REGIONAL ROAD 25 & BRITANNIA ROAD PROPOSED MIXED-USE DEVELOPMENT

UPDATED Urban Transportation Considerations

Town of Milton

Prepared For: Mattamy (Milton West) Limited

January 2024

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January 19, 2024

Christine Chea, MCIP RPP (she/her)
Director, Development, GTA Urban
3300 Bloor Street West, Suite 1800
Toronto, ON M8X 2X2

RE: Mattamy (Milton West) Limited Site, UPDATED Transportation Considerations Report

Dear Christine:

Attached please find BA Group's Updated Transportation Considerations Report (Traffic Impact Study) for the proposed development of a site that is located on the northwest quadrant of the intersection of Regional Road 25 and Britannia Road, in the Town of Milton, in the Region of Halton.

This Transportation Considerations Report (Traffic Impact Study) has been updated and prepared as part of the Zoning By-law Amendment (ZBA) application being resubmitted to the Town of Milton.

I can confirm that the enclosed report has been prepared under my supervision and to the best of my knowledge is accurate and true.

I trust that the foregoing is satisfactory.

Sincerely,
BA Consulting Group Ltd.

Deanna Green, MSc. P.Eng.
Senior Associate

Responses to Town of Milton and Halton Region Comments – Submission 1

Zoning By-law Amendment

Regional Road 25 & Britannia Road, Town of Milton

Proposed Mixed-Use Development

Responses to September 28, 2023 Town of Milton Comments

Development Review (Natalie Stopar)

Comment 2n. The following comments are related to the Parking Rates proposed and discussed in the draft ZBA and the TIS/Parking Justification Study:

Comment: The Town of Milton will require a Peer Review of the TIS/Parking Justification Report. Once a revised report has been provided to address the comments on the most recent submission, the Town will provide the applicant with an invoice for the cost of the peer review.

Response: Noted.

Comment: The Zoning By-law currently establishes the following MU parking rates:

1.25 parking spaces per dwelling unit
PLUS
The greater of 0.25 parking spaces per residential dwelling unit for visitor parking or 1 parking space per 25 m² of gross floor area for the non- residential component in a mixed use building

For other mixed-use developments in Milton, Town staff have typically supported the following parking rates:

1.0 parking spaces per dwelling unit
PLUS
0.25 visitor parking spaces per dwelling unit
PLUS
1.0 parking spaces per 20 square metres of commercial gross floor area

Notwithstanding anything to the contrary, the greater of 0.25 residential visitor parking spaces per dwelling unit or 1 parking space per 20 square metres of commercial gross floor area and 1 parking spaces per 30 square metres of office gross floor area shall be required. The applicant should increase the visitor parking rate to 0.25 parking spaces per unit.

Response: The updated site plan and the January 2023 BA Group Transportation Considerations Report continues to include a residential parking supply of 1.0 spaces per unit and non-residential parking supply of 0.22 spaces per unit. BA Group recently undertook additional parking demand surveys in Milton. The parking justification section has been updated in the January 2024 BA Group Transportation Considerations Report.

Comment: Vehicles associated with a car share program shall be permitted to be parked in required visitor spaces.

Response:

Noted.

Comment: Zoning staff have confirmed that a minimum of 89 short-term bicycle parking spaces are required, whereas 14 short-term bicycle parking spaces are proposed. A minimum bicycle parking rate of 0.05 short term bicycle parking spaces per unit is required. A reduction to the minimum short-term bicycle parking spaces would not be supported by Planning Staff.

Response:

The revised site plans provide a minimum bicycle parking supply for residents of 0.5 spaces per unit and 0.05 spaces per unit for non residents.

Comment: A reduction to the minimum size of 50 perpendicular parking spaces is proposed, (5.3 metres long and 2.6 metres wide). Staff are not supportive of this reduction. A minimum perpendicular parking space size of 5.8 metres long by 2.75 metres wide is required.

Response:

All parking spaces are designed to be 5.8 metres long by 2.75 metres wide. Dimensions are provided on the architectural plans provided in Appendix A of the January 2023 BA Group Transportation Considerations Report.

Responses to September 7, 2023 Town of Milton Comments (Sherri Jamieson)

The following comments are in addition to what has already been noted in the previous section.

Comment 3: Are any Restaurant Patios associated with a future Restaurant/Restaurant Take-out uses proposed at grade level. If so, please note additional parking may be required.

Response:

It is unknown if restaurant patios are proposed at this stage of development.

Comment 7: Provide the ingress and egress driveway widths at property lines. Maximum width of a two way driveway entrance is 15.0m (Section 5.6.1 ii Table 5B footnote*1)

Response:

All proposed driveways are proposed to be a minimum of 6 metres wide. Dimensions are included on the architectural plans provided in Appendix A of the January 2023 BA Group Transportation Considerations Report.

Comment 8a: Accessible Parking spaces requirement appears to comply with proposed parking rates. Further review of compliance with following during SPA review.

Response:

Noted.

Comment 8b: Bicycle Parking requirements proposed for Short-term parking space is only 2 per apartment building and mixed use building, whereas, 0.05 short term bicycle parking space/unit. Short-term bicycle parking spaces must be provided in a bicycle rack located in an easily accessible location and available for visitors to a lot or building.

Response:

The revised site plans provide a minimum bicycle parking supply for residents of 0.5 spaces per unit and 0.05 spaces per unit for non residents. Short-term bicycle parking spaces will be located in bicycle racks located in an easily accessible location and available for visitors to the buildings.

Responses to September 28, 2023 Halton Region Planning and Development Department comments

Comment 1: Regional Road 25 Site Access
The development proposes two right-in/right-out (RI/RO) accesses to Regional Road 25; one access each for the north block and south block. Per Halton Region's pre-consultation comments and TIS Terms of Reference comments, Halton Region's Access By-law (NO.32-17) Section 6.1 (a) states that "*access to a Regional Road from private property shall be permitted only where such access is necessary because access to a local road is not feasible.*" As access to Regional Road 25 can be provided via Etheridge Avenue, any proposed access to Regional Road 25 must be justified via a Transportation Impact Study (TIS) and must be approved by Halton Region's Senior Management. Halton Region noted that:

- The justification should demonstrate that the proposed accesses conform to Halton Region's Access Management Guideline, demonstrate the benefits of permitting access to Regional Road 25 (e.g. to traffic operations, safety, circulation, etc.) and highlight any negative impacts of not permitting access to Regional Road 25 (e.g. traffic congestion on Etheridge Avenue);
- The accesses would have to be RI/RO restricted by a raised centre median on Regional Road 25; and
- The TIS must analyze traffic safety components associated with the proposed accesses to Regional Road 25 including (but not limited to):
  - Sightlines along Regional Road 25,

- Auxiliary right-turn lane requirements on Regional Road 25 at the site accesses;
- the proposed clear throat length at the accesses; and
- swept path analysis for the largest design vehicle anticipated to use the proposed accesses to Regional Road 25. The accesses should be designed to allow a simultaneous inbound movement from the design vehicle and outbound movement from a passenger car, and vice versa.

The TIS does not include any of the required analysis as noted above, nor acknowledge how the RI/RO accesses would be restricted. These analyses and details are required to justify the proposed RI/RO accesses and potentially obtain approval from Halton Region's Senior Management. The Region is willing to discuss the proposed accesses further with the project team once the required analysis has been provided and reviewed.

Response:

- The justification and benefits of the proposed right-in/ right-out accesses (one on each block) along Regional Road 25 is discussed in detail in Section 9.6 of the January 2023 BA Group Transportation Considerations Report.
- A sightline review undertaken at the proposed right-in right-out intersections along Regional Road 25 demonstrates that the locations meet the requirements outlined in the Transportation Association of Canada (TAC) Chapter 9 guidelines.
- The TAC Chapter 8 guidelines suggest minimum clear throat lengths of 25m and 40m for driveways off collector roads and arterial roads, respectively. The clear throat length provides a no conflict zone that prevents blocking on-site vehicle circulation. The provision of the clear throat length is particularly important for developments with a high turnover rate (drive-ins, restaurants, banks, etc.). It should be noted that the lengths provided in the TAC guidelines are suggestions and the document further states that the clear length should be determined based on a traffic study.
- The proposed clear throat length for both right-in / right-out intersections on Regional Road 25 is 25m, which meets the suggested TAC throat length for a collector road. Although Regional Road 25 is an arterial road, the proposed 25m throat length has been proposed based on the traffic analysis undertaken and the design components of each Block.
- The analysis in the January 2023 BA Group Transportation Considerations Report concludes that there is no queuing making a right turn into the site from Regional Road 25 for either Block. This suggests that both intersections are relatively "free-flowing" and there is no queuing expected that would block vehicles coming from the Regional Road 25.
- The south block is proposed to have a ramp entrance 25m from the intersection. This entrance has been designed to accommodate two-way traffic and outbound vehicles will not conflict with traffic coming from Regional Road 25.
- The north block proposes to have visitor parking stalls 25m from the intersection. Residential visitor parking is not considered to have a high turnover rate and conflicts at this location are anticipated to be minimal.
- Based on the above, the proposed 25m throat length is appropriate to service both the north and south blocks of the site.
- It is anticipated that all larger loading vehicles (garbage truck, single unit vehicle) will access the site from Etheridge Avenue. Therefore, the design vehicle for the right-in right-out intersections is proposed to be a cube van. The simultaneous movements from a cube van and a passenger car are provided in the Vehicle Manoeuvring Diagrams in the January 2023 BA Group Transportation Considerations Report (Appendix D).

Comment 2: Halton Region Policies
Section 2.2 of the TIS (Halton Region Policies) should be updated as follows:

- Remove the following sentence under "Halton Region Transportation Master Plan": "The Halton Region TMP (2031) is focused on a sustainable approach that balances 'greenfield' development with intensification."
- Include Halton Region's Access By-Law NO. 32-17, a By-Law to prohibit, restrict and regulate access to the Regional road network, in the Halton Region Policies list as this By-Law is applicable to the proposed development. In particular, Section 6.1(a) of the By-Law, which states "access to a Regional road from private property shall be permitted only where such access is necessary because access to a local road is not feasible", should be documented in the TIS.

Response:

Noted and removed. The January 2023 BA Group Transportation Considerations Report includes references to Halton Region's Access By-Law NO. 32-17, a By-Law to prohibit, restrict and regulate access to the Regional road network.

Comment 3: Table 2 - Area Road Network
Table 2 of the TIS (Area Road Network) should be updated as follows:

- Clarify that there is a gap in the Regional Road 25 span between Derry Road and Steeles Avenue East. Ontario Street spans from Derry Road to Steeles Avenue East and is not a Regional road.
- Correct the existing cross-section and speed limit details for Britannia Road west of Regional Road 25 to reflect the road widening that was completed in early 2022.

Response:

Noted and corrected in the January 2023 BA Group Transportation Considerations Report.

Comment 4: Planned Road Network Improvements
Section 3.1.2 of the TIS (Planned Road Network Improvements) should be updated as follows:

- Note that Britannia Road was identified as a Priority Bus Corridor as part of Halton Region's 2019 Defining Major Transit Requirements (DMTR) Study.
- Revise the first sentence under "Regional Road 25 Corridor Improvements" to begin with: "A Notice of Study Commencement was issued by the Region…."
- Revise the second-to-last sentence under "Regional Road 25 Corridor Improvements" to read as follows: "A number of multi-modal transportation improvements will be considered for Regional Road 25 including widening the roadway from 4 to 6 lanes to address future travel demand." • Note the currently scheduled construction start date of 2027 (subject to change) for the Regional Road 25 improvements from Speers Road to Derry Road per Halton Region's 2023 Budget and Business Plan.
- Note that Regional Road 25 was identified as a Priority Bus Corridor from Bronte GO to Steeles Avenue per Halton Region's DMTR Study.
- Note that the lane configurations shown in Figure 5 are not finalized as the Municipal Class Environmental Assessment (MCEA) study for the Regional Road 25 improvements is in the early phases.

- Remove the all-way stop control shown in Figure 5 at the intersection of Regional Road 25 and Etheridge Avenue.

Response:

The lane configurations in Figure 5 at the intersection of Regional Road 25 and Etheridge Avenue have now been revised in the January 2023 BA Group Transportation Considerations Report.

Comment 5: Existing Traffic Volumes
The existing traffic data collected on the road network is from November 2022. Halton Region provided additional historical data for the Regional Road 25 intersections at Britannia Road (December 2019) and at Louis St. Laurent Avenue (December 2016) to compare travel patterns to existing travel patterns. Per Halton Region's TIS Terms of Reference comments, the comparison between existing data and historical data was requested because of the potential impacts from existing construction along Britannia Road east of Regional Road 25, not because of impacts from COVID-19 as documented in the TIS (Halton Region has been accepting new traffic counts since the summer of 2022). The TIS should be updated to clarify the reason for the data comparison.
The TIS should clearly state which traffic counts were used as the "raw" data for the Regional Road 25 intersections at Britannia Road and at Louis St. Laurent Avenue.
The exact traffic volumes from the "raw" traffic counts should be applied as opposed to rounding the volumes to the nearest five.
Separate traffic volume figures illustrating the "adjusted" existing traffic volumes (e.g. historical volumes grown to 2022, balanced through volumes, etc.) and the "raw" traffic volumes should be included in the TIS for report clarity and completeness.
The historical traffic data provided by Halton Region for the Regional Road 25 intersections at Britannia Road and at Louis St. Laurent Avenue should be appended to the TIS.
The reference to 2023 existing traffic volumes in Section 8.2 of the TIS (Future Horizon Years) should be corrected as the "adjusted" existing traffic volumes reflect 2022.

Response:

- The TIS has been updated to clarify that the reason for data comparison was mainly due to construction along Britannia Road. The TIS has also clarified that the historical 2019 counts were applied at Regional Road 25 / Britannia Road as they were generally higher than the 2022 counts, whereas the 2022 counts were applied at Regional Road 25 / Louis St. Laurent Avenue because they were generally higher than the historical 2016 counts.
- Rounding to the nearest five is a typical industry standard. The purpose of rounding is to illustrate the reality that traffic volumes fluctuate day-to-day during the peak hours. Furthermore, rounding to the nearest five would be inconsequential to the traffic impacts that result from the difference of up to +/- 2 vehicles (ex: 3 rounding to 5, or 2 rounding to 0).
- The raw traffic volume figures are included in the January 2023 BA Group Transportation Considerations Report (Figure 9). Adjusted 2023 volume figures are included in Figure 10.
- The historical traffic data is appended in January 2023 BA Group Transportation Considerations Report Appendix E.
- Based on the Halton Region's and Town of Milton's TIS Guidelines, the traffic counts were collected at the end of 2022 (the month of November of 2022) and are within the two-year acceptance period, and further compared to historical data to establish a likely-conservative basis for traffic volumes.

Therefore, the adoption of, and reference to, these volumes as 2023 baseline existing traffic volumes is appropriate (and not 2022).

Comment 6: Table 19 – Adopted Corridor Growth Rates
Table 19 of the TIS (Adopted Corridor Growth Rates – Compounded Annually) should be revised to clarify that a growth rate of 2% was applied from 2030 to 2037 for all other movements besides the through movements along Regional Road 25 for which the growth rate of 3.8% was applied.

Response:
The table (now Table 20 in January 2023 BA Group Transportation Considerations Report) has been revised to clarify that 2% was used for all other movements.

Comment 7: Background Development Traffic Figure
A traffic volume figure illustrating the total background development site traffic on the road network should be included in the TIS for report completeness.

Response:
A traffic volume figure illustrating all total background development traffic on the study area road network is provided in Figure 14 of the January 2023 BA Group Transportation Considerations Report.

Comment 8: Trip Generation Forecasts
The TIS rounded up the proposed unit count to the nearest hundred for the trip generation forecasts for each Phase. The TIS rationalizes this methodology as accounting for potential future revisions to the current proposed unit count. While conservative assumptions are generally supported where appropriate, the TIS does not have to round up the proposed unit counts for each Phase to account for future unit count revisions. Any future revisions to the development proposal (including unit count) can be addressed through future Site Plan Applications for the individual sub-phases and future supporting traffic analyses.
The fitted curve equation from the Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition should be applied to each Phase separately for the trip generation forecasts as opposed to being applied to the entire development proposal and then proportioned by Phase unit count. Further, the exact inbound and outbound trip generation forecasts from the ITE Trip Generation Manual should be applied as opposed to rounding the forecasts to the nearest five.
The TIS should consider if any of the proposed retail uses would be expected to generate pass-by trips on the road network during the weekday a.m. and p.m. peak periods.
Per Halton Region's TIS Terms of Reference comments, a trip generation comparison between the current development proposal and the trip generation forecasts associated with the subject property from the Boyne Road Network Assessment (2017) must be provided. This comparison has not been provided and thus must be included in a TIS Update.
All trip generation data excerpts from the ITE Trip Generation Manual must be appended to the TIS.

Response:
- The unit count is no longer rounded for trip generation purposes. The fitted curve data was applied.
- As aforementioned, rounding to the nearest five is a typical industry standard. Exact numbers assume a perfect degree of accuracy in traffic volume forecasting, while rounding to the nearest five presents the idea that the ITE forecasts may differ slightly across day-to-day weekday peak hours.

Furthermore, rounding to the nearest five would be inconsequential to the traffic impacts that result from the difference of up to +/- 2 vehicles (ex: 3 rounding to 5, or 2 rounding to 0).

- The retail uses on-site are expected to be ancillary to the residential uses and thus generate negligible external trips. Most of the trips are anticipated to be walking trips between the uses.
- The comparison with the Boyne RNA model is provided in Section 8.4.1.1 in Table 23. The site is expected to generate 222 and 258 more vehicle trips than the Boyne RNA forecasts during the weekday morning and afternoon peak hours, respectively.
- ITE excerpts are appended in the January 2023 BA Group Transportation Considerations Report (Appendix F).

Comment 9: Holdout Property
A holdout property has been identified within the north block, and a Concept Plan has been prepared for this holdout property in the context of the overall development proposal. However, the TIS does not consider the holdout property in the development proposal description nor analysis. Consideration should be given to including this holdout property as part of the TIS analysis (e.g. as a sensitivity analysis) in case the property is acquired in the future.

Response:
A sensitivity analysis has been completed and summarized in Section 9.7 of the January 2023 BA Group Transportation Considerations Report assuming 144 residential units from the development of the holdout property.

Comment 10: Modelling Assumptions
The TIS sources other jurisdictions' guidelines as the sole rationale for specific Synchro modelling parameter assumptions. For example, the TIS sources the City of Toronto's Synchro 11 Guidelines to justify the assumed lost time adjustment factor of -1.0 seconds, and the TIS sources the Region of Peel's Synchro Guidelines to justify the assumed Peak Hour Factor (PHF) of 1.00 under future conditions. Other jurisdictions' guidelines could be sourced to supplement the justification for these assumptions. However, primary justification must be provided to demonstrate that these assumptions are appropriate for the analysis of this specific development proposal, immediate study area conditions and observations, etc.
The modelling of the intersection of Britannia Road and Farmstead Drive under existing conditions as described in the TIS must be corrected to reflect the completed Britannia Road widening to six-lanes in early 2022, as modelled in the Synchro analysis.
The Synchro modelling of the intersection of Regional Road 25 and Etheridge Avenue under existing conditions currently reflects two southbound through lanes with no southbound right-turn provisions. The modelling must be updated to reflect the existing shared southbound through and southbound through/right-turn lane configuration. The traffic operations results must be updated accordingly.

Response:
These adjustments were applied to represent future conditions as the development in the area continues to progress. Based on the analysis forecasting done as part of the TIS work, operations at the study area intersections are expected to approach capacity. The lost time adjustment (LTA) parameter accounts for more drivers taking advantage of the amber / all-red time (i.e. intergreen time) to clear the intersection (these vehicles are herein referred to as "sneakers"). Based on this behaviour, the City of Toronto's guidelines recommend a baseline adjustment of -1.0 seconds is applied to all signalized intersections in the study area during both peak hours. This recommended adjustment is a reasonable calibration as it considers the on-field

condition that drivers at busy intersections are either (a) unable to stop before the intersection as the signal suddenly goes from green to amber, or (b) more aggressive in traversing the intersection to avoid waiting for the next green phase (more common at busy urban intersections).

Under existing conditions, the peak hour factors at all study area intersections are based on the collected traffic count data. Under future background and future total conditions, peak hour factors of 1.00 were adopted. As urban intersections approach capacity, vehicle trips will begin to equalize their distribution across the different peak 15-minute periods within the peak hour. This shift would result in an increasingly even distribution of trips over the course of the peak hour as drivers make trips earlier or later to reduce delays. During the data collection process in November of 2022, several peak hour factors at the study area intersections were observed to be approaching 1.00 (up to 0.97). Given that significant growth in the area is expected, the full servicing potential of the road network during the peak hours will continue to be reached as development progresses, hence the application of the peak hour factor of 1.00 under future conditions.

In conclusion, the added corridor growth and background development traffic allowances assume that development in the Town will continue to progress. The parameters applied to the Synchro models assume that the full potential of the study area road network will be achieved prior to recommendations of future improvements. The Region should continue to monitor growth in travel demand along regional roads and their respective levels-of-service as part of future development applications.

The correct configuration (including the southbound through-right) at Regional Road 25 / Etheridge Road is now shown in the Synchro models and reflected in the analysis results.

Comment 11: Traffic Operations Results
All critical volume-to-capacity ratios listed in the traffic operations results tables must be bolded or highlighted. Critical volume-to-capacity ratios are those which exceed 0.85 for through movements or shared through/turning movements and 0.95 for exclusive turning movements. These critical threshold limits as defined in Halton Region's TIS Guidelines should also be documented in the TIS for report completeness.

Response:
The critical volume-to-capacity ratios are highlighted in the tables, and the threshold limits are defined in Section 9.1.1 of the January 2023 BA Group Transportation Considerations Report.

Comment 12: Regional Road 25 and Britannia Road Results
The 2037 future background and total traffic operations results for the intersection of Regional Road 25 and Britannia Road indicate that a few movements are expected to operate beyond capacity during the peak hours (i.e. a volume-to-capacity ratio beyond 1.00). The TIS acknowledges these operations and recommends that the Region monitor traffic volumes and operations at the intersection as development occurs, which is an acceptable recommendation.
The TIS should consider analyzing and recommending future background geometric improvements to the intersection (e.g. as an additional "with improvements" analysis) that could possibly be integrated with the Regional Road 25 Improvements Project. For example, the northbound through/right-turn lane grouping is expected to operate beyond capacity during the weekday p.m. peak hour, and the forecasted northbound right-turn volume is 450 veh/hr during this time period. An auxiliary northbound right-turn lane could improve traffic operations for this lane grouping and thus could be noted as a recommended future background improvement.

As previously noted, the modelled future lane configurations along Regional Road 25 are not finalized as the MCEA for the Regional Road 25 improvements is still in the early phases. Therefore, the future six-lane cross-section for Regional Road 25 could consist of six standard travel lanes similar to the completed Britannia Road widening west of Regional Road 25, instead of four standard travel lanes and two high-occupancy vehicle (HOV) lanes. The TIS should acknowledge this and note that if the future six-lane cross-section for Regional Road 25 to be confirmed via the MCEA and Detail Design process consists of six standard travel lanes, then traffic operations along the Regional Road 25 corridor may improve given the increased lane capacity.
Further, the TIS should state that the traffic operations results can be verified via future supporting traffic analyses for future Site Plan Applications, which depending on the timing of the studies may reflect the completion of the Britannia Road widening construction east of Regional Road 25.

Response:
For the purposes of recommending future background improvements, two options were tested, including where Regional Road 25 had a standard six-lane cross section with no HOV lanes and where the Regional Road 25 / Britannia Road intersection has an auxiliary northbound right-turn lane. The conclusions of the analysis is provided in the January 2023 BA Group Transportation Considerations Report (Section 9.8). The Report notes that the future cross-section for Regional Road 25 is to be confirmed via MCEA and Detailed Design process. The TIS also notes that traffic operations results can be verified through future Site Plan Applications.

Comment 13: Right-of-way Dedication – Regional Road 25 (applicable to both blocks):
Any lands within 23.5 metres of the centreline of the original right-of-way of Regional Road 25 that are part of the subject property shall be dedicated to the Regional Municipality of Halton for the purpose of road right-of-way widening and future road improvements. This land dedication requirement must be dimensioned on the Survey Plan and Concept Plan.
Right-of-way Requirements – Britannia Road (applicable to south block only):
Any lands within 23.5m of the centreline of the existing right-of-way of Britannia Road (Regional Road 6) that are part of the subject property shall be dedicated to the Regional Municipality of Halton for the purpose of road right-of-way widening and future road improvements. This land dedication requirement must be dimensioned on the Survey Plan and Concept Plan.

Response:
Noted.

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EXECUTIVE SUMMARY

Development Proposal

BA Group was retained by Mattamy (Milton West) Limited to provide transportation consulting services related to the proposed development of a site (herein referred to as "the site") that is located on the northwest quadrant of the intersection of Regional Road 25 and Britannia Road, in the Town of Milton ("the Town"). The updated development proposal includes 7 residential buildings (up to 15 stories) inclusive of a total of 1,427 residential units (792 units on the south block and 635 units on the north block) along with a total of 920 m^2 GFA of retail (437 m^2 on the south block and 483 m^2 on the north block). With consideration for an additional 144 units on Block 8 ("hold-out property"), a total of 1,571 residential units has been considered within this report.

It is estimated at this time that the south block will be completed by 2029 and the north bock will be completed by 2032. Resident parking is to be provided through a connected below-grade structure on each block, while non-resident parking (resident visitor and retail) is to be shared and provided at-grade on each block. Vehicle access and site circulation for each block is proposed via a driveway across each block that provides a connection between a new 4-legged intersection on Etheridge Avenue and a new right-in/ right-out only access (one on each block) at Regional Road 25.

Vehicle Parking Considerations

The site is subject to the Town of Milton Comprehensive Zoning By-law 016-2014 (HUSP Urban Area – March 2023) for parking considerations. Application of this By-law to the site results in a total minimum parking requirement for the site of 2,357 spaces, inclusive of 1,188 and 1,169 spaces for the south and north blocks, respectively. A total parking supply of 1,917 parking spaces is proposed for the site, inclusive of 966 and 951 parking spaces for the south and north blocks, respectively. The development proposes a provision of a minimum resident parking rate of 1.0 space per unit, with non-resident shared parking proposed to be provided at a minimum rate of 0.22 spaces per unit. The proposed parking supply is appropriate for the site based upon the evolving transportation context, observed parking demands at the proxy sites and proposed TDM measures.

Bicycle Parking Considerations

Zoning By-law 016-2014 (HUSP Urban Area – March 2023) requires a minimum of 436 and 429 bicycle parking spaces for the south and north blocks, respectively. A total supply of 902 bicycle parking spaces is proposed for the site, inclusive of 463 and 439 spaces for the south and north blocks, respectively. The proposed bicycle parking supply exceeds the minimum requirements and will encourage a shift to sustainable travel.

Loading Considerations

Application of Zoning By-law 016-2014 to the site for loading considerations, results in the minimum requirement of 2 loading areas (1 loading area per block), with the minimum dimensions of 6.0 m (length) x 3.5 m (width) x 3.0 m (vertical clearance). The development proposes the following loading provisions for each block, with the following dimensions:

- **South Block**: 1 loading space with dimensions of 18 m (length) x 6 m (width) & 4 loading areas with dimensions of 8 m (length) x 4 m (width)
- **North Block**: 1 loading space with dimensions of 18 m (length) x 6 m (width) & 3 loading areas with dimensions of 8 m (length) x 4 m (width)

All of the proposed loading spaces are located at-grade, without any overhead obstructions, and meet the minimum heights required by the Zoning By-law. The proposed loading supply is appropriate.

Transportation Demand Management Plan
The proposed Transportation Demand Management (TDM) Plan aims to reduce automobile use through an on-going strategy that supports and promotes the use of non-auto transportation modes. Proposed TDM measures for the site include pedestrian facilities with a focus on connectivity, bicycle parking/ bicycle repair stations, an appropriate vehicle parking supply, resident traveller information and unbundled parking.

Travel Demand
The Phase 1 (south block) proposed development is anticipated to generate **195 and 235 two-way vehicle trips** during the weekday morning and afternoon peak hours, respectively. At full buildout, the proposed development is anticipated to generate in the order of **345 and 410 two-way vehicle trips,** during the morning and afternoon peak hours, respectively. If an additional 144 residential units are constructed on the north block as a result of the acquisition of the "hold-out" property, at full buildout, the proposed development is anticipated to generate in the order of **375 and 450 two-way vehicle trips** during the morning and afternoon peak hours, respectively.

Traffic Operations Analysis
The traffic analysis was undertaken for the 2029, 2032 and 2037 horizon years. The 2029 horizon year represents the build-out of Phase 1 (south block). The 2032 horizon year represents the full build-out of the site (south block + north block). The 2037 horizon year represents the five-years beyond the build-out horizon of the site. The following analysis scenarios were undertaken for this study:

- 2023 Baseline existing traffic volumes
- 2029 Future background traffic conditions
- 2029 Future total traffic conditions (inclusive of Phase 1 - south block)
- 2032 Future background traffic conditions
- 2032 Future total traffic conditions (complete site build-out – inclusive of north block)
- 2037 Future background traffic conditions
- 2037 Future total traffic conditions (five years beyond complete site build-out)

The traffic analysis was completed for a typical weekday for both the morning and afternoon peak periods and indicated that in 2037, all study area intersections will operate acceptably, with the recommended optimization of traffic signal timings at the intersections of Regional Road 25 / Louis St. Laurent Avenue and at Regional Road 25 / Britannia Road. The queuing review indicates no concerns at any of the signalized and unsignalized intersections in the study area. The impact of the site on queuing is only modest and can be accommodated on the existing and future road network.

Overall Conclusion

Based on the comprehensive traffic analysis, the proposed development can be accommodated on the future transportation network.

1.0 INTRODUCTION

BA Group was retained by Mattamy (Milton West) Limited to provide transportation consulting services related to the proposed development of a site (herein referred to as "the site") that is located on the northwest quadrant of the intersection of Regional Road 25 and Britannia Road, in the Town of Milton ("the Town"), in the Region of Halton ("the Region").

This Transportation Considerations Report (Traffic Impact Study) has been prepared as part of the **Zoning By-law Amendment (ZBA)** application being submitted to the Town of Milton.

1.1 EXISTING SITE CONTEXT

The site includes two adjacent blocks with frontage along the west side of Regional Road 25. The "south block" is on the south side of Etheridge Avenue and the north side of Britannia Road while the "north block" is on the north side of Etheridge Avenue. There are existing residential uses to the north and west of the site. The site location and site context are illustrated in **Figure 1** and **Figure 2**, respectively.

1.2 BACKGROUND

A Transportation Considerations Report (Traffic Impact Study) dated July 2023 was completed by BA Group as part of the process for the **Zoning By-law Amendment (ZBA)** development application to the Town (first submission) on August 8, 2023. This Transportation Considerations Report provides a comprehensive update that responds to comments provided by the Town and Region and considers recent revisions to the development proposal.

A high level comparison of the difference between the July 2023 development proposal and the current development proposal are summarized in **Table 1**.

TABLE 1 JULY 2023 PROPOSAL VS. CURRENT JANUARY 2024 PROPOSAL

Land Use	South Block		North Block		Total	
	July 2023 Proposal	Current Proposal	July 2023 Proposal	Current Proposal	July 2023 Proposal	Current Proposal
Residential Units	*1,029 units*	**792 units**	*739 units*	**635 units**	***1,768 units***	**1,427 units**
Block 8 "Hold Out Property" Potential Development						**144 units**
Total Future Potential Development						**1,571 units**
Retail	*454 m²*	**437 m²**	*475 m²*	**483 m²**	***929 m²***	**920 m²**
Vehicle Parking	*1,265 spaces*	**966 spaces**	*902 spaces*	**951 spaces**	***2,167 spaces***	**1,917 spaces**
Bicycle Parking	*534 spaces*	**463 spaces**	*376 spaces*	**439 spaces**	***910 spaces***	**902 spaces**

Note:
1. Vehicle and bicycle parking supply includes consideration for Block 8 ("hold-out" property).

1.3 DEVELOPMENT PROPOSAL

The updated development proposal includes 7 residential buildings (up to 15 stories) inclusive of a total of 1,427 residential units (792 units on the south block and 635 units on the north block), along with a total of 920 m^2 GFA of retail (437 m^2 on the south block and 483 m^2 on the north block). With consideration for an additional 144 units on Block 8 ("hold-out property"), a total of 1,571 residential units has been considered within this report.

It is estimated at this time that the south block will be completed by 2029 and the north block will be completed by 2032. The phasing of the construction of the south block is proposed to begin with Building 1 and then proceed with Buildings 2, 3 and 4 in that order. The phasing of the construction of the north block is proposed to begin with Building 5 and then proceed with Buildings 6 and 7 in that order.

Resident parking is to be provided through a connected below-grade structure on each block, while non-resident parking (resident visitor and retail) is to be shared and provided at-grade on each block. Vehicle access and site circulation for each block is proposed via a driveway across each block that provides a connection between a new 4-legged intersection on Etheridge Avenue and a new right-in/ right-out only access (one on each block) at Regional Road 25.

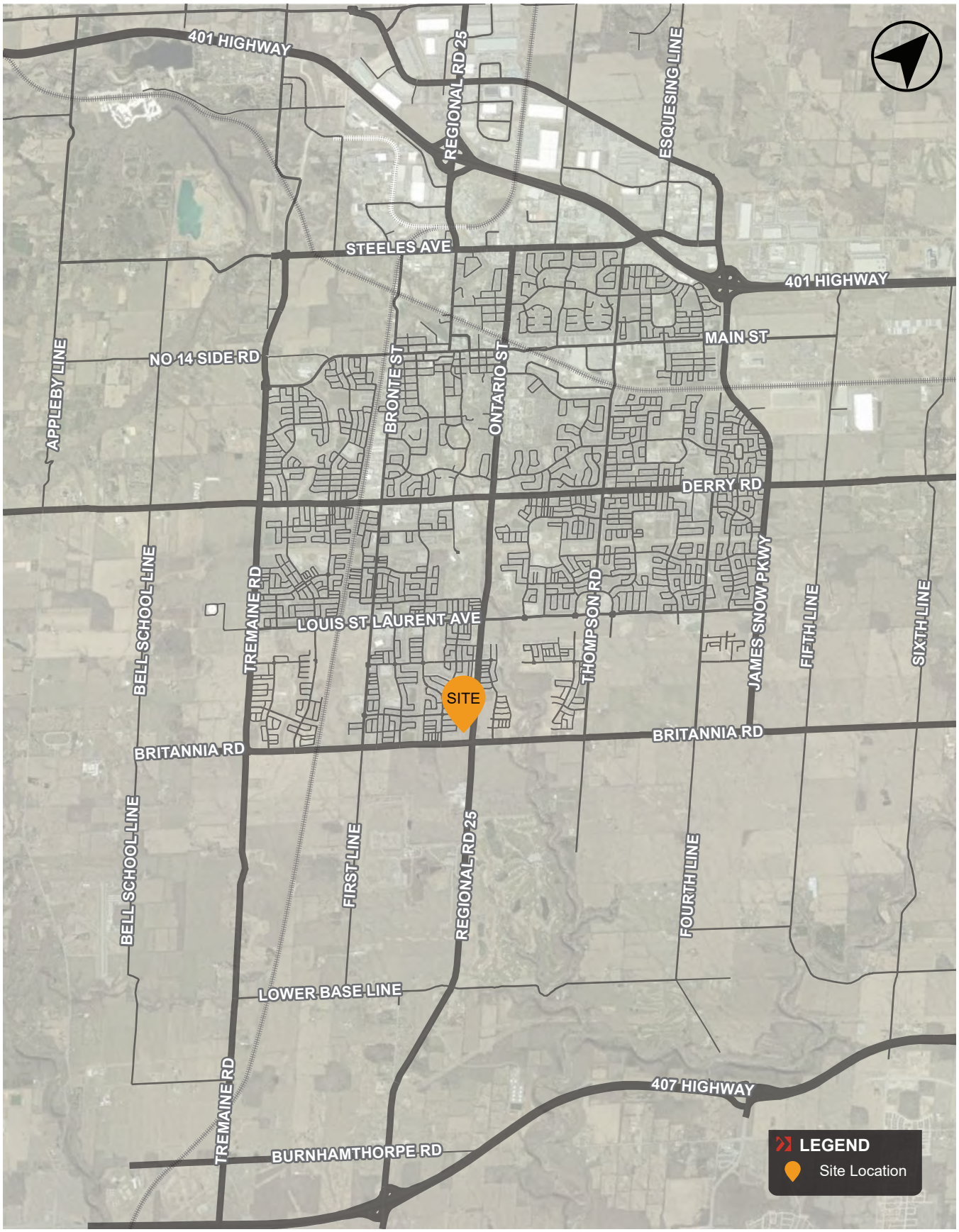
As the proposed new 4-legged intersection of the north and south block driveways with Etheridge Avenue is only approximately 80 metres from the signalized intersection of Regional Road 25 at Etheridge Avenue, a pedestrian crossover is not recommended to be installed across Etheridge Avenue. The installation of pedestrian warning signs could however be considered.

The development statistics for the site are summarized in **Table 2.** The architectural drawings, along with the traffic signage and pavement marking plan, are provided in **Appendix A** and **Appendix B**, respectively**.**

TABLE 2 DEVELOPMENT PROPOSAL

Land Use	SOUTH BLOCK				NORTH BLOCK			Total Proposed
	Building 1	Building 2	Building 3	Building 4	Building 5	Building 6	Building 7	
Residential								
Residential (units)	231	189	155	217	238	188	209	**1,427 units**
Total Residential Units	**792 units**				**635 units**			
Block 8 "Hold Out Property" Potential Development								**144 units**
Total Future Potential Development								**1,571 units**
Non-Residential								
Retail (GFA)	437 m^2	--			--		483 m^2	**920 m^2**
Total Non-Residential GFA	**437 m^2**				**483 m^2**			
Vehicle Parking								
Resident (spaces)	792 spaces				779 spaces			**1,571 spaces**
Non-Resident (spaces)	174 spaces				172 spaces			**346 spaces**
Total Vehicle Parking (inclusive of Block 8)	**966 spaces**				**951 spaces**			**1,917 spaces**
Bicycle Parking								
Resident (spaces)	422 spaces				398 spaces			**820 spaces**
Non-Resident (spaces)	41 spaces				41 spaces			**82 spaces**
Total Bicycle Parking (inclusive of Block 8)	**463 spaces**				**439 spaces**			**902 spaces**

Notes:
1. Site statistics based on site plans prepared by Core Architects dated January 18, 2024.
2. Vehicle and bicycle parking supply includes consideration for Block 8 ("hold-out" property).



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

FIGURE 1 SITE LOCATION

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

FIGURE 2 SITE PLAN

1.4 STUDY SCOPE

The terms of reference for the Traffic Impact Study was submitted to both the Town and Region. The comments received regarding the scope of work are provided in **Appendix C**.

This report provides an assessment of the transportation-related aspects of the site, including:

- a summary of the existing land uses and proposed development;
- a review of the area transportation context, including planned area road network improvements; and
- a review of traffic operations on the road system following the development of the site.

The Town and Region have several planned improvements for the area surrounding the site including improvements to transit connectivity, new active transportation links, and the adjacent road network as identified in the:

- Town and Regional Official Plans (OP, ROP)
- Town and Regional Transportation Master Plans (TMP); and
- Boyne Survey Secondary Plan (MSPS);

Plans for road improvements approved and already underway by the Town and Region will provide for significantly improved connectivity and mobility options for future site residents and visitors. Planned area road, transit and active transportation improvements are outlined in **Section 3.0** of this report.

The study scope is outlined below.

Transportation Context

- A description of the existing transportation context with consideration for the area road network, transit system and active transportation facilities.
- A description of any future transportation changes and/or improvements to the area context such as transit improvements and other non-automobile dependent travel options.

Development Proposal

- A summary of the proposed development.
- An overview of the site and the area-wide transportation system that facilitates a shift towards non-automobile travel for prospective residents and visitors, while still being able to meet the practical and operational needs of the proposed development plan.
- A review of the transportation elements of the proposed development plan that includes vehicle access and circulation, loading and parking facilities.

Transportation Demand Management Framework

- An overview of potential Transportation Demand Management (TDM) measures and initiatives that are being considered to encourage prospective residents and visitors to use more active and sustainable modes of transportation.

Site Plan

- A review of the adequacy of the vehicle and bicycle parking supply, inclusive of a parking study.
- A review of the adequacy of the loading space provisions.
- A review of the functionality and appropriateness of the proposed vehicle, pedestrian and cycling facilities incorporated into the site plan, including loading/garbage collection facility arrangements.

Travel Demand Forecasting

- An assessment of the existing travel patterns and traffic volumes in the study area, during the key weekday morning and afternoon peak hours.
- A comprehensive review of future growth that may occur in the area, including corridor growth and consideration for a number of other area development projects.
- An assessment of the multi-modal trip generation potential of the proposed development.

Traffic Operations Review

- A review of traffic operations at intersections in the area, under existing and future conditions, including an assessment of the operational impacts of the proposed development.
- An assessment of any mitigative measures to accommodate the development traffic.

The findings of this review are summarized in the following sections.

2.0 POLICY & PLANNING CONTEXT

2.1 PROVINCIAL POLICIES

2020 Provincial Policy Statement

The *Provincial Policy Statement, May 1, 2020* (the "PPS"), establishes the foundational policy for directing land development in Ontario. There are a number of important transportation-related directives relevant to the site including:

- Optimize and re-using existing infrastructure before developing new infrastructure
- Providing transportation systems appropriate for projected needs which are safe, energy efficient, and facilitate the movement of people and goods
- Make efficient use of existing and planned infrastructure, including through the use of TDM strategies
- Improve the connectivity of transportation systems for all modes of travel
- Provide a density and mix of land uses to minimize the length and number of vehicle trips and encourage the use of transit and active transportation

Places to Grow: Growth Plan for the Greater Golden Horseshoe

A Place to Grow: Growth Plan for the Greater Golden Horseshoe, August 2020 (the "Growth Plan"), further expands upon the policy foundations established by the PPS by providing additional and more specific land use planning policies including:

- Prioritizing growth in major transit station areas ("MTSAs"). The site is 6 kilometres (10 minute travel by car) away from the Milton GO Station.
- Developments within MTSAs will be transit supportive, often referred to as a compact mixed-use development with a high level of residential and employment density in proximity to transit stations and corridors
- Developments within MTSAs will be supported, where appropriate, by providing alternative development standards, such as reduced parking standards
- That municipalities will develop and implement TDM policies that increases the modal share of alternatives to the automobile and prioritize active transportation, transit, and goods movement over single-occupant automobiles

2.2 HALTON REGION POLICIES

Halton Region Official Plan

Halton Region's Official Plan provides direction regarding how physical development should occur in Halton Region to meet the current and future needs. The Official Plan outlines a long term vision for the Region's physical form and community character. To pursue that vision, it sets forth goals and objectives, describes an urban structure for accommodating growth, states the policies to be followed, and outlines the means for implementing the policies.

Halton Region Transportation Master Plan

An updated *Halton Region Transportation Master Plan 2031* (the "Halton Region TMP") was adopted by Halton Region in October 2011 defining the Region's framework for growth from 2021 to 2031. The new TMP supports the policies and objectives arising out of Regional Official Plan Amendment No. 38 (ROPA 38) which

incorporate the results from the Sustainable Halton Official Plan Review process. The Halton Region TMP has identified a number of initiatives to accommodate future growth in the region including, but not limited to: an expanded road network, transportation demand management, active transportation and expanded transit options.

Halton Region's Access By-law No. 32-17

Halton Region's Access By-Law No. 32-17, a By-Law to prohibit, restrict and regulate access to the Regional road network, is a key consideration for the proposed development. It is important to note that Section 6.1(a) of the By-Law, states that "*access to a Regional road from private property shall be permitted only where such access is necessary because access to a local road is not feasible*". As the proposal includes a right-in/ right-out access along Regional Road 25, the Region's Access Management Guidelines (2015) were referenced to ensure that the proposed points of access meet the minimum spacing requirements of the Guidelines. Justification for the proposed points of access is discussed further in **Section 9.6**.

2.3 TOWN OF MILTON POLICIES

Town of Milton Official Plan

The *Town of Milton Official Plan Amendment (OPA 31), November 2018* sets the planning policy framework to guide the future growth and development of the Town by aligning with the Province's Growth Plan for the Greater Golden Horseshoe as well as Halton Region's Official Plan. It recognizes that the Town's settlement area is nearly built out and most of the future development in the Town will occur through intensification. A *new Official Plan project*, *We Make Milton*, launched in July 2019, focusses on reviewing and updating the Official Plan with policies to mange the Town's growth to the year 2051. This is a multi-year, multi-stage project that is currently at Stage Three, according to the latest June 2023 report. It considers the implementation of key transportation related directions as identified in the updated 2023 Transportation Master Plan (TMP). The Part 1 of this new Official Plan is anticipated to release in fall 2023.

Milton Transit Service Review and Master Plan

The *2019-2023 Milton Transit Service Review and Master Plan Update, June 2019* identifies the current and future transit needs for the Town of Milton. The Milton Transit Service Review acknowledges the rapid growth of population and employment triggering the need to expand public services. The updated Transit Master Plan focusses on:

- Improving Milton Transit's operation and management while positioning growth over the next 5-15 years
- Coordinating strategically with the Region and Milton's surrounding communities
- Recommending short to medium to long-term changes by increasing service productivity, introducing and expanding new mobility services and specialized transit services into new growth area, introducing cross-boundary services, extending local-fixed routes network, maintaining service reliability and assets to enhance connectivity, accessibility and mobility

The Transit Master Plan specifically talks about supporting the Regional Network as part of the long-term recommendations which includes locating the southern transit hub at Britannia Road and Regional Road 25.

This transit hub will provide maximum flexibility for transfers among routes, reducing travel times and making transit a prime mode of travel for the wider variety of trip purposes.

Town of Milton Transportation Master Plan

In 2018, the Town of Milton developed a Transportation Master Plan (TMP) to guide investment in all modes of transportation in order to accommodate the travel future demand expected due to the expected significant population and economic growth. In March 2023, the Town of Milton retained a consultant to prepare the Transportation Master Plan Update. The TMP update intends to align transportation policy with Milton's growth plan and priorities. It will also reflect recent policy directions from the Province of Ontario, which focuses Milton's future growth on intensification in the built boundary and developing complete communities through Secondary Plan Areas. The TMP Update will be the guide that considers all modes of transportation and identifies strategic improvements for each mode of travel in order to focus a shift towards sustainable travel in the Town.

Boyne Survey Secondary Plan

The Town of Milton will expand its urban core in three phases. The *Boyne Survey Secondary Plan*, in which the site is located, is part of the Milton Urban Expansion Area. It extends to the lands south of the Bristol Survey and Sherwood Survey Secondary Plan Areas, and forms phase 3 of the expansion.

The Boyne Survey is a rectangular block of land south of Milton's urban core in the area bounded by Louis St Laurent Avenue in the north, James Snow Parkway in the east, Tremaine Road in the west and Britannia Road in the south. Approximately 930 hectares in size, the Boyne Survey will include residential development with some mixed-use areas to accommodate an additional 50,000 residents when fully developed.

As per Schedule C.10.C *Boyne Survey Secondary Plan Land Use Plan*, the subject site is identified as a Major Node Area. These areas highlight key intersections with potential to integrate higher residential densities and concentrations of mixed-use developments. Major Node Areas focus on urban activities within residential neighbourhoods, creating pedestrian-oriented infrastructure and maximizing the use of areas transit.

The Regional Road 25 and Britannia Road intersection is also recognized as a Gateway, a key point of entry to the Milton Urban Area of the Town. These entry points may be required to include the highest form of roadway design features such as special signage and central medians.

3.0 TRANSPORTATION CONTEXT

A number of transportation network improvements are planned or underway within the vicinity of the site, that will significantly alter the way area residents and visitors are able to travel. Most significantly, these improvements will facilitate a shift from predominantly automobile-based travel to more sustainable modes of travel, including transit, cycling and walking.

The following sections provide a detailed discussion of the existing and evolving area transportation context of the site and network improvements.

3.1 AREA ROAD NETWORK

3.1.1 Existing Area Road Network

A detailed description of the area road network surrounding the site and the characteristics of the streets serving the site area is provided in **Table 3.**

The existing area road network is illustrated in **Figure 3**. The existing area road lane configuration and traffic control are illustrated in **Figure 4**.

TABLE 3 AREA ROAD NETWORK

Classification / Direction		Street Name	Roadway Limits	Description
Major Arterial	North-South	Regional Road 25 (Ontario Street)	Regional Road 25 extends from Steeles Avenue East in the north to its full interchange with the Ontario Highway 407 Express Toll Route ('407ETR') in the south. South of 407ETR it continues as Bronte Road that extends across Halton Region to the Town of Oakville in the south.There is a gap in the Regional Road 25 span between Derry Road and Steeles Avenue East. Ontario Street spans from Derry Road to Steeles Avenue East and is not a Regional road.	The corridor has a basic four-lane urban cross, two-lanes in each direction. Both dedicated right and left turn lanes are provided in the northbound and southbound directions at Britannia Road and Louis St. Laurent Avenue. The posted speed limit is 70 km/h. In the vicinity of the site, on-street parking is not permitted along Regional Road 25.
	East-West	Britannia Road (Regional Road 6)	Britannia Road extends from Hurontario Street in the east (City of Mississauga), where it continues to Britannia Street West / Peel Regional Road 3, to Milburough Town Line in the west (City of Burlington). East of Hurontario Street, it continues as Britannia Road East to Kennedy Road (City of Mississauga).	In the vicinity of the site, west of Regional Road 25, the corridor has a 6-lane urban cross-section, with 3-lanes in each direction and a 4-lane urban cross-section, east of Regional Road 25, with 2-lanes in each direction. The posted speed limit is 70 km/h.
Minor Arterial	North-South	Bronte Street S/ First Line	Bronte Street South extends from Main street in the north to Britannia Road in the south, where it continues as First Line.	The roadway has a basic four-lane urban cross-section with dedicated right and left turn lanes in the southbound direction at Britannia Road. Along Bronte Street South, through the study area, there are bicycle lanes on both sides indicated by pavement markings on the street and signs identifying the reserved lane.

Classification / Direction		Street Name	Roadway Limits	Description
			North of Main Street, it continues as Bronte Street North to Steeles Avenue.	South of Britannia Road, Bronte Street South continues as First Line, a two-lane cross-section collector roadway with auxiliary left turn lanes. The posted speed limits is 70 km/h.
		Thompson Road S / Third Line	Thompson Road South extends from Main street in the north to south of Britannia Road. North of Main Street, it continues as Thompson Road North to Steeles Avenue.	The roadway is classified as a minor arterial from Main Street in the north, and continues as a collector roadway south of Britannia Road. The corridor has a four-lane urban cross section, with two lanes in each direction. There are bicycle lanes indicated by pavement markings on the street and multi-use paths in the boulevard on both sides of the road. The posted speed limit is 70 km/h.
	East-West	Louis St. Laurent Avenue	Louis St. Laurent Avenue extends from James Snow Parkway South in the east to west of Tremaine Road, where it becomes Pan Am Boulevard.	The roadway has a four-lane basic cross-section with dedicated left turn lanes in the northbound and southbound directions at Regional Road 25. Additionally, Louis St, Laurent has a grade separation at the CN rail line. Along Louis St. Laurent Avenue through the study area, there are bicycle lanes on both sides indicated by pavement markings on the street and signs identifying the reserved lane. The posted speed limit is 60 km/h.
Collector	North-South	Farmstead Drive	Farmstead Drive extends from Laurier Avenue in the north to Britannia Road in the south.	The roadway has a two-lane cross-section, one-lane in each direction, with bicycle lanes on both sides indicated by pavement markings on the street and signs identifying the reserved lane. On-street parking is permitted. There is no posted speed limit so it is assumed that the statutory 50 km/h speed limit applies.
	East–West	Etheridge Avenue	Etheridge Avenue extends from Regional Road 25 in the east to Bronte Street South in the west.	The roadway has a two-lane cross-section, one-lane in each direction, with bicycle lanes on both sides indicated by pavement markings on the street and signs identifying the reserved lane. On-street parking is permitted. There is no posted speed limit so it is assumed that the statutory 50 km/h speed limit applies.
		Whitlock Avenue	Whitlock Avenue extends from Sweetfern Crescent / Basswood Drive east of Regional Road 25 to Bronte Street South in the west.	The roadway has a two-lane cross-section, one-lane in each direction, with bicycle lanes on both sides indicated by pavement markings on the street and signs identifying the reserved lane. On-street parking is permitted. There is no posted speed limit so it is assumed that the statutory 50 km/h speed limit applies.

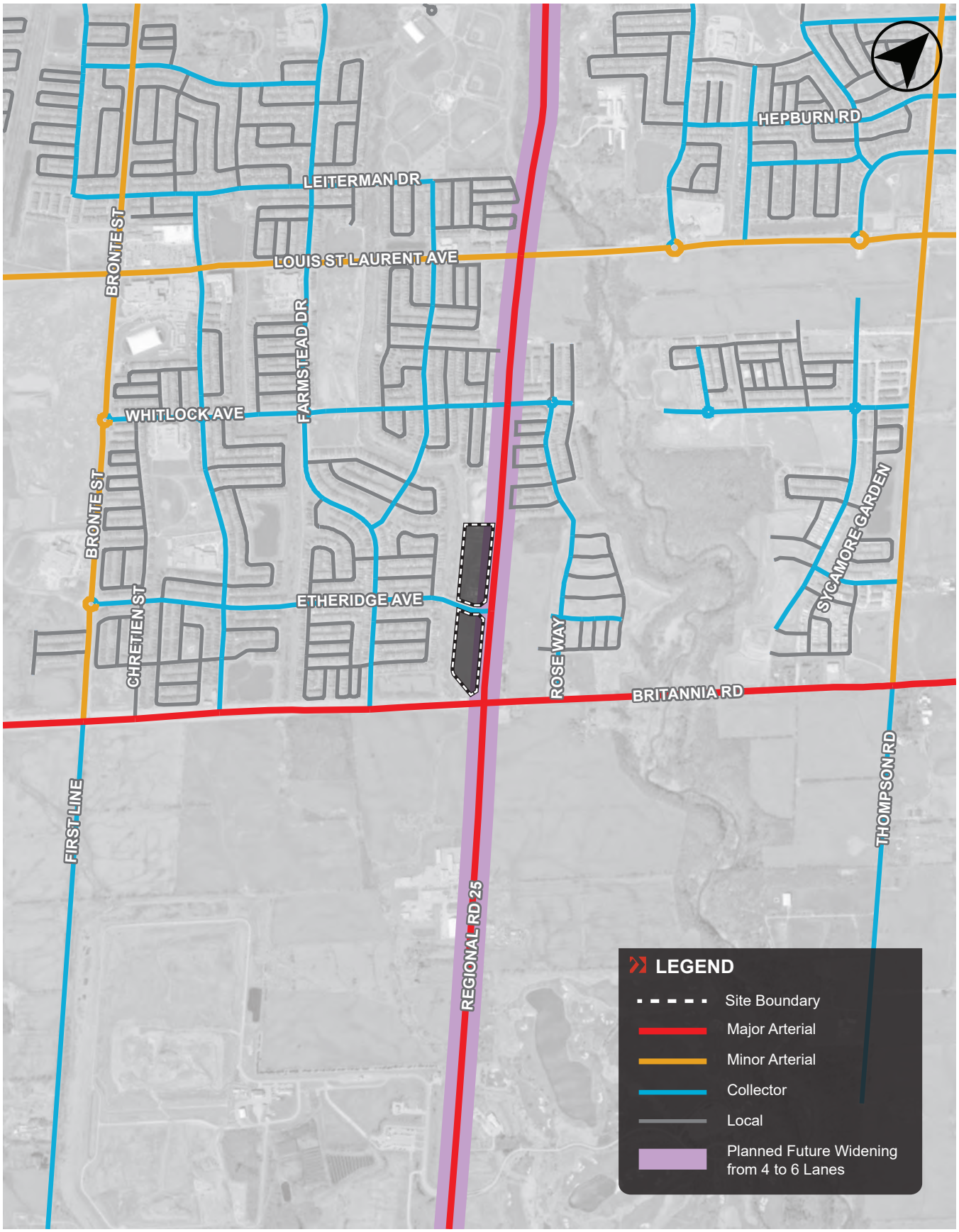

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FIGURE 3 EXISTING AREA ROAD NETWORK

3.1.2 Planned Road Network Improvements

Halton Region has developed and is implementing an extensive roads development and improvement program. The Regional road improvement program is generally identified in the Halton TMP, where improvements in the immediate vicinity of the site area were identified for implementation in conjunction with development (intensification). Additionally, a review of the Town of Milton's construction project forecasts and the *2019 - 2023 Milton Transit Services Review & Master Plan Update* has identified other improvements in the study area. The planned road improvements are described below.

Britannia Road Corridor Improvements

As part of the planning study, the Region undertook a Schedule C Municipal Class Environmental Assessment (EA) Study, dated April 2014 (herein referred to as "2014 Britannia Road EA" or "EA Study") to further identify opportunities for improvements on the Britannia Road (Regional Road 6) corridor, from Tremaine Road to Highway 407. The study identified and evaluated alternative configurations for the Britannia Road corridor surrounding the site.

The EA study initially indicated that the first phase would include the widening of Britannia Road from 2 to 6 lanes from Tremaine Road to Regional Road 25 including a grade separation at the CN rail line, and from 2 to 4 lanes from Regional Road 25 to Highway 407. The second phase provided for the further widening of Britannia Road between Regional Road 25 and the Highway 407 interchange from 2 to 4 lanes starting in 2014, and from 4 to 6 lanes possibly in conjunction with the implementation of high occupancy vehicle lanes starting in 2028.

In January 2017, Halton Region completed an addendum to the EA study which essentially proposes to amend the Britannia road widening project to eliminate phasing to the project as originally contemplated. The addendum proposes that the widening from 2 to 6 lanes from Tremaine Road to the Highway 407 interchange occur in one phase.

After evaluating a range of alternatives, a recommended plan was approved to widen Britannia Road from 2 to 6 lanes between Tremaine Road and Highway 407. The project is planned to be completed in three Phases: ***Phase 1*** (Tremaine Road to Regional Road 25) began construction in September of 2019 and completed in February of 2022, ***Phase 2*** (James Snow Parkway to Highway 407) and, ***Phase 3*** (Regional Road 25 to James Snow Parkway) began construction in June 2021 and is anticipated to be completed by December 2024.

The key elements of the preferred *Britannia Road Corridor* between Tremaine Road and Highway 407 included:

- Road widening from four to six lanes
- New turn lanes
- New on-road bike lane
- New sidewalk/multi-use pathway
- New landscaping
- New traffic signals

Britannia Road is also identified as a “Priority Transit Corridor” as part of Halton Region’s 2019 Defining Major Transit Requirements (DMTR) Study, with 4 and 2 lanes for Transit / Highway Occupancy Vehicle (“HOV”) between Tremaine Road and Highway 407.

Regional Road 25 Corridor Improvements

A Notice of Study Commencement was issued by the Region in July 2022 for a Municipal Class EA Study to consider a range of options for corridor improvements to Regional Road 25. The Halton Region TMP identified the need for additional capacity in the Regional Road 25 corridor from Speers Road to Derry Road, in the Towns of Oakville and Milton. A number of multi-modal transportation improvements will be considered for Regional Road 25, including widening the roadway from 4 to 6 lanes to address future travel demand.

Regional Road 25 is also identified as a Priority Bus Corridor from Bronte GO to Steeles Avenue per Halton Region’s DMTR Study, with 4 and 2 lanes for Transit / HOV between QEW and Derry Road; 4 and 2 lanes for Transit / HOV – other jurisdiction between Derry Road and Steeles Avenue.

The currently scheduled construction start date is 2027 (subject to change) for the Regional Road 25 improvements from Speers Road to Derry Road per Halton Region’s 2023 Budget and Business Plan.

The future area road lane configuration and traffic control is illustrated in **Figure 5.**

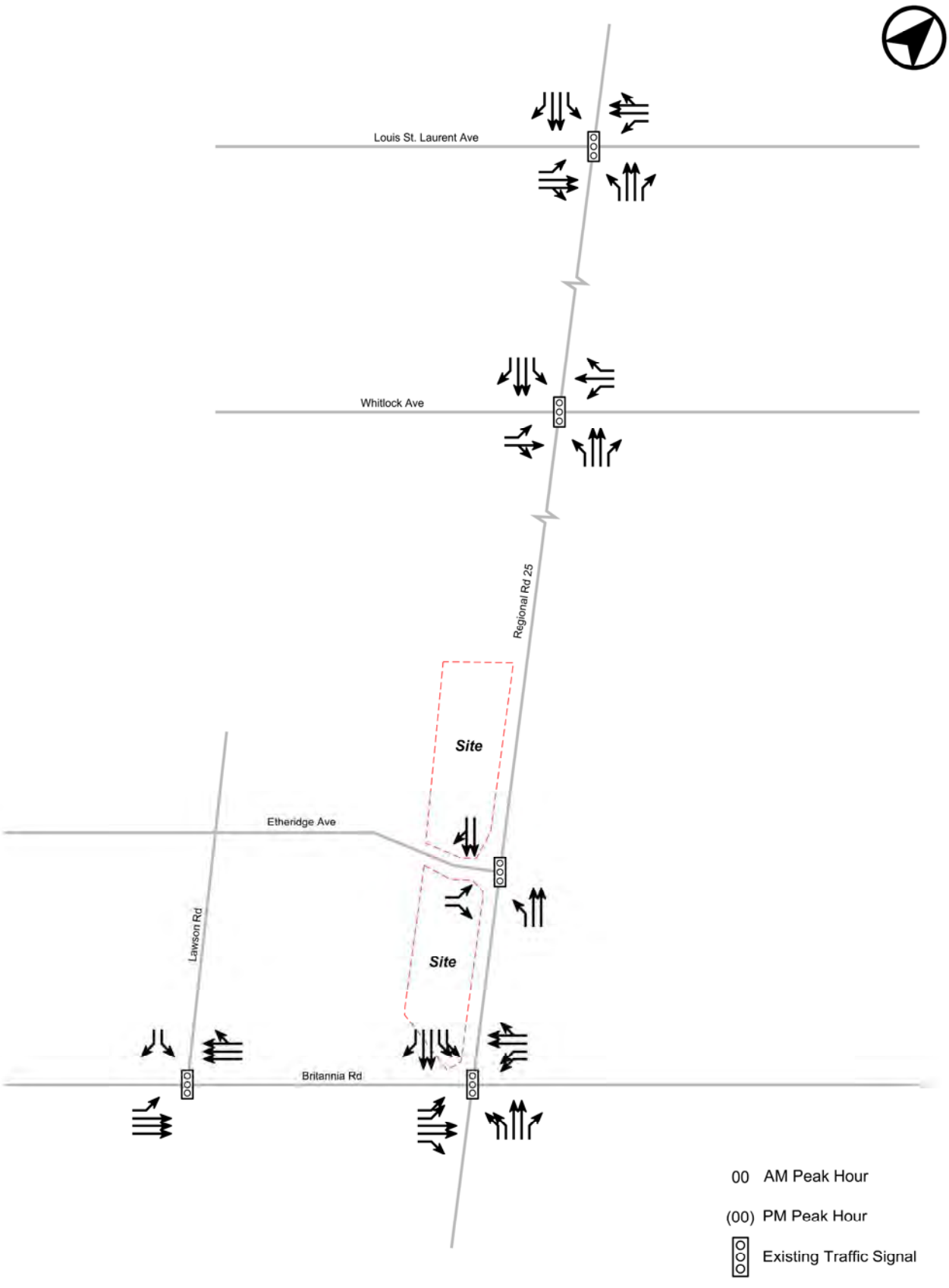

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FIGURE 4 EXISTING LANE CONFIGURATION & TRAFFIC CONTROL

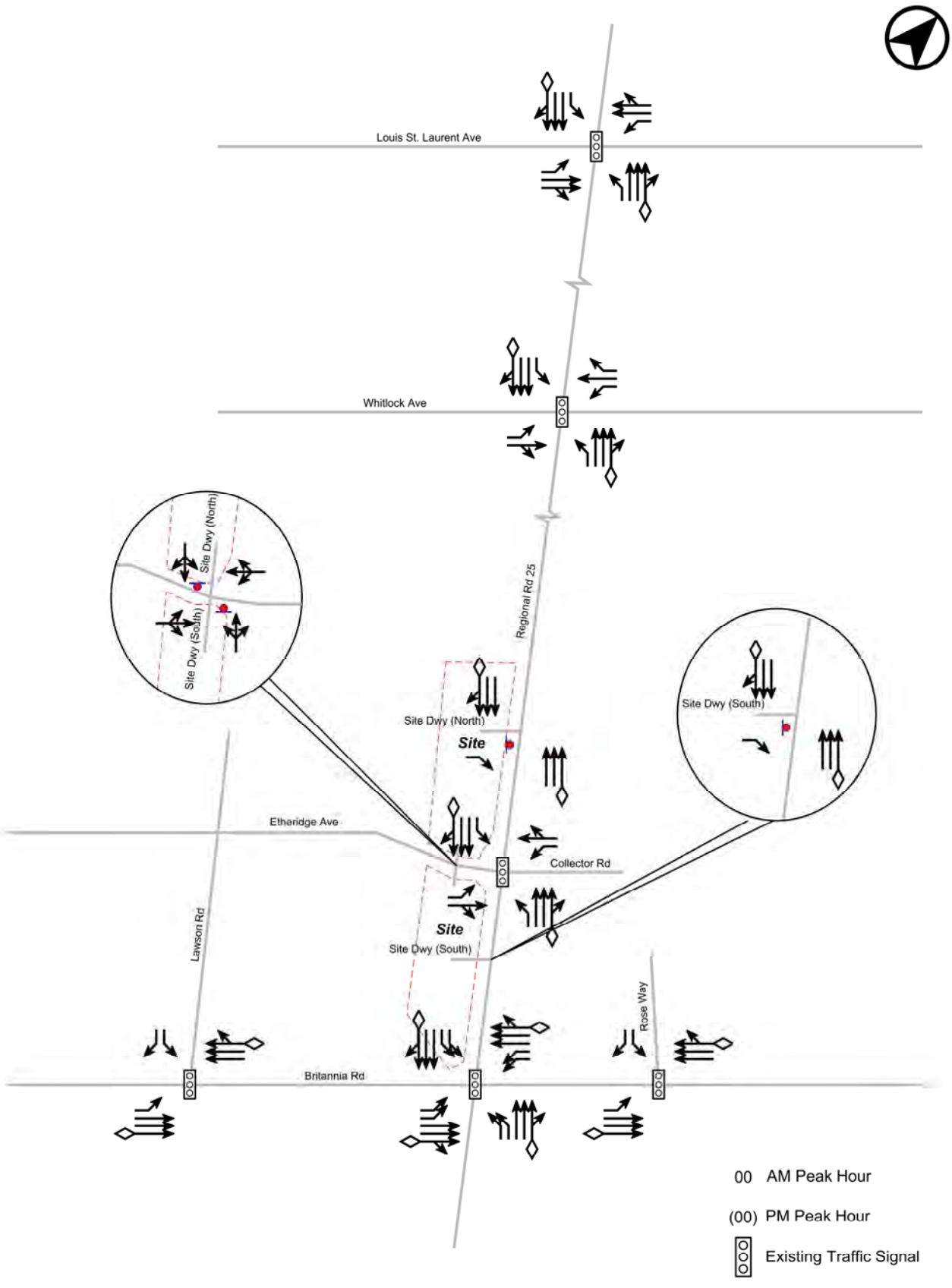

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FIGURE 5 ULTIMATE LANE CONFIGURATION & TRAFFIC CONTROL

3.2 AREA TRANSIT NETWORK

3.2.1 Existing Transit Network

The site is currently served by local surface bus routes operated by Milton Transit. Specifically, the site is currently serviced by 2 regular bus routes, and 3 school special bus routes which collectively provide local connections to the higher-order GO Transit System. The nearest existing transit stop to the site is located adjacent to the site, on the north side of Etheridge Avenue, less than 100 m to the west.

The site is also serviced by Milton Transit OnDemand which is a flexible, shared-ride service that provides transit without following a fixed route or schedule, booked via a mobile app that operates on weekdays from 5:15 am to 10:11 pm and on Saturdays from 7:10 am to 7:40 pm. OnDemand transit connects passengers to/from available fixed route service at key transfer locations. Smaller-sized, fully accessible Milton Transit buses are used to deliver OnDemand services. The site is serviced within the “Boyne Zone 1” area.

GO Transit

The site is located within proximity to the Milton GO station, the western terminus of the Milton GO line. The Milton GO Train line provides commuter rail service connecting the greater Milton area to Downtown Toronto. The GO Station is located approximately 6.4 km north of the site.

Currently, the Milton GO line operates peak direction peak period service between Milton and Union Station. On a typical weekday, six eastbound trains depart from Milton GO Station during the morning peak period, and six westbound trains arrive at Milton GO Station during the afternoon peak period. Outside of these peak periods, GO buses provide additional service in both the eastbound and westbound directions.

A detailed overview of the existing area transit network is summarized in **Table 4** and illustrated in **Figure 6.**

TABLE 4 EXISTING AREA TRANSIT NETWORK

Route	Headway (peak periods)	Closest Stop Location	Description
8 Willmot	30 min. weekday peak periods (60 min. off peak)	Louis St. Laurent Avenue / Leger Way (1.8 Kilometres, 22 min. walk)	Operates generally in an east-west direction connecting neighbourhoods surrounded by Derry Road, Regional Road 25, Louis St. Laurent Avenue, and Bronte Street to the Milton GO Station, via Thompson Road and Derry Road.
9 Ontario South	30 min. weekday peak periods (60 min. off peak)	Etheridge Avenue / Orr Terrace (50 metres, 1 min. walk)	Operates generally in a north-south direction along Ontario Street / Regional Road 25. The bus route provides access to neighborhoods surrounded by Louis St. Laurent Avenue, Regional Road 25, Britannia Road, and Bronte Street, via Regional Road 25. The route was realigned in 2019 to serve a larger portion of Farmstead Road between Etheredge Avenue and Louis St. Laurent Avenue.
50 School Special	–	Louis St. Laurent Avenue / Leger Way (1.8 Kilometres, 22 min. walk)	Route 50, 51, and 52 are special secondary school connection routes provide student access to and from multiple secondary schools throughout Milton, during the school year. Route 50 – runs one trip in the morning from Derry Road at Scott Boulevard to Milton District High School. In the afternoon, the first trip runs between Jean Vanier Secondary School at Derry Road and Scott Boulevard, while the second trip leaves from Milton District High School. Route 51 follows the same schedule but runs on a slightly different alignment serving neighbourhoods south of Derry Road. Route 52 – only operates one afternoon trip between Jean Vanier Secondary School and Milton GO Station.
51 School Special	–	Louis St. Laurent Avenue / Leger Way (1.8 Kilometres, 22 min. walk)	
52 School Special	–	Louis St. Laurent Avenue / Leger Way Bronte Street South / Lemieux Court (1.8 Kilometres, 22 min. walk)	
53 School Special	–	Etheridge Avenue / Farmstead Drive (300 metres, 4 min. walk)	Route 53 – only operates one afternoon trip between Elsie Macgill Secondary School and Milton GO Station.

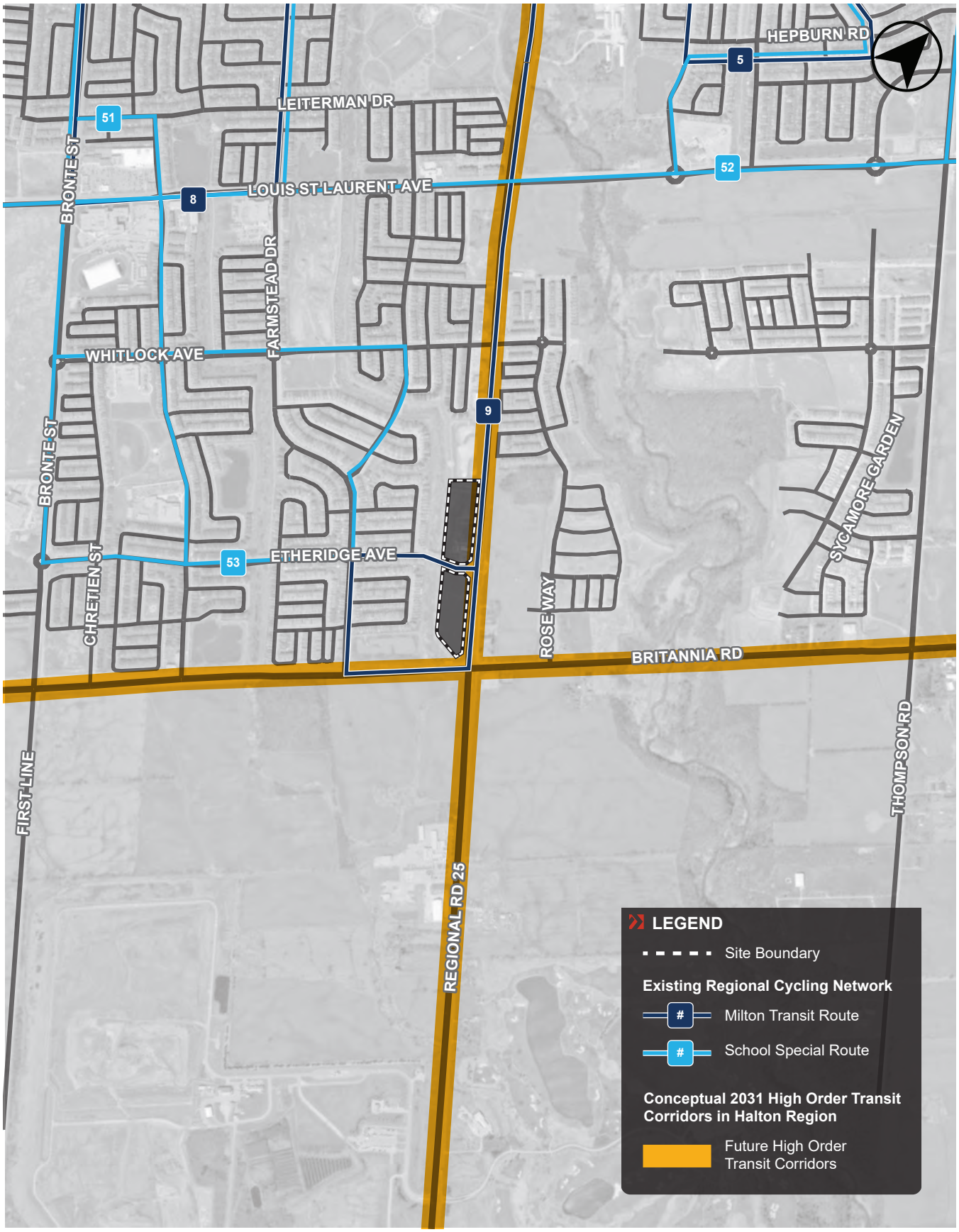

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FIGURE 6 AREA TRANSIT NETWORK

3.2.2 Planned Transit Network Improvements

2019 – 2023 Milton Transit Services and Master Plan Update
The Town of Milton Master Plan Update recommends a rapid transit network for a long term horizon (2041). Key improvements within the Site's vicinity are outlined below:

- Medium Term Recommendations (2021 – 2024)
    - Implement **Home-to-Hub service –** a shared on-demand mobility service that allows residents in newly developed or underdeveloped areas to be picked up at home and dropped off at the closest transit hubs, with connections to regular fixed transit route services. The proposed mobility service addresses coverage gaps by serving low-density areas, as communities expand and continue to develop to include fixed route transit services.

- Long-term Recommendations (Beyond 2024)
    - Expand new mobility service, Home-to-Hub, to new growth areas as an initial transit service;
    - Extend fixed route transit service to south of Louis St. Laurent, while developing a new secondary transit hub at the Regional Road 25 and Britannia Road intersection to support the expansion.
    - Support regional network by providing vehicles to operate al routes at 30-minute headways all-day, along regional transit priority corridors – including Regional Road 25 and Britannia Road.

Milton GO Line Service Expansion
The Milton line is an existing GO Rail line that currently provides two-way, all-day service 7 days a week between Toronto and Milton. It also provides weekday rush-hour service from Milton GO to Union GO Station in the morning and back in the afternoon. Metrolinx has proposed expanded service characteristics to include 15-minute service or better frequencies, both-ways, throughout the day between Toronto and Milton, in addition to a 7-day a week, hourly service between Toronto and Milton. Milton Transit will look to expand the hours of service and increase frequency of service to facilitate efficient and reliable connectivity with the rail line.

3.3 AREA CYCLING NETWORK

3.3.1 Existing Cycling Network

On-street bike lanes are available along collector roads within the vicinity of the site including Farmstead Drive, Etheridge Avenue and Whitlock Avenue. There are presently no existing dedicated cycling facilities along Britannia Road. Regional Road 25 is considered a multi-use path (with provisions for cycling and pedestrians), as identified within the 2019-2023 Halton Region TMP.

3.3.2 Future Area Cycling Network Improvements

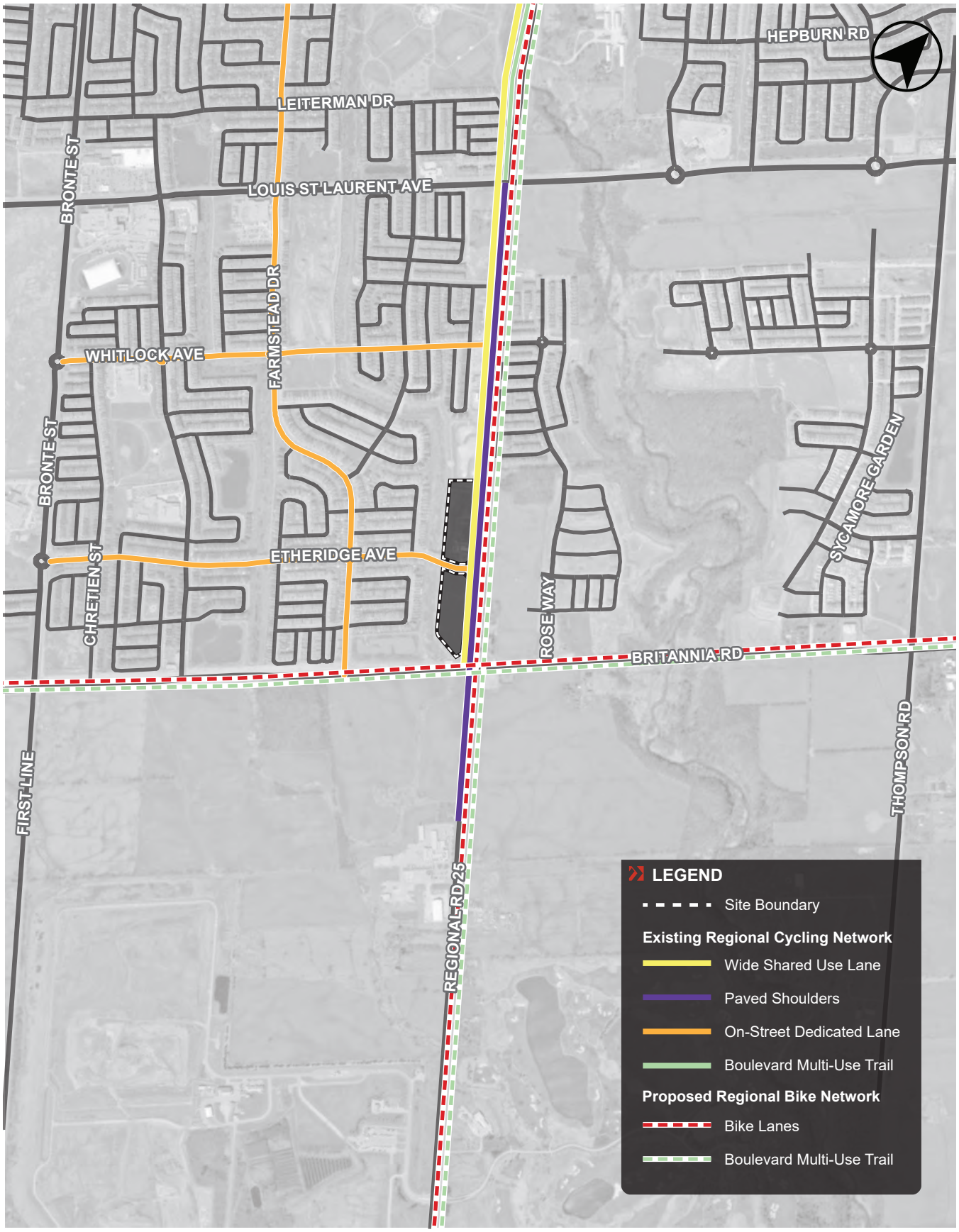
A number of cycling infrastructure improvements are planned within the vicinity of the site, including:

- Bike Lanes along Britannia Road, Regional Road 25 and Louis St Laurent Avenue; and
- Boulevard Multi-use Trail along Britannia Road and Regional Road 25.

Elements of the Halton Region Transportation Master Plan have identified Britannia Road as a 47 metre right-of-way with an urban cross section, including 3.0 metre off road multi-use pathways and 1.8 metre on road cycling lanes on both sides of the roadway.

These cycling connections provide opportunities for residents and visitors of the site and surrounding area to travel using active forms of transportation.

The existing and future area cycling network is illustrated in **Figure 7.**



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

FIGURE 7 AREA CYCLING NETWORK

3.4 AREA PEDESTRIAN NETWORK

3.4.1 Existing Pedestrian Network

The site is located within the Ford neighbourhood and is situated northwest of the intersection of Britannia Road and Regional Road 25. The site is also located in proximity to a wide range of key destinations, including recreation facilities, institutional uses, parks and restaurants, that are accessible by walking.

Adjacent to the site, a recently installed traffic signal provides a protected pedestrian crossing of Regional Road 25 at Etheridge Avenue.

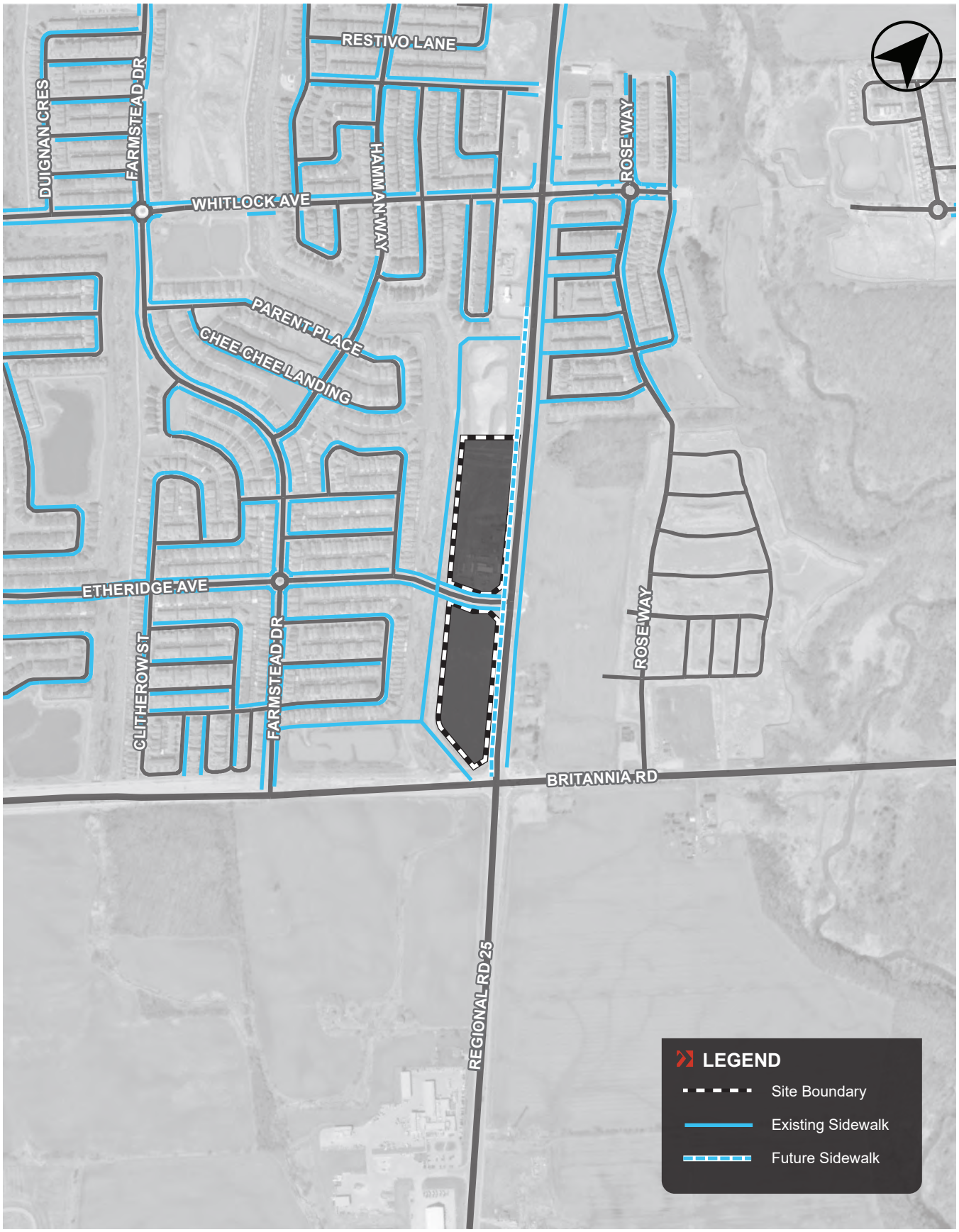
3.4.2 Future Pedestrian Network

The development of the site includes walkways throughout both the north and south blocks that will connect to a future sidewalk on the west side of Regional Road 25 as well as to the existing sidewalks along Etheridge Avenue. The pedestrian linkages to Etheridge Avenue will provide connectivity to an existing walking trail along the Natural Heritage System (NHS) as well as to the adjacent neighbourhood.

The walkways throughout the site with connectivity to sidewalks on Etheridge Avenue and to Regional Road 25 will also provide connectivity to transit stops in order to encourage transit trips to/from the site.

As the proposed new 4-legged intersection with the north and south block driveways along Etheridge Avenue, is just over 80 metres from the signalized intersection of Regional Road 25 at Etheridge Avenue, a pedestrian crossover is not recommended to be installed across Etheridge Avenue. The installation of pedestrian warning signs could however be considered in order to improve the level of safety for pedestrians in the area.

The existing and future area pedestrian network is illustrated in **Figure 8.**



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

FIGURE 8 AREA PEDESTRIAN NETWORK

4.0 VEHICLE PARKING CONSIDERATIONS

4.1 ZONING BY-LAW REQUIREMENTS

The site is subject to the Town of Milton Comprehensive Zoning By-law 016-2014 (HUSP Urban Area – March 2023) for parking considerations. Application of this By-law to the site is summarized in **Table 5** and results in a total minimum parking requirement for the site of 2,357 spaces, inclusive of 1,188 and 1,169 spaces for the south and north blocks, respectively. The required parking supply considers the development of Block 8 ("hold-out" property).

The total minimum requirement of 2,357 parking spaces includes 1,964 resident spaces and 393 non-resident spaces to be shared between resident visitors and retail. As the resident visitor parking requirement is greater than the retail parking requirement, the minimum required non-resident parking is based on the resident visitor parking rate.

TABLE 5 ZONING BY-LAW 016-2014 MINIMUM PARKING REQUIREMENT

Use	Minimum Parking Requirement	Phase 1 (South Block – Buildings 1-4)		Phase 2 (North Block – Buildings 5-8)		SITE TOTAL	
		Units/ GFA	Minimum Required Parking Spaces	Units/ GFA	Minimum Required Parking Spaces	Units/ GFA	Minimum Required Parking Spaces
MU (*2) Mixed-Use Buildings	1.25 spaces/unit	792 units	990	779 units	974	**1,571 units**	**1,964**
	Greater of 0.25 space/unit or 1 space/25 m² GFA non-res	437 m² non-res	198	483 m² non-res	195	**920 m²**	**393**
Total		**--**	**1,188**	**--**	**1,169**	**--**	**2,357**

Notes:
1. Site statistics based on site plans prepared by Core Architects dated January 18, 2024 and include Block 8 ("hold-out property").
2. Non-resident parking to be shared between resident visitor and retail. As the resident visitor requirement is greater than the retail requirement, the proposed non-resident rate is based on the resident visitor requirement.
3. If the required number of parking spaces results in a fraction, the number shall be rounded to the next highest whole number.

4.2 PROPOSED PARKING SUPPLY

Table 6 summarizes the proposed parking supply for the site. A total parking supply of 1,917 parking spaces is proposed, inclusive of 966 and 951 parking spaces for the south and north blocks, respectively. The proposed parking supply includes the development of Block 8 ("hold-out" property).

The development proposes a provision of a minimum resident parking rate of 1.0 space per unit, with non-resident shared parking proposed to be provided at a minimum rate of 0.22 spaces per unit. As the resident visitor parking requirement is greater than the retail parking requirement, the proposed non-resident rate is based on the resident visitor supply.

TABLE 6 PROPOSED PARKING SUPPLY

Use	Phase 1 (South Block – Buildings 1-4)		Phase 2 (North Block – Buildings 5-8)		SITE TOTAL	
	Units/ GFA	Number of Parking Spaces	Units/ GFA	Number of Parking Spaces	Units/ GFA	Number of Parking Spaces
Resident	792 units	792	779 units	779	**1,571 units**	**1,571**
	1.0 space/unit		*1.0 space/unit*		***1.0 space/unit***	
Non-Resident[1]	437 m² non-res	174	483 m² non-res	172	**920 m²**	**346**
	0.22 spaces/unit		*0.22 spaces/unit*		***0.22 spaces/unit***	
Total	**--**	**966**	**--**	**951**	**--**	**1,917**

Notes:
1. Non-resident parking to be shared between resident visitor and retail. As the resident visitor requirement is greater than the retail requirement, the proposed non-resident rate is based on the resident visitor supply.
2. Site statistics based on site plans prepared by Core Architects dated January 18, 2024 and include Block 8 ("hold-out property").

When compared to the minimum requirements of the Town of Milton Comprehensive Zoning By-law 016-2014 (HUSP Urban Area – March 2023), a reduced parking supply is being proposed for the site. As shown in **Table 7,** the proposed parking supply of 1,917 spaces is 440 spaces (or 19%) less than the minimum Zoning By-law requirement of 2,357 spaces. As the proposed parking supply is appropriate for the site but is less than the minimum requirements of the Zoning By-law, justification for the parking reduction is provided in **Section 4.4**.

TABLE 7 COMPARISON OF PARKING SUPPLY AND ZONING BY-LAW REQUIREMENTS

Land Use	Minimum Requirement Zoning By-law 016-2014 (HUSP Urban Area – March 2023) (number of spaces)	Proposed Parking Supply (number of spaces)	Difference (number of spaces)
South Block			
Resident	990	792	-198
Non-resident	198	174	-24
Sub-Total	**1,188**	**966**	**-222**
North Block			
Resident	974	779	-195
Non-resident	195	172	-23
Sub-Total	**1,169**	**951**	**-218**
SITE TOTAL	**2,357**	**1,917**	**-440**
Reduction compared to Zoning By-law 016-2014 (HUSP Urban Area – March 2023)		***-19%***	

4.3 ACCESSIBLE PARKING

The minimum requirement for accessible parking spaces is outlined in the Town's By-law 016-2014 (HUSP Urban Area – March 2023). Since a reduced parking requirement is being sought for the site, the requirements for the accessible parking supply is determined by the proposed parking supply for the site. The site requires a total of 25 accessible spaces on each of the south and north blocks for a total of 50 accessible spaces, as summarized in **Table 8**.

Where the minimum number of accessible parking spaces required is even, an equal number of Type A and Type B accessible parking spaces shall be provided. Where the minimum number of accessible parking spaces is odd, an equal number of Type A and Type B accessible parking spaces shall be provided but the last accessible parking space will be a Type B.

As the architectural drawings include a minimum of 25 accessible spaces on the south block and 25 spaces on the north block, the minimum requirements are met.

TABLE 8 ACCESSIBLE PARKING SUPPLY

Use	Phase 1 (South Block – Buildings 1-4)		Phase 2 (North Block – Buildings 5-8)		SITE TOTAL	
	Proposed Parking Supply (spaces)	Accessible Spaces	Proposed Parking Supply (spaces)	Accessible Spaces	Proposed Parking Supply (spaces)	Accessible Spaces
Resident	792	18	779	18	**1,571**	**36**
	2 spaces + 2%		*2 spaces + 2%*			
Non-Resident	174	7	172	7	**346**	**14**
	1 spaces + 3%		*1 space + 3%*			
Total	**966**	**25**	**951**	**25**	**1,917**	**50**

Notes:
1. Accessible parking requirement must be rounded up to nearest whole number.
2. Site statistics based on site plans prepared by Core Architects January 18, 2024.
3. If the required number of parking spaces results in a fraction, the number shall be rounded to the next highest whole number.

4.4 ADEQUACY OF PROPOSED PARKING SUPPLY

4.4.1 Adequacy of Recommended Residential Parking Supply

Resident parking standards outlined in By-law 016-2014 (HUSP Urban Area – March 2023) could be considered to overstate the parking needs of a residential development based on the evolving transportation context, inclusive of a comprehensive Transportation Demand Management Plan.

The following sections provide an overview of the contextual factors that could influence parking demand at the site.

4.4.1.1 Ontario's Five-Year Climate Change Action Plan

Trends in urban transportation policy are leaning heavily towards reductions in mandatory minimum parking requirements. A reduced minimum parking supply requirement for the project would be in conformance with Ontario's current vision for transit corridors.

Ontario's Five-Year Climate Change Action Plan was announced in June 2016. Some of the key transportation / land-use planning actions outlined in the Plan are as follows:

- **Support cycling and walking**: Commuter cycling networks will be established across Ontario, targeting routes with high-commuting volume such as between residential communities, major transit stations and employment areas. There will be more cycling facilities in urban areas, including grade separated routes and cycling signals. There will be more bike parking at transit stations and provincially owned, publicly accessible facilities. Ontario will revise provincial road and highway standards to require commuter cycling infrastructure be considered for all road and highway construction projects where it is safe and feasible. Ontario will do the same for major transit corridors.
- **Reduce single-passenger vehicle trips**: Ontario would provide grants to municipalities and large private employers to implement Transportation Demand Management Plans. The plans will be designed to help increase walking, cycling, carpooling, telecommuting, and flex-work schedules, thereby reducing overall fossil fuel consumption, traffic congestion, and transportation emissions.
- **Eliminate minimum parking requirements**: Minimum parking requirements would be eliminated over the next five years for municipal zoning bylaws, especially in transit corridors and other high density, highly walkable communities. Minimum parking requirements are a barrier to creating complete, compact and mixed-use communities. Instead, bylaws will encourage bike lanes, larger sidewalks, and enhanced tree canopies.

As of the submission date of this report, the website for the Action Plan has the following disclaimer at the top of the page: "*This page was published under a previous government and is available for archival and research purposes*."

The idea to eliminate minimum parking requirements in transit accessible areas is not new in North America. Residential developments proposing zero resident parking are being promoted, approved and developed across North America including Toronto, Calgary, Vancouver, Portland and Boston. Some cities are even going as far as to eliminate minimum residential parking requirements altogether (i.e. Toronto and Edmonton) or in downtown/core areas, including London, Guelph, and Ottawa in Canada, and San Francisco, Oakland, Sacramento, Santa Monica, Portland, Seattle, and Minneapolis in the United States.

Although zero parking has not been requested for the project, this shift away from providing excess residential parking highlights an evolving perspective toward automobile ownership, travel mode choice and the cost of living.

4.4.1.2 Proxy Site Observed Parking Demand

In order to assess the resident parking demand at other similar buildings in the area, BA Group conducted evening and overnight resident parking surveys at several residential buildings within Halton Region as described below.

Town of Milton Parking Demand Studies

Resident parking demand surveys were recently undertaken at a condominium development located at 1105 Leger Way in the Town of Milton. Parking surveys were conducted for a duration of 6 to 7 hours on a Friday and Saturday, as well as for 3:00 am weeknight spot counts.

As summarized in **Table 9**, the observed resident parking demand at the 1105 Leger Way property ranged from 0.63 to 0.96 spaces per resident unit.

TABLE 9 RESIDENT PARKING DEMAND STUDY – 1105 LEGER WAY, MILTON

Address (Major Intersection)	Study Date	Peak Hour of Parking Demand	Site Description	Resident Parking Demand	
				Demand (spaces)	Ratio (spaces/unit)
1105 Leger Way[1] (Regional Road 25 / Britannia Road)	Friday, June 16, 2023	10:00 p.m.	213 units / 234 resident parking spaces (condominium)	134	**0.63**
	Saturday, June 17, 2023	11:00 p.m.		140	**0.66**
	Wednesday June 21 & Thursday June 22, 2023	3:00 a.m.		204[2]	**0.96[2]**

Notes:
1. The surveys were undertaken from 2:00 p.m. to 9:00 p.m. with 30-minute interval counts and 3:00 a.m. spot counts.
2. The summarized 3:00 a.m. results are "composite" – a conservative representation of parking demand where a car was parked in its particular space on either night of the survey.

Oakville Parking Demand Studies

BA Group undertook parking demand surveys at residential buildings in the Town of Oakville at 2379 Central Park Drive, 1229 Malborough Court and at White Oaks Apartments (1297 Marlborough Court & 1360 White Oaks Boulevard) between October 9th, 2013, and October 28th, 2019.

As shown in **Table 10,** the observed overall resident parking demand at the proxy sites ranged from 0.46 to 0.83 spaces per resident unit.

TABLE 10 RESIDENT PARKING DEMAND STUDIES – TOWN OF OAKVILLE

Address (Major Intersection)	Study Date	Peak Hour of Parking Demand	Site Description	Resident Parking	
				Demand (spaces)	Ratio (spaces/unit)
2379 Central Park Drive[1] (Dundas Street E / Sixth Line)	Tuesday, Nov. 27, 2018	6:00 a.m.	301 units / 344 resident parking spaces (condominium)	244	0.81
	Saturday, Dec. 1, 2018	6:00 a.m.		240	0.80
	Sunday, Dec. 2, 2018	6:00 a.m.		249	0.83
1229 Malborough Court[2] (Trafalgar Road / Queen Elizabeth Way)	Wed, Oct. 9, 2013	3:00 a.m.	227 units / 329 resident parking spaces (apartments)	161	0.71
	Thurs, Oct. 10, 2013	3:00 a.m.		155	0.68
1297 Marlborough Court & 1360 White Oaks Boulevard[3] (Trafalgar Road / Upper Middle Road E)	Friday, Oct. 25, 2019	3:00 a.m.	263 units/ 343 resident parking spaces (apartments)	181	0.69
	Friday, Oct. 25, 2019	9:00 p.m.		130	0.49
	Saturday, Oct. 26, 2019	3:00 a.m.		180	0.68
	Saturday, Oct. 26, 2019	9:00 p.m.		147	0.56
	Monday, Oct. 28, 2019	9:00 p.m.		121	0.46

Notes:
1. The surveys were undertaken from 6:00 a.m. to 5:30 p.m. with 30-minute interval counts.
2. The surveys were undertaken at 3:00 a.m. (spot counts).
3. The surveys were undertaken from 2:00 p.m. to 9:00 p.m. with 30-minute interval counts, and 3:00 a.m. spot counts.

4.4.1.3 Resident Parking Assessment Summary

As summarized in **Table 11,** the highest resident parking demand of 0.96 spaces per resident unit was observed at the 1105 Legere property in Milton. When considering the proxy site in Milton with the sites in Oakville, the average resident parking demand was 0.80 spaces per unit.

The proposed resident parking supply ratio of 1.0 spaces per unit is higher than the peak resident parking demand observed at 1105 Legere Way in Milton and is considered to be appropriate based upon the evolving transportation context, the observed parking demands at the proxy sites and the TDM measures proposed for the site.

TABLE 11 SUMMARY OF RESIDENT PARKING DEMAND SURVEYS

Property	Peak Resident Parking Demand (resident spaces/unit)
1105 Leger Way, Milton	0.96
2379 Central Park Drive, Oakville	0.83
1229 Malborough Court, Oakville	0.71
1297 Marlborough Court & 1360 White Oaks Boulevard, Oakville	0.69
Average	**0.80**

4.4.2 Adequacy of Proposed Non-Resident Parking Supply

As outlined in the review of the proposed residential parking supply, the availability of existing and future travel alternatives available within the vicinity of the site, reduces the need for residents and visitors of the site to use a car on a day-to-day basis. As such, the non-resident parking standards outlined in Zoning By-law 016-2014 (HUSP Urban Area – March 2023) could also be considered to overstate the parking needs of the site.

4.4.2.1 Resident Visitor Parking Assessment

The development proposes a non-resident parking supply at a minimum rate of 0.22 spaces per unit to be shared between resident visitors and retail. As the resident visitor parking requirement is greater than the retail parking requirement, the proposed non-resident rate is based on the resident visitor supply.

In order to assess the visitor parking demand at similar buildings in the area, BA Group conducted evening and overnight visitor parking surveys at several residential locations within Halton Region. Resident visitor parking demand surveys were undertaken at the following locations in the Town of Milton and the Town of Oakville:

- 1360 Main Street East, Milton
- 1105 Leger Way, Milton
- 2379 Central Park Drive, Oakville
- 216 Oak Park Boulevard, Oakville
- White Oaks Apartments (1297 Marlborough Court & 1360 White Oaks Boulevard), Oakville

As shown in **Table 12** the overall visitor parking demand at the proxy sites ranged from 0.07 to 0.16 spaces per resident unit.

TABLE 12 RESIDENT VISITOR PARKING DEMAND STUDIES

Address (Major Intersection)	Study Date	Peak Hour	Site Description	Visitor Parking	
				Demand (spaces)	Ratio (spaces / unit)
Town of Milton					
1360 Main Street East, Milton	Fri. Nov.3, 2023	8:00 & 9:00 p.m.	312 units/ 60 visitor parking spaces (condominium)	43	0.14
	Sat.Nov 4, 2023	7:00 pm		49	0.16
1105 Leger Way[3] (Regional Road 25 / Britannia Road)	Fri. June 16, 2023	8:00 & 9:00 p.m.	213 units / 49 parking spaces	33	0.15
	Sat. June 17, 2023	8:00 p.m.		33	0.15
	Wed. June 21 & Thu June 22, 2023	3:00 a.m.		14[4]	0.07[4]
Town of Oakville					
2379 Central Park Drive[1] (Dundas Street E / Sixth Line)	Tues, Nov. 27, 2018	6:00 a.m.	301 units / 68 resident visitor parking spaces	20	0.07
	Sat, Dec. 1, 2018	6:00 a.m.		31	0.10
	Sun, Dec. 2, 2018	6:00 a.m.		30	0.10
216 Oak Park Boulevard[2] (Trafalgar Road / Glenashton Drive)	Tues, Nov. 27, 2018	5:30 p.m.	213 units / 38 resident visitor parking spaces	30	0.14
	Sat, Dec. 1, 2018	1:30 p.m.		29	0.14
	Sun, Dec. 2, 2018	2:30 p.m.		29	0.14
1297 Marlborough Court & 1360 White Oaks Boulevard[3] (Trafalgar Road / Upper Middle Road E)	Fri, Oct. 25, 2019	3:00 a.m.	263 units / 56 resident visitor parking spaces	35	0.13
	Fri, Oct. 25, 2019	9:00 p.m.		42	0.16
	Sat, Oct. 26, 2019	3:00 a.m.		34	0.13
	Sat, Oct. 26, 2019	9:00 p.m.		33	0.13
	Mon, Oct. 28, 2019	9:00 p.m.		35	0.13

Notes:
1. The surveys were undertaken from 6:00 a.m. to 5:30 p.m. with 30 minute interval counts.
2. Visitor parking spaces surveyed were undertaken from 6:00 a.m. to 5:30 p.m. with 30 minute interval counts.
3. The surveys were undertaken from 2:00 p.m. to 9:00 p.m. with 30 minute interval counts, and 3:00 a.m. spot counts.
4. The summarized 3:00 a.m. results are “composite”, that is, a conservative representation of parking demand where a car was parked in its particular space on either night of the survey.

4.4.2.2 Non-Resident Parking Assessment Summary

As summarized in **Table 13,** the highest resident visitor parking demand of 0.16 spaces per resident unit was observed at 1360 Main Street East, Milton and at 1297 Marlborough Court & 1360 White Oaks Boulevard in Oakville.

The proposed resident visitor parking supply ratio of 0.22 spaces per unit (to be shared with retail) is higher than the peak resident visitor parking demand observed in the proxy studies and is considered to be appropriate based upon the evolving transportation context, observed parking demands at the proxy sites and proposed TDM measures.

TABLE 13 SUMMARY OF RESIDENT VISITOR PARKING DEMAND SURVEYS

Property	Peak Resident Visitor Parking Demand (resident visitor spaces/unit)
1360 Main Street East, Milton	0.16
1105 Leger Way, Milton	0.15
2379 Central Park Drive, Oakville	0.10
216 Oak Park Boulevard, Oakville	0.14
1297 Marlborough Court & 1360 White Oaks Boulevard, Oakville	0.16
Average	**0.14**

4.5 PARKING SUMMARY

It is acknowledged that parking standards outlined in Zoning By-law 016-2014 (HUSP Urban Area – March 2023) could be considered to overstate the parking needs of a residential development based on the evolving transportation context, parking demand studies and a comprehensive Transportation Demand Management Plan.

As summarized in **Table 14** a total parking supply of 1,917 parking spaces is proposed for the site, inclusive of 966 and 951 parking spaces for the south and north blocks, respectively. The development proposes a provision of a minimum resident parking rate of 1.0 space per unit, with non-resident shared parking proposed to be provided at a minimum rate of 0.22 spaces per unit. As the resident visitor parking requirement is greater than the retail parking requirement, the proposed non-resident rate is based on the resident visitor supply. The proposed parking supply includes the development of Block 8 ("hold-out" property).

TABLE 14 PROPOSED PARKING SUPPLY

Use	Phase 1 (South Block – Buildings 1-4)		Phase 2 (North Block – Buildings 5-8)		SITE TOTAL	
	Units/ GFA	Number of Parking Spaces	Units/ GFA	Number of Parking Spaces	Units/ GFA	Number of Parking Spaces
Resident	792 units	792	779 units	779	**1,571 units**	**1,571**
	1.0 space/unit		*1.0 space/unit*		***1.0 space/unit***	
Non-Resident[1]	437 m² non-res	174	483 m² non-res	172	**920 m²**	**346**
	0.22 spaces/unit		*0.22 spaces/unit*		***0.22 spaces/unit***	
Total	**--**	**966**	**--**	**951**	**--**	**1,917**

Notes:
1. Non-resident parking to be shared between resident visitor and retail. As the resident visitor requirement is greater than the retail requirement, the proposed non-resident rate is based on the resident visitor supply.
2. Site statistics based on site plans prepared by Core Architects dated January 18, 2024 and include Block 8 ("hold-out property").

The highest resident parking demand of 0.96 spaces per resident unit was observed at the 1105 Legere property in Milton. When considering the proxy site in Milton with the sites in Oakville, the average resident parking demand was 0.83 spaces per unit. The proposed resident parking supply ratio of 1.0 spaces per unit is higher than the peak resident parking demand observed at 1105 Legere Way in Milton and is considered to be appropriate.

The highest resident visitor parking demand of 0.16 spaces per resident unit was observed at 1360 Main Street East, Milton and at 1297 Marlborough Court & 1360 White Oaks Boulevard in Oakville. When considering the proxy site in Milton with the sites in Oakville, the average peak resident parking demand was 0.14 spaces per unit. The proposed resident visitor parking supply ratio of 0.22 spaces per unit (to be shared with retail) is higher than the peak resident visitor parking demand observed in the proxy studies and is considered to be appropriate.

The proposed parking supply is appropriate for the site based upon the evolving transportation context, observed parking demands at the proxy sites and proposed TDM measures as outlined in **Section 7.0**

5.0 BICYCLE PARKING CONSIDERATIONS

As summarized in **Table 15,** Zoning By-law 016-2014 (HUSP Urban Area – March 2023) the site requires a minimum total of 865 bicycle parking spaces, inclusive of 786 short-term and 79 long-term spaces.

TABLE 15 ZONING BY-LAW 016-2014 MINIMUM BICYCLE PARKING REQUIREMENT

Use	Minimum Parking Requirement	Phase 1 (South Block – Buildings 1-4)		Phase 2 (North Block – Buildings 5-8)		SITE TOTAL	
		Units	Minimum Spaces	Units/ Space	Minimum Spaces	Units/Space	Minimum Spaces
Dwelling, Apartment (long-term parking)	0.5 spaces/unit	792 units	396	779 units	390	**1,571 units**	**786**
Mixed-Use Building, (short-term parking)	0.05 spaces/unit		40		39		**79**
Total		**--**	**436**	**--**	**429**	**--**	**865**

Notes:
1. Site statistics based on site plans prepared by Core Architects dated January 18, 2024 and include Block 8 ("hold-out property").

As summarized in **Table 16**, a total supply of 902 bicycle parking spaces is proposed for the site, inclusive of 463 and 439 spaces for the south and north blocks, respectively. The proposed bicycle parking supply exceeds the minimum Zoning By-law requirements and will encourage cycling trips to and from the site.

TABLE 16 PROPOSED BICYCLE PARKING SUPPLY

Use	Phase 1 (South Block – Buildings 1-4)		Phase 2 (North Block – Buildings 5-8)		SITE TOTAL	
	Units/ GFA	Number of Bike Parking Spaces	Units/ GFA	Number of Bike Parking Spaces	Units/ GFA	Number of Bike Parking Spaces
Dwelling, Apartment	792 units	422	779 units	398	**1,571 units**	**820**
Mixed-Use Building, (short-term parking)		41		41		**82**
Total	**--**	**463**		**439**	**--**	**902**

Notes:
1. Site statistics based on site plans prepared by Core Architects dated January 18, 2024 and include Block 8 ("hold-out property").

6.0 LOADING CONSIDERATIONS

As summarized in **Table 17**, application of Zoning By-law 016-2014 to the site for loading considerations, results in the minimum requirement of 2 loading areas (1 loading area per block), with the minimum dimensions of 6.0 m (length) x 3.5 m (width) x 3.0 m (vertical clearance).

The development proposes the following loading provisions for each block, with the following dimensions:

- **South Block**: 1 loading space with dimensions of 18 m (length) x 6 m (width) & 3 loading areas with dimensions of 8 m (length) x 4 m (width)
- **North Block (including Block 8)**: 1 loading space with dimensions of 18 m (length) x 6 m (width) & 3 loading areas with dimensions of 8 m (length) x 4 m (width)

All of the proposed loading spaces are located at-grade, without any overhead obstructions, and meet the minimum heights required by the Zoning By-law.

The minimum loading requirements of the Zoning By-law are met and the loading supply will meet the practical needs of the site. Vehicle maneuvering figures are provided in **Appendix D**.

TABLE 17 LOADING SUPPLY SUMMARY

Building	Number of Units/GFA	Zoning By-law 016-2014 Minimum Requirement	Minimum Number of Required Loading Spaces / Area[2]	Proposed Loading Supply
South Block				
Residential	792 units	-	0	3 loading areas 1 loading space
Retail	437 m²	281 m² to 930 m²: 1 loading area	1 loading area	
North Block				
Residential	779 units	-	0	3 loading areas 1 loading spaces
Retail	483 m²	281 m² to 930 m²: 1 loading area	1 loading area	
		SITE TOTAL	**2 loading areas**	**6 loading areas 2 loading spaces**

Notes:
1. Site statistics based on site plans prepared by Core Architects dated January 18, 2024 and include Block 8 ("hold-out property").
2. Requirements based on Table 5J of Zoning By-law 016-2014.

7.0 TRANSPORTATION DEMAND MANAGEMENT (TDM)

7.1 TDM OBJECTIVES

The Transportation Demand Management (TDM) Plan strives to reduce automobile use through an on-going strategy that supports and promotes the use of non-auto transportation modes.

The key objective of the TDM Plan is to reduce peak hour single occupant automobile traffic by focusing on four specific policy areas:

1. Encourage the use of alternate travel modes (transit, cycling, walking);
2. Increase vehicle occupancy;
3. Shift travel to off-peak periods; and
4. Reduce vehicle kilometres travelled.

The physical infrastructure components or TDM measures outlined in this Plan (i.e. bicycle parking spaces) will be incorporated into the development design. The implementation of these elements and the associated costs will be the responsibility of the developer. The operational measures of the TDM plan (i.e. travel mode choice information packages) will be implemented by the developer.

7.2 PROPOSED TDM STRATEGIES

The existing and future area context provides for good public transit service as well as travel by active transportation. Proposed TDM strategies, including a reduced parking supply with “unbundled” parking, active transportation facilities and travel mode information packages, have been developed to further support the use of non-auto modes of travel.

7.2.1 Reduced Parking Supply

As discussed in Section **4.0,** when compared to the minimum requirements of the Town of Milton Comprehensive Zoning By-law 016-2014 (HUSP Urban Area – March 2023), a reduced parking supply is being proposed for the site. As shown in **Table 7,** the proposed parking supply of 1,923 spaces represents a decrease of 18%, when compared to the minimum Zoning By-law requirement of 2,357 spaces.

7.2.2 Summary of Proposed TDM Strategies

Proposed TDM measures for the site are summarized in **Table 18**. The measures being proposed for the site are supportive of alternative transportation modes.

TABLE 18 TDM STRATEGIES

Measure	Description	Cost Estimate	Implementation Strategy
Physical Measures			
Pedestrian Facilities	Provide internal walkways that provide connectivity throughout the site and to the adjacent sidewalks on Etheridge Avenue and on Regional Road 25.	Integrated into overall development cost.	Construct as part of development.
Bicycle Parking	Bicycle parking spaces to be provided that exceeds the minimum requirements of Zoning By-law 016-2014.	Integrated into overall development cost.	Construct as part of development.
Bicycle Repair Stations	Provide bicycle repair stations in bicycle parking areas.	Integrated into overall development cost.	Construct as part of development.
Vehicle Parking	Proposed reduced parking supply is 19% less than the Zoning By-law 016-2014 requirement.	Integrated into overall development cost.	Construct as part of development.
Operational Measures			
Travel Mode Information Packages	Implement programs to inform new residents of available travel mode choices and existing mobile apps providing transit information.	To be determined.	Travel mode information packages to be distributed at the sales office.
Unbundled Parking	Parking spaces to be unbundled from condominium purchase to discourage car ownership.	n/a	Parking spaces to be sold separately from units.

8.0 TRAVEL DEMAND FORECASTING

8.1 EXISTING TRAFFIC VOLUMES

Turning movement counts were conducted by Spectrum Traffic Inc. on behalf of BA Group for the study area intersections. The counts were completed in November of 2022 during the weekday morning and afternoon peak periods (the busiest hours of traffic are between 7:30 a.m. to 9:30 a.m. and 4:00 p.m. to 6:00 p.m., respectively).

Due to potential impacts from construction along Britannia Road at the time of the traffic volume data collection, historical traffic counts were obtained from the Region for comparison purposes. Given that the Regional Road 25 / Britannia Road counts in 2019 are generally greater than those in 2022, the 2019 counts were adopted for analysis. The Regional Road 25 / Louis St. Laurent Avenue counts undertaken in 2016 are less than those in 2022, thus the 2022 counts were maintained. The counts provided by the Region were adopted where the historical counts exceeded the recent traffic counts. Traffic volumes along the Britannia Road and Regional Road 25 corridors were then conservatively balanced (i.e. balanced upwards) to ensure consistency across the study area road network.

As per typical industry standard, and to illustrate the reality that turning movement volumes vary day-to-day, all turning movement volumes were rounded to the nearest five vehicles and were reviewed to ensure a general consistency in the traffic volumes on links between intersections.

Figure 9 illustrates the raw existing traffic volumes, while **Figure 10** illustrates the baseline existing traffic volumes adopted for analysis purposes on the study area road network. All surveyed traffic counts are summarized in **Table 19**. Detailed existing turning movement counts for all of the intersections are shown in **Appendix E**.

TABLE 19 TRAFFIC DATA INFORMATION

Intersection	Date of Count
Spectrum Traffic Inc. (on behalf of BA Group)	
Regional Road 25 / Louis St Laurent Avenue (used in analysis)	Tuesday, November 29, 2022
Regional Road 25 / Whitlock Avenue (used in analysis)	
Regional Road 25 / Etheridge Avenue (used in analysis)	
Regional Road 25 / Britannia Road (**not** used)	
Britannia Road / Farmstead Drive (used in analysis)	
Halton Region	
Regional Road 25 / Louis St Laurent Avenue (**n**ot used)	Tuesday, December 6, 2016
Regional Road 25 / Britannia Road (used)	Monday, December 9, 2019

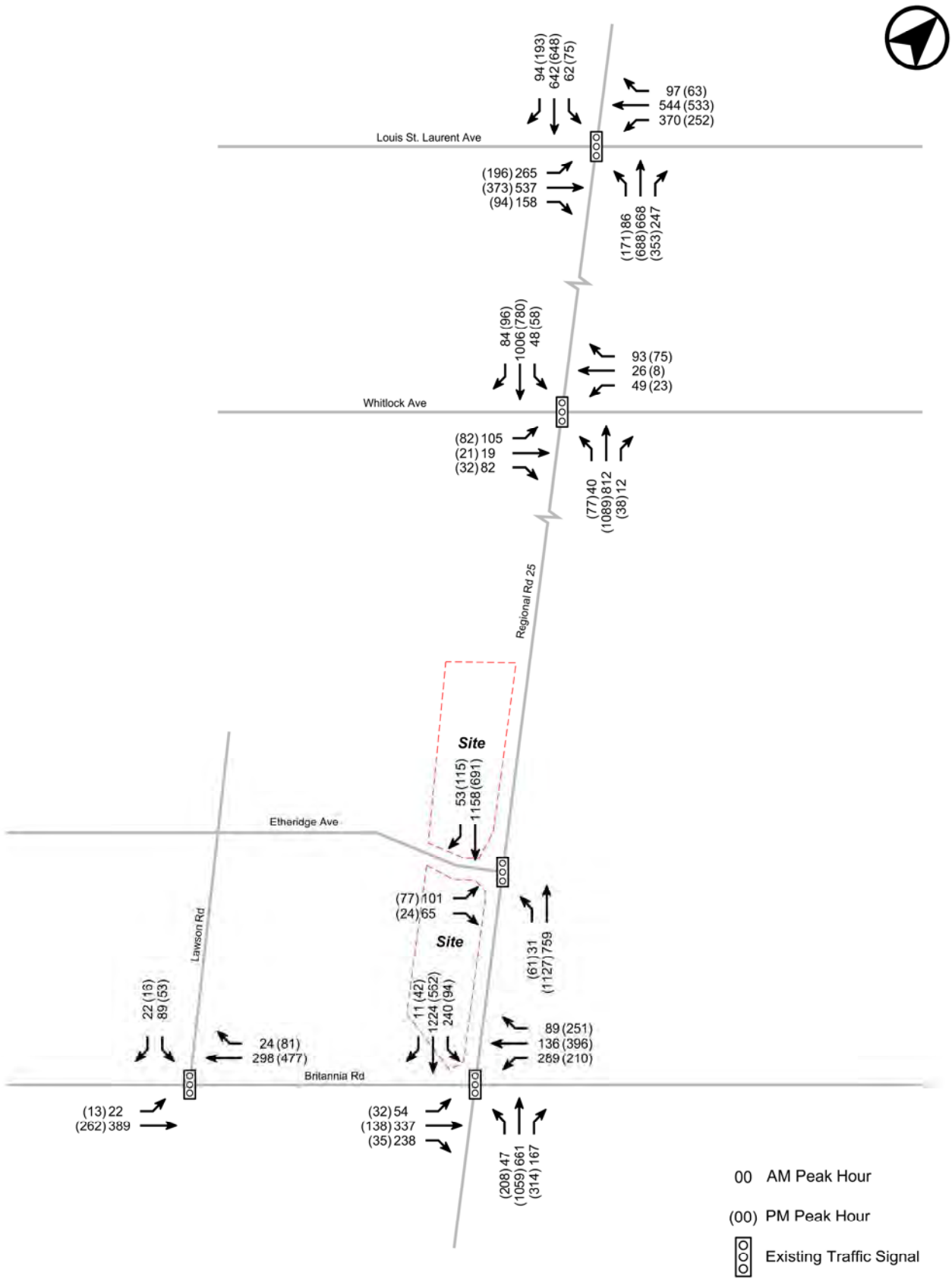

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FIGURE 9 RAW EXISTING TRAFFIC VOLUMES

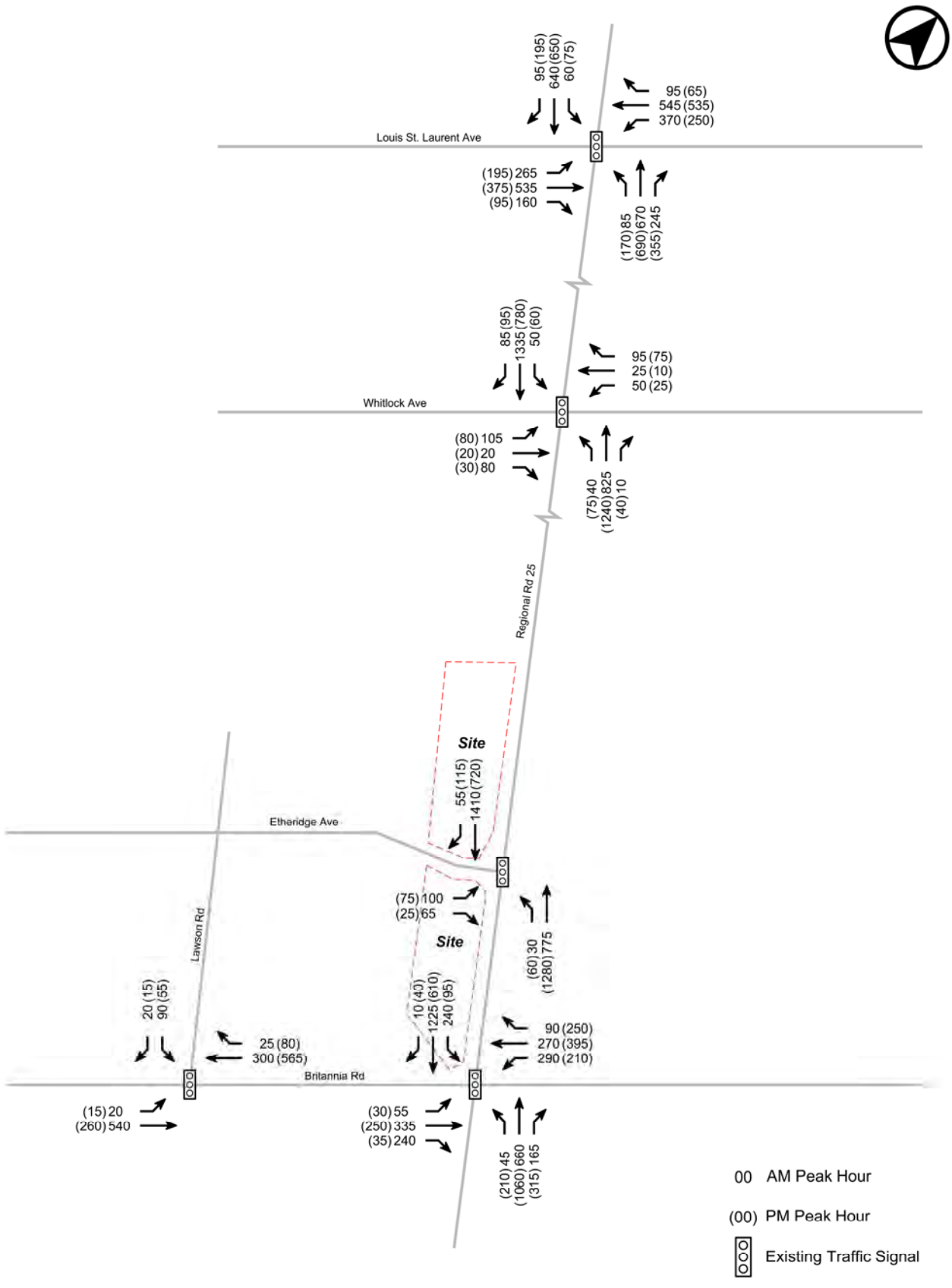

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FIGURE 10 BASELINE EXISTING TRAFFIC VOLUMES

8.2 FUTURE HORIZON YEARS

The traffic analysis was undertaken for the 2029, 2032 and 2037 horizon years. The 2029 horizon year represents the build-out of Phase 1 (south block). The 2032 horizon year represents the full build-out of the site (south block + north block). The 2037 horizon year represents the five-years beyond the build-out horizon of the site. The following analysis scenarios were undertaken for this study:

- 2023 Baseline existing traffic volumes
- 2029 Future background traffic conditions
- 2029 Future total traffic conditions (inclusive of Phase 1 - south block)
- 2032 Future background traffic conditions
- 2032 Future total traffic conditions (complete site build-out – inclusive of north block)
- 2037 Future background traffic conditions
- 2037 Future total traffic conditions (five years beyond complete site build-out)

The traffic analysis was completed for a typical weekday for both the morning and afternoon peak periods.

8.3 FUTURE BACKGROUND TRAFFIC VOLUMES

Traffic growth in the site vicinity was considered based upon an evaluation of traffic volume changes related to:

- General corridor growth along major arterials in the study area (i.e. Britannia Road and Regional Road 25); and
- Background development traffic allowances.

Future background traffic volumes in each of the horizon years (2029, 2032, 2037) are illustrated in **Figure 15** **Figure 16** and **Figure 17**.

8.3.1 Corridor Growth

Based on correspondence with Region staff, the growth rates summarized in **Table 20** were adopted for future horizon years.

Corridor growth traffic volumes in each of the horizon years (2029, 2032, 2037) are illustrated in **Figure 11**, **Figure 12**, and **Figure 13**.

TABLE 20 ADOPTED CORRIDOR GROWTH RATES (COMPOUNDED ANNUALLY)

Corridor	2023 to 2030	2030 to 2037
Britannia Road	2% for ***all*** movements	
Regional Road 25	2% for ***all*** movements	3.8% for ***through*** movements only 2% for ***all other (i.e., not through)*** movements

8.3.2 Background Developments

Allowances have been made for future traffic conditions to account for new traffic generated by other development proposals that are either under construction, approved, being reviewed or for which an application is expected to be submitted to the Town and Region.

The list of background developments was developed in correspondence with Town staff. A total of 6 background developments have been considered that amount to a total of 1,665 residential units.

Table 21 summarizes the list of background developments considered in this study. Background development traffic volumes are illustrated in **Figure 14.**

TABLE 21 BACKGROUND DEVELOPMENTS

Development	Description	Report Source	Traffic Source
Primont Homes Residential Subdivision 24T-14004/M	665 residential units	GHD	TIS Report Excerpt
Fernbrook Residential Development (8175 Britannia Road) Z-10/20	254 residential units	Paradigm	
Mil Con Three Residential Subdivision	140 residential units	TMIG	
West Country Milton Properties Residential Development Z-21/21	227 residential units	GHD	
Gulfbeck Residential Development Z-11/20	103 residential units	GHD	
Sixteen Mile Creek Residential Subdivision 24T-20007/M (6439 Regional Road 25)	276 residential units	Paradigm	
Total	**1,665 residential units**		

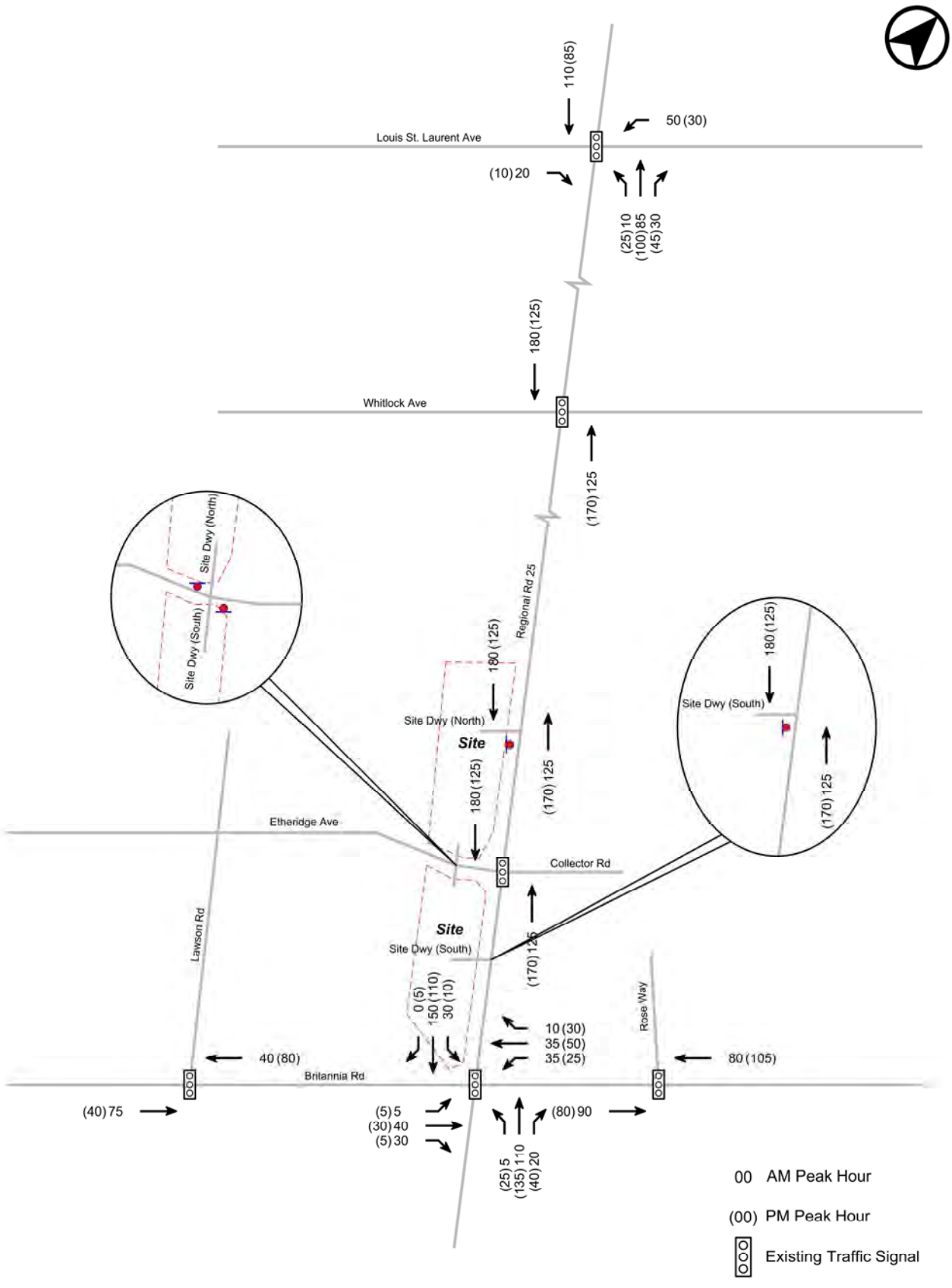

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FIGURE 11 CORRIDOR GROWTH TRAFFIC VOLUMES (2029 HORIZON)

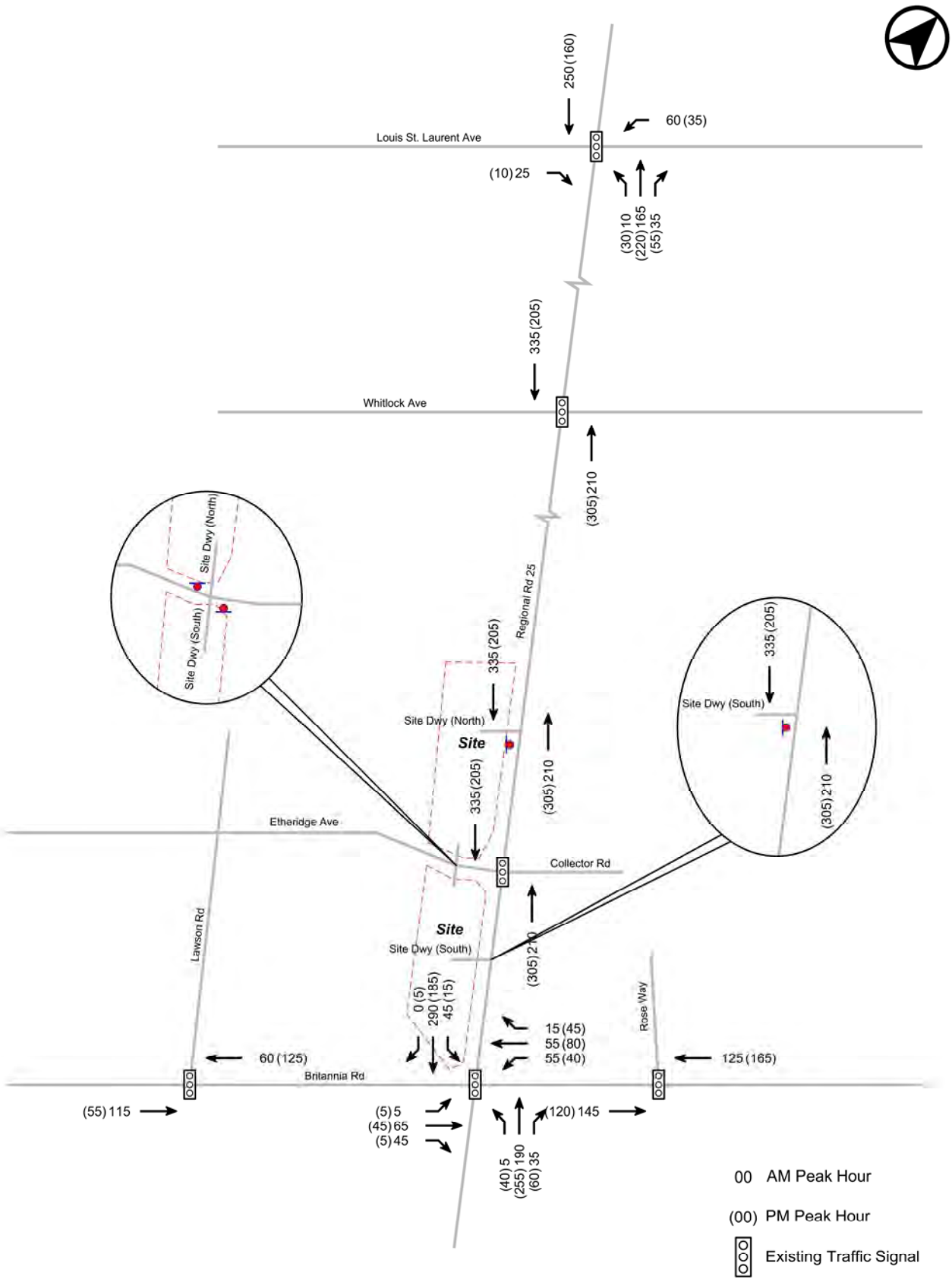

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FIGURE 12 CORRIDOR GROWTH TRAFFIC VOLUMES (2032 HORIZON)

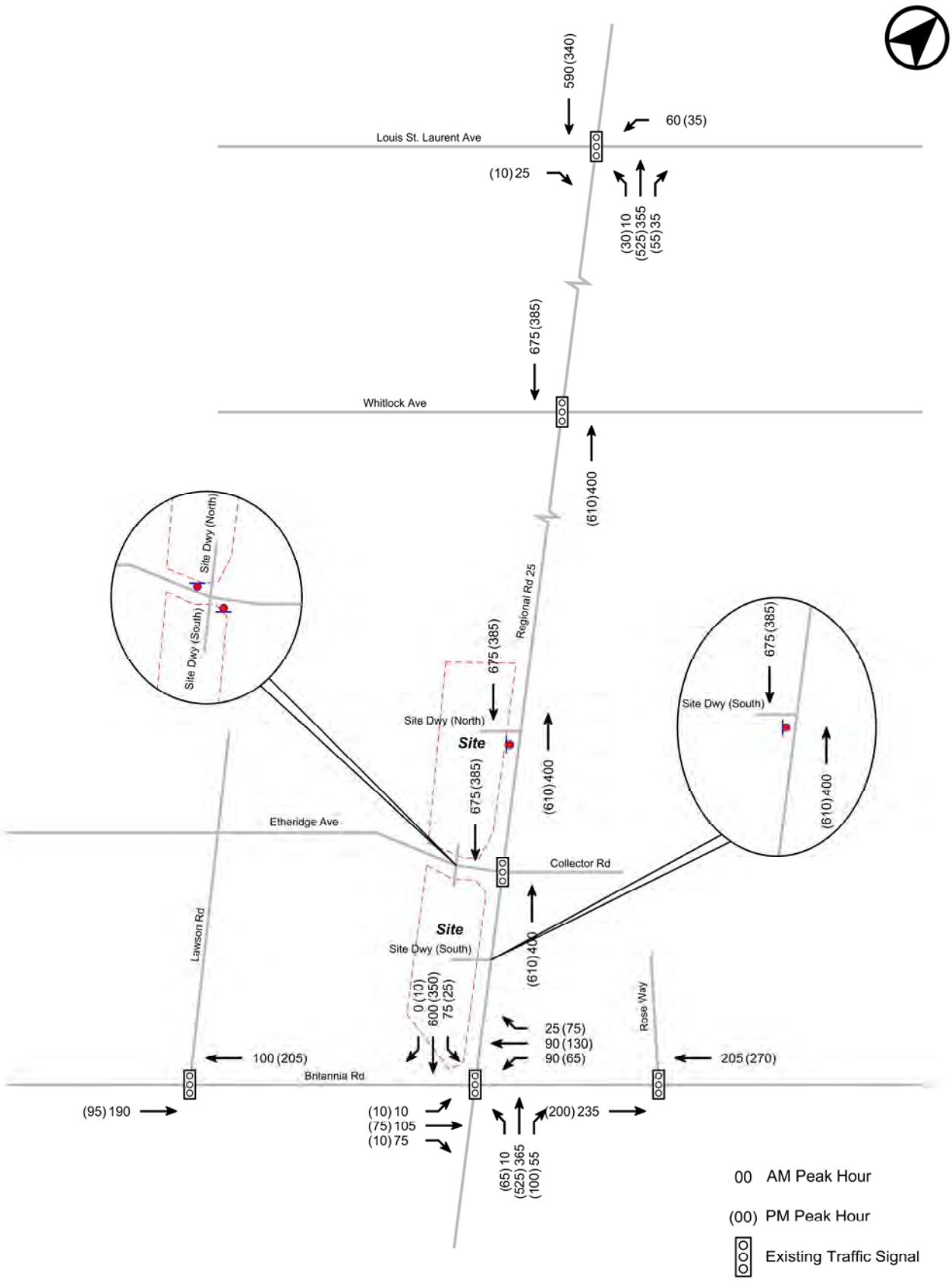

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FIGURE 13 CORRIDOR GROWTH TRAFFIC VOLUMES (2037 HORIZON)

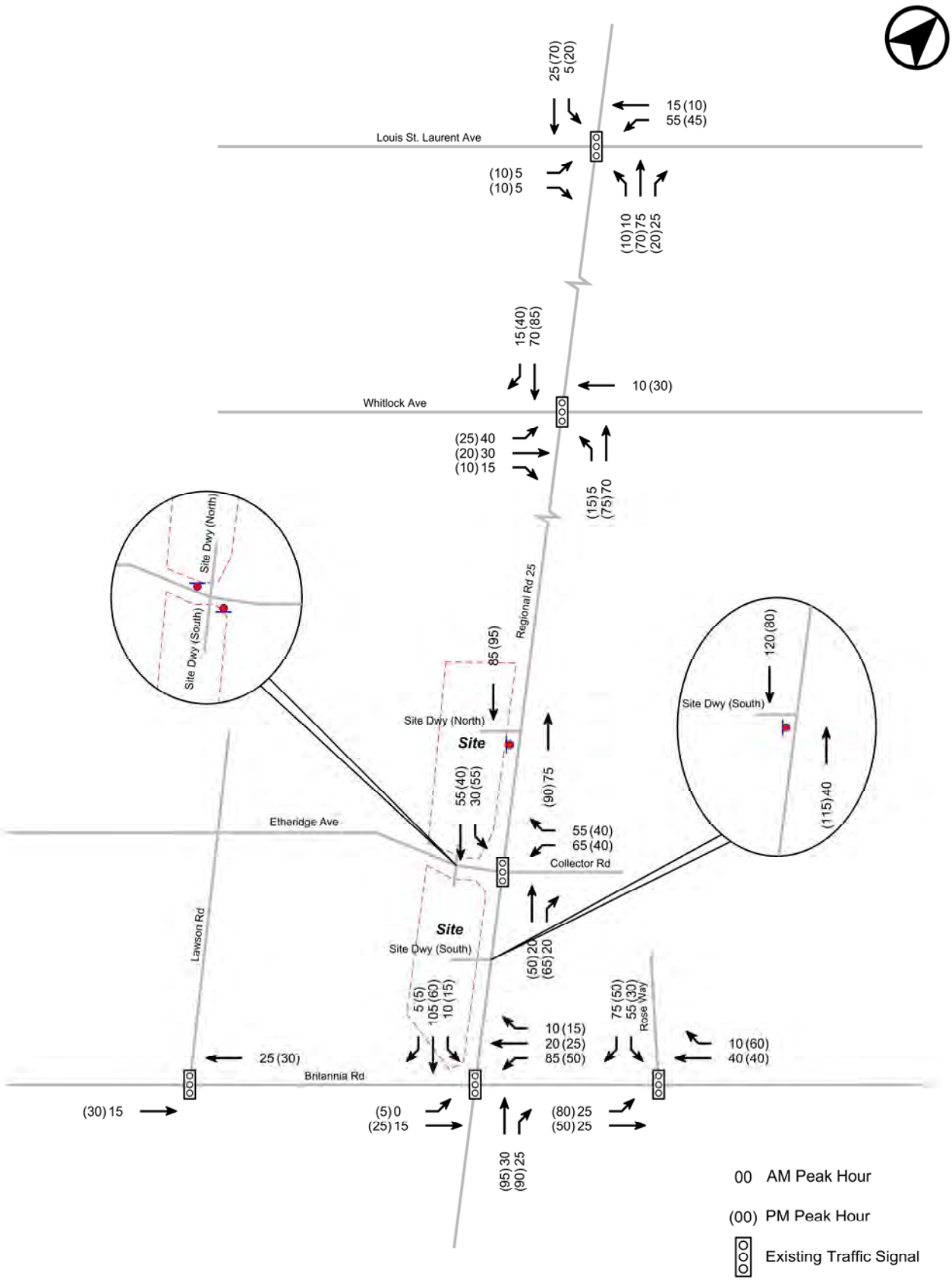

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FIGURE 14 BACKGROUND DEVELOPMENT TRAFFIC VOLUMES

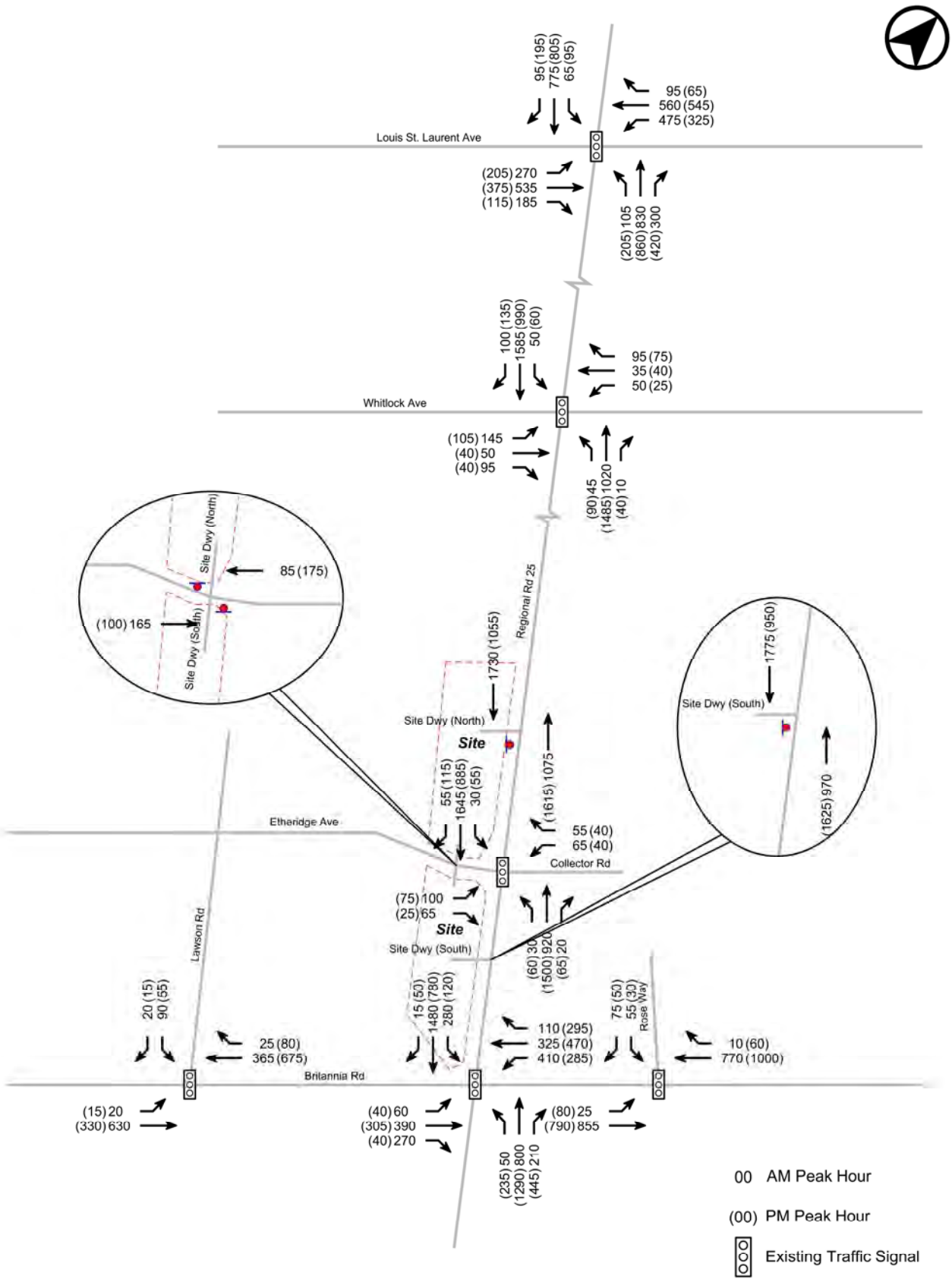

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FIGURE 15 FUTURE BACKGROUND TRAFFIC VOLUMES (2029 HORIZON)

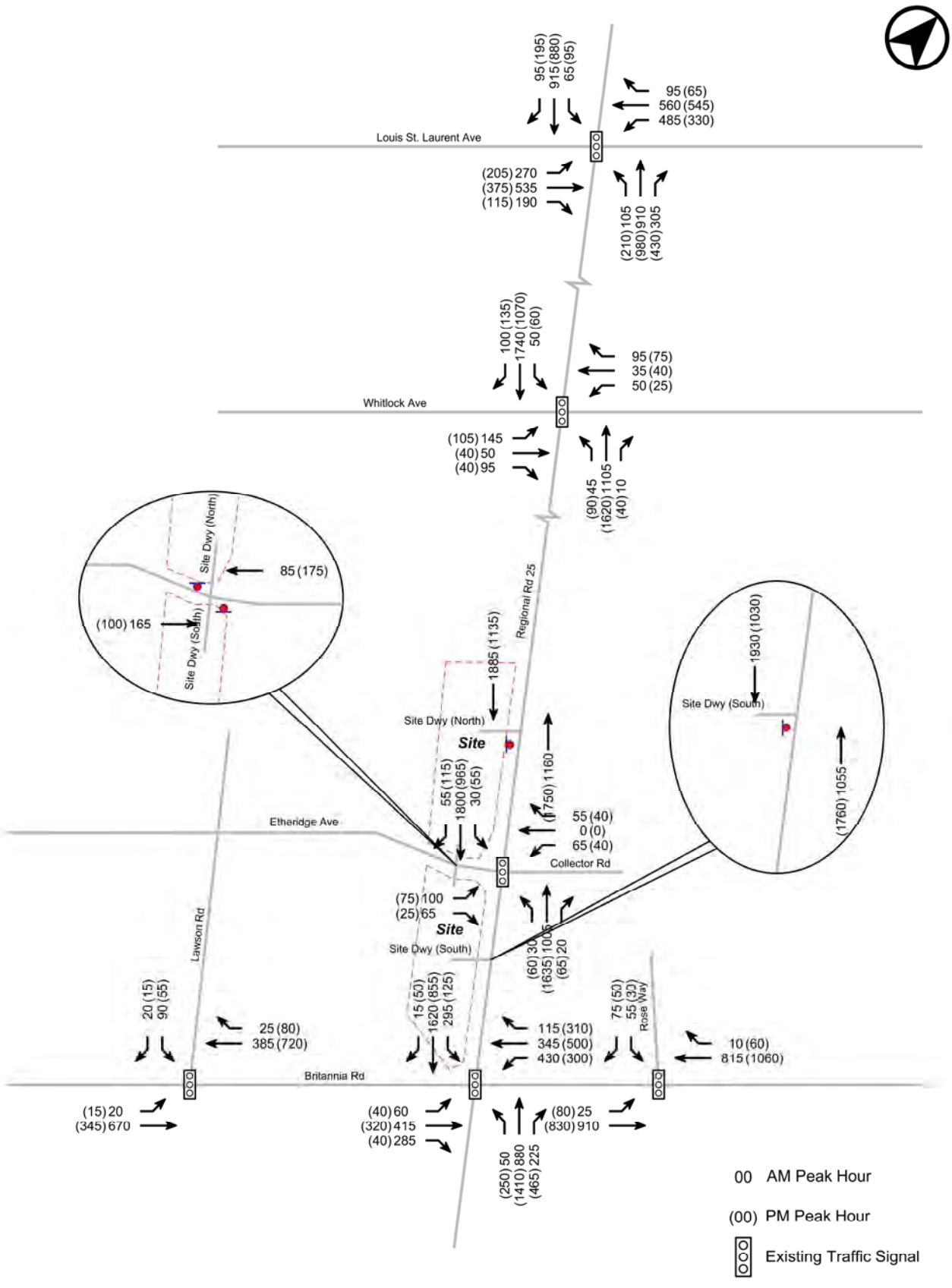

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FIGURE 16 FUTURE BACKGROUND TRAFFIC VOLUMES (2032 HORIZON)

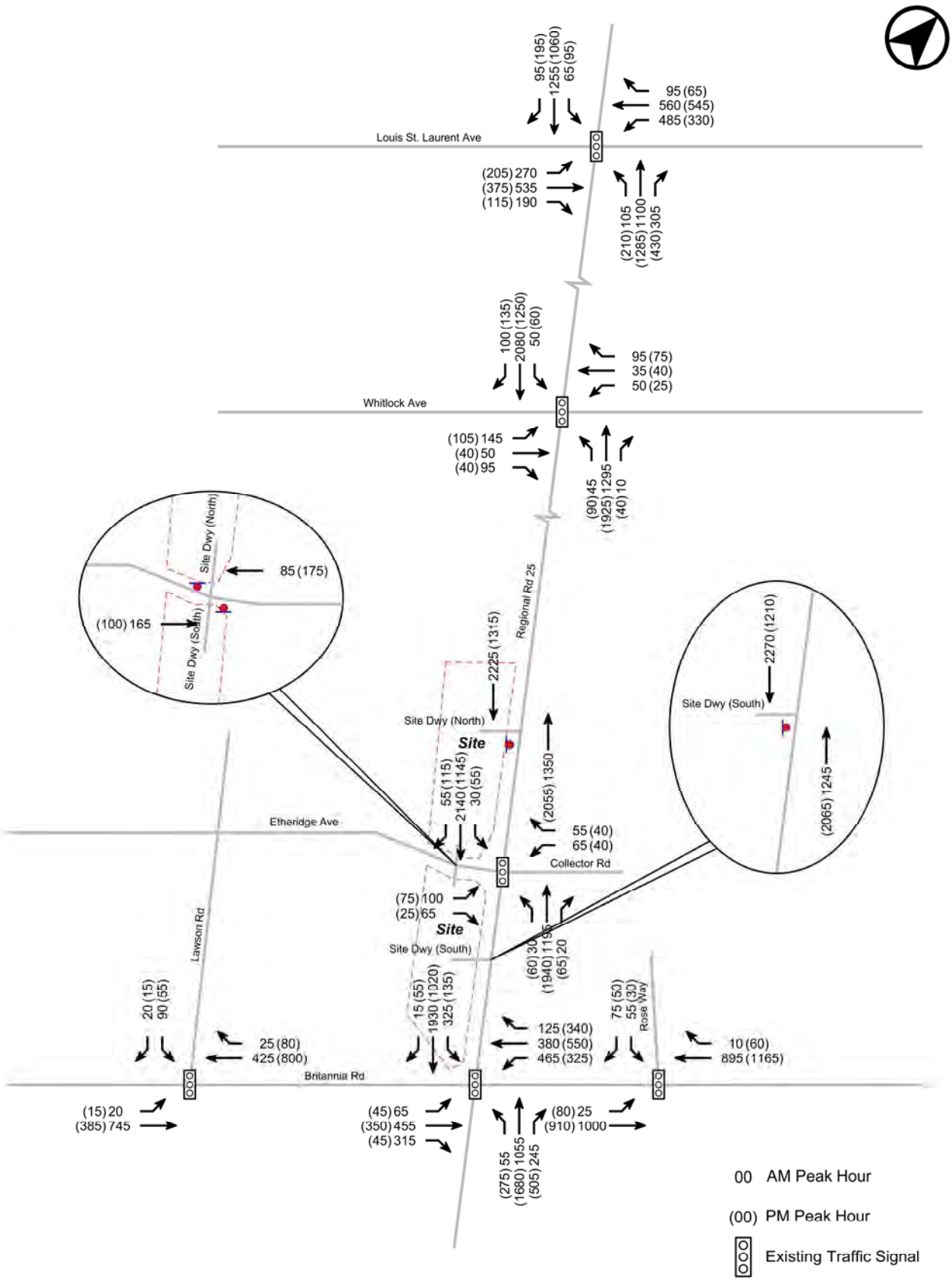

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FIGURE 17 FUTURE BACKGROUND TRAFFIC VOLUMES (2037 HORIZON)

8.4 SITE TRAFFIC VOLUMES

8.4.1 Trip Generation

8.4.1.1 Residential Uses

Residential vehicle trip generation was established based upon a review of trip generation rates from the ITE Trip Generation Manual (11th Edition). The trip generation parameters adopted for the purposes of the traffic analysis are summarized in **Table 22**. The ITE excerpts are provided in **Appendix F**. The traffic analysis is conservative and based on 846 residential units on the south block (site plans now includes 792 residential units), as the site statistics evolved throughout the final design process. The 635 residential units on the north block does not include the Block 8 "hold-out" property. The potential for an additional 144 residential units on Block 8 is addressed as part of a sensitivity analysis reviewed in **Section 9.7**.

TABLE 22 TRIP GENERATION SUMMARY

	AM Peak Hour			PM Peak Hour		
	In	Out	2-Way	In	Out	2-Way
ITE LUC 222 (Multifamily Housing, High-Rise, General Urban / Suburban) – Not Close to Rail Transit						
Fitted Curve Trip Equation	T = 0.22(X) + 18.85			T = 0.26(X) + 23.12		
Directional Distribution	26%	74%	100%	62%	38%	100%
Resultant Trip Rate 1,481 residential units (846 units + 635 units)	0.06	0.17	0.23	0.17	0.10	0.27
Residential Site Trips (Full Build)	**90**	**255**	**345**	**255**	**155**	**410**
Phase 1 – South Block Only 846 residential units[2]	50	145	195	145	90	235
Phase 2 – North Block Only 635 residential units[3]	40	110	150	110	65	175

Notes:
1. All site trips are rounded to the nearest 5.
2. Traffic analysis is conservative and based on 846 units on the south block as site statistics evolved through the final design process.
3. The 635 units on the north block **does not include** the Block 8 "hold-out" property. The potential for an additional 144 units on Block 8 is addressed as part of a sensitivity analysis in **Section 9.7**.

The Phase 1 (south block) proposed development is anticipated to generate **195 and 235 two-way vehicle trips** during the weekday morning and afternoon peak hours, respectively. At full buildout, the proposed development is anticipated to generate in the order of **345 and 410 two-way vehicle trips** during the peak hours.

A comparison of the current trip generation forecasts, with the previously assumed forecasts from the Boyne Secondary Plan Road Network Assessment (RNA) study dated September of 2017, is provided in **Table 23**. The site is expected to generate 222 and 258 more vehicle trips than what was considered in the Boyne Secondary Plan Road Network Assessment (RNA), during the weekday morning and afternoon peak hours, respectively.

TABLE 23 SITE TRIP GENERATION COMPARISON WITH BOYNE RNA

	AM Peak Hour			PM Peak Hour		
	In	Out	2-Way	In	Out	2-Way
Current Forecast Site Trips (This Study)	90	255	345	255	155	410
Boyne RNA Site Trips[1]	25	98	123	99	53	152
Difference	**+ 65**	**+ 157**	**+ 222**	**+ 156**	**+ 102**	**+ 258**

Notes:
1. This estimate assumes that the site lands encompass all of the high-density development within Zone 30 and at least 25% of the development within Zone 25 of the Boyne RNA.

8.4.1.2 Retail Uses

The proposed retail uses are expected to operate ancillary to the site and to primarily service residents on the site and the immediate area. As most of the trips to and from the retail uses are expected to be active transportation trips to and from within the site, traffic has not been generated for the retail uses.

8.4.2 Trip Distribution and Assignment

Trip distribution patterns and traffic route assignment were derived from the 2016 Transportation Tomorrow Survey (TTS) for 2006 GTA Zones 4104, 4105 and 4108. Queries for residential trips are provided in **Appendix G**. The adopted distribution of inbound and outbound vehicle traffic is presented in **Table 24.**

TABLE 24 SITE TRIP DISTRIBUTION

Directions	Residential	
	Outbound[1]	Inbound[2]
To/From North on Bronte Street South	5%	5%
To/From North on Regional Road 25	25%	25%
To/From North on Thompson Road South	5%	5%
To/From South on First Line	0%	0%
To/From South on Regional Road 25	20%	20%
To/From South on Thompson Road South	0%	0%
To/From East on Britannia Road	20%	20%
To/From East on Louis St. Laurent Avenue	15%	15%
To/From West on Britannia Road	5%	5%
To/From West on Louis St. Laurent Avenue	5%	5%
Total	**100%**	**100%**

Notes:
1. Based upon weekday morning, peak period, outbound, home-based trip data.
2. Based upon weekday afternoon, peak period, inbound, home-based trip data.
3. Based on trip data within TTS zones 4104, 4105 and 4108.

New residential site trips on the study area road network are illustrated in **Figure 18** and **Figure 19**, respectively.

8.5 FUTURE TOTAL TRAFFIC VOLUMES

Future total traffic volumes during the weekday morning and afternoon peak hours, reflect the sum of future background traffic volumes and new site traffic volumes and are illustrated in **Figure 20**, **Figure 21** and **Figure 22** for each of the horizon years.

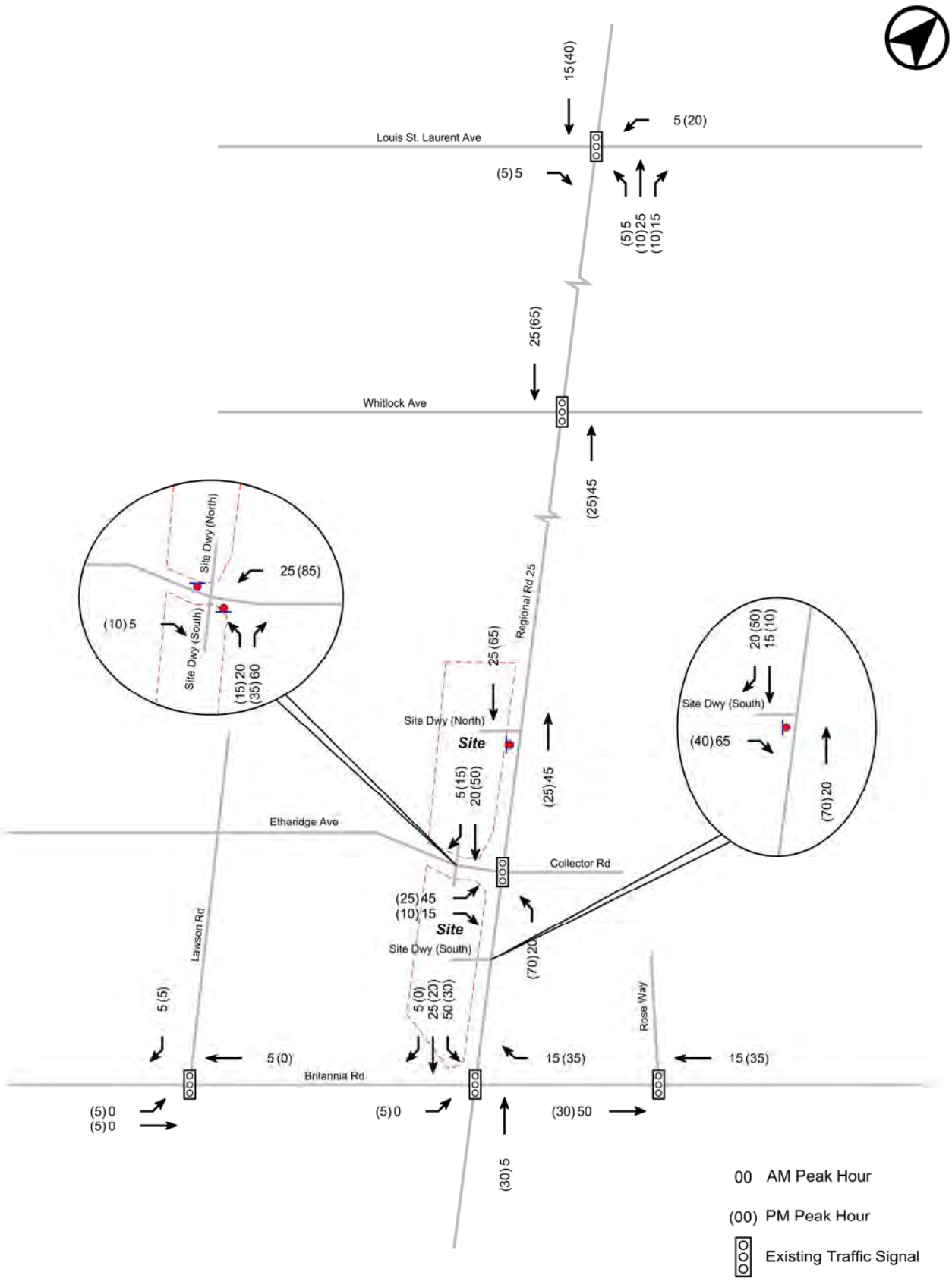

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FIGURE 18 PHASE 1 (SOUTH BLOCK) SITE TRAFFIC VOLUMES

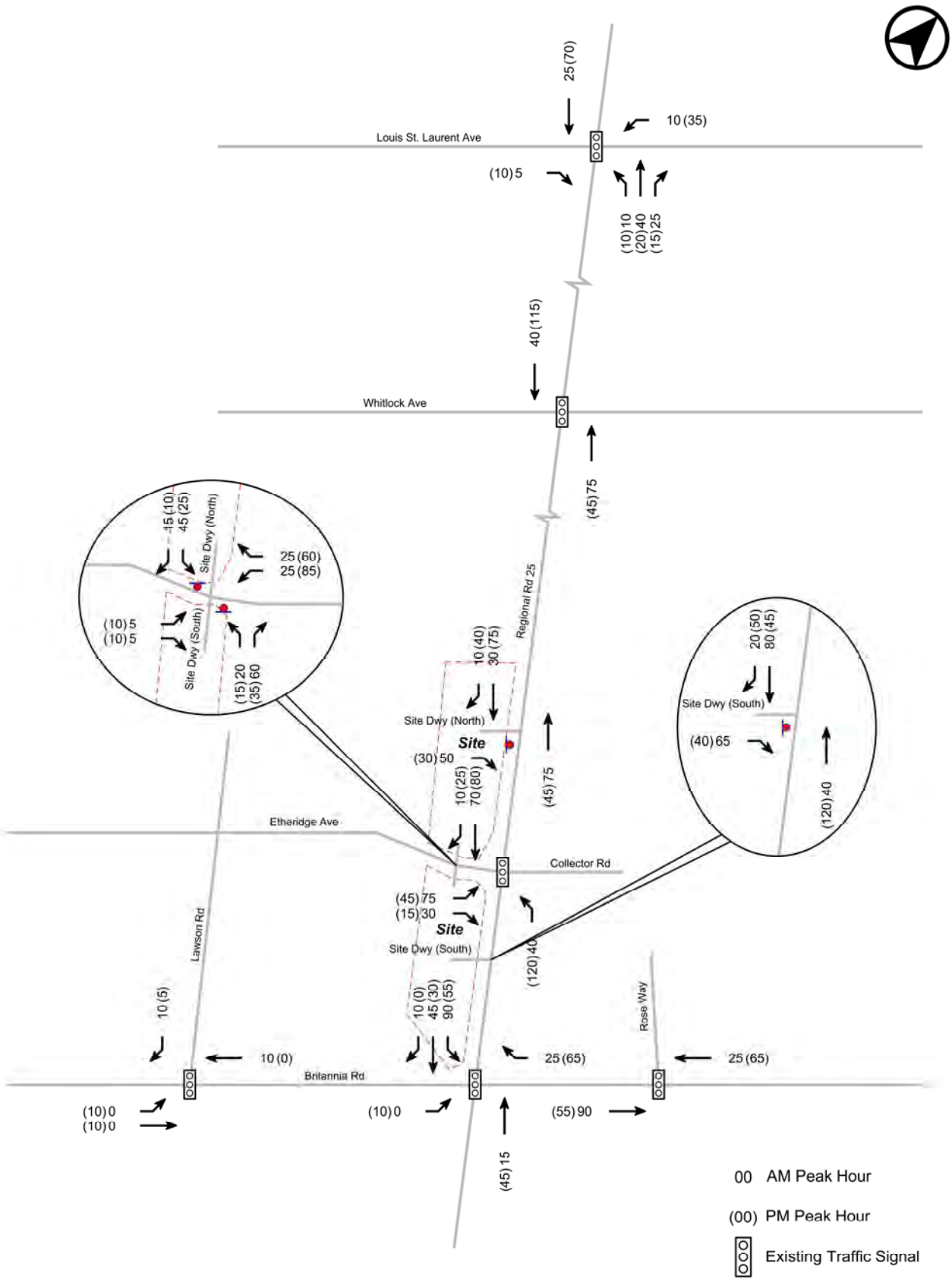

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FIGURE 19 FULL BUILDOUT SITE TRAFFIC VOLUMES

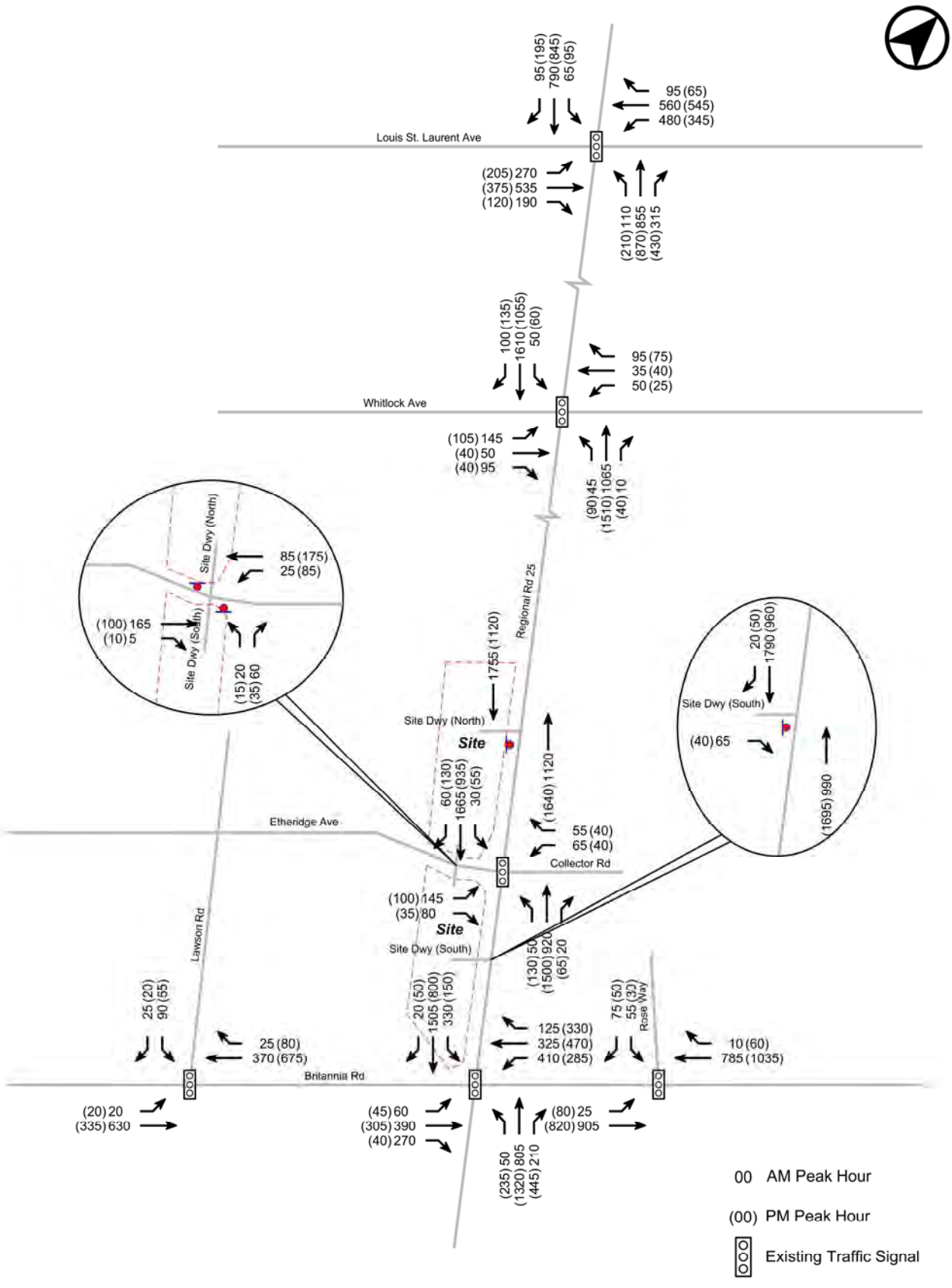

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FIGURE 20 FUTURE TOTAL TRAFFIC VOLUMES (2029 HORIZON)

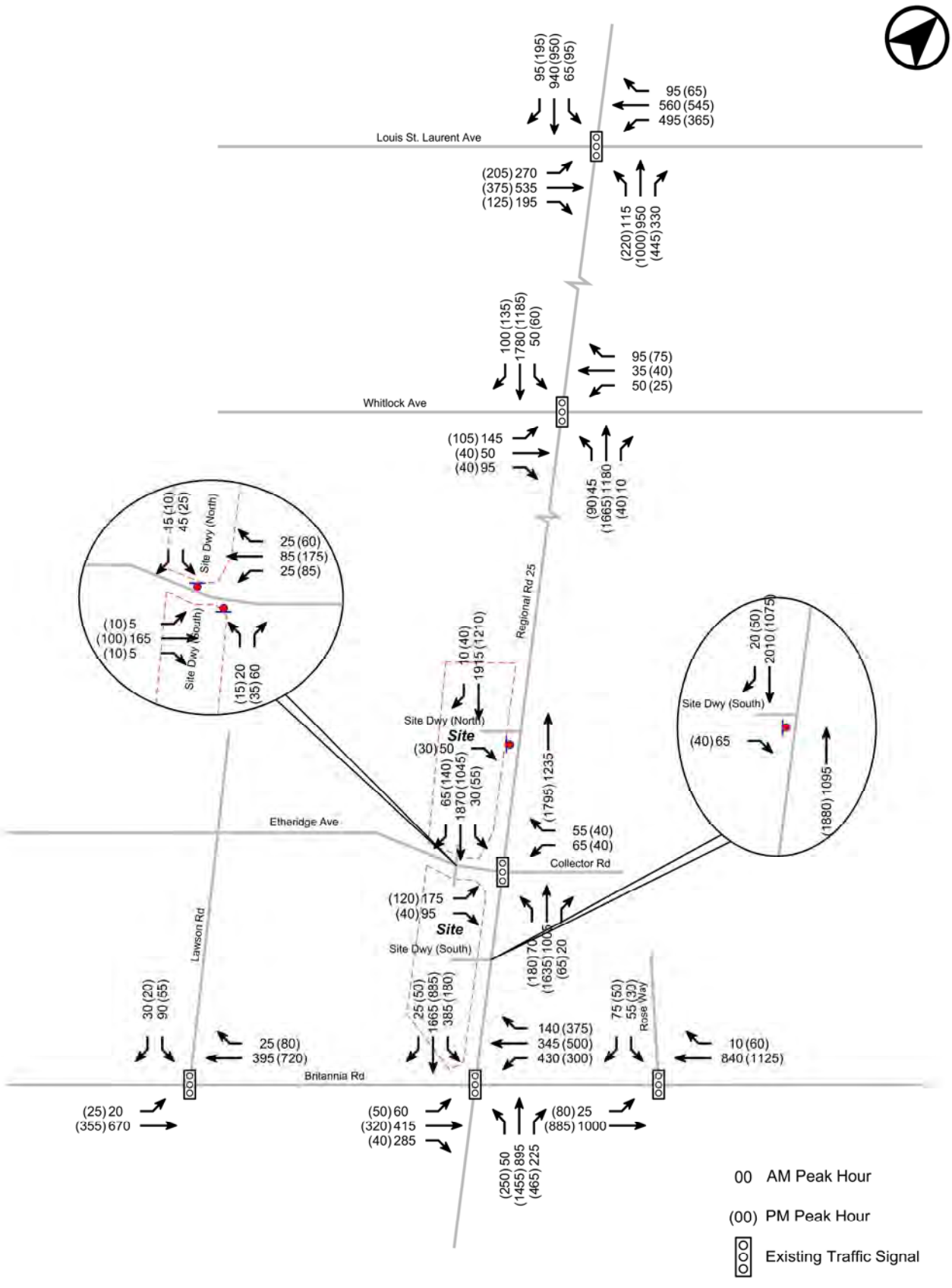

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FIGURE 21 FUTURE TOTAL TRAFFIC VOLUMES (2032 HORIZON)

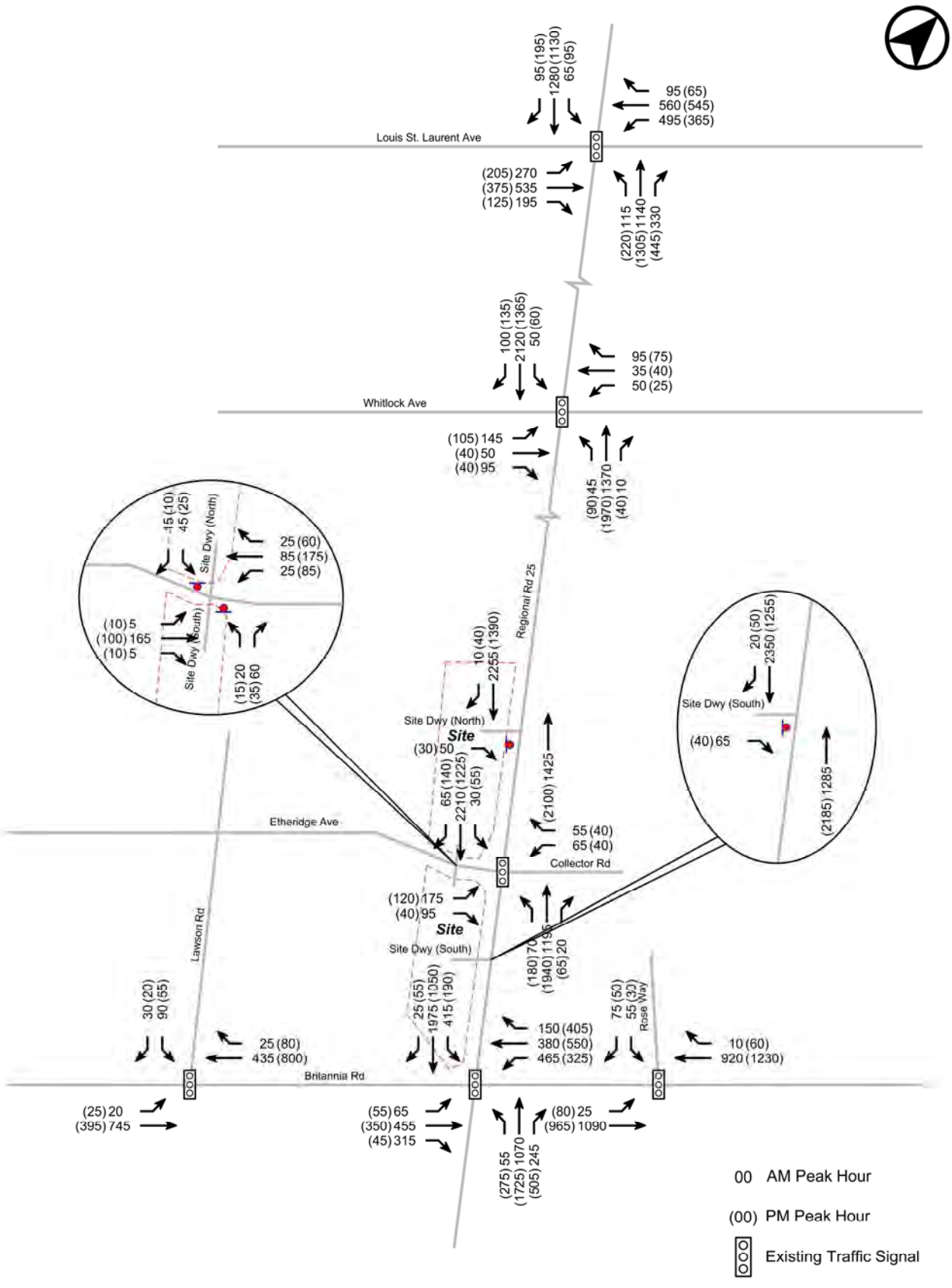

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FIGURE 22 FUTURE TOTAL TRAFFIC VOLUMES (2037 HORIZON)

9.0 TRAFFIC OPERATIONS ANALYSIS

9.1 ANALYSIS METHODOLOGY

The intersection capacity analysis was completed using Synchro Version 11.0 and the Highway Capacity Manual (HCM) methodology.

For signalized intersections, the volume-to-capacity ratio (v/c) is an indicator of the capacity utilization for key movements in the intersection. A v/c of 1.00 indicates that certain governing traffic movements through the intersection are operating at or near maximum capacity. The primary overall level of service (LOS) indicator is delay, both on individual movements and expressed as an average for all vehicles processed. Many busy urban intersections operate at LOS D to E, which reflects average delays in the range of 35 to 80 seconds.

For unsignalized intersections, level of service (LOS) characterizes operational conditions for key movements in terms of delay within the traffic stream. LOS A represents a good level of service with short delays. LOS F represents a poor level of service with long delays. The volume to capacity ratio (v/c) is an indicator of the capacity utilization for key movements at the intersection and resultant residual capacity potential.

The LOS criteria provided by the HCM methodology is summarized as follows:

1. Signalized Intersection LOS

    a. LOS A: Control Delay ≤ 10s
    b. LOS B: 10s < Control Delay ≤ 20s
    c. LOS C: 20s < Control Delay ≤ 35s
    d. LOS D: 35s < Control Delay ≤ 55s
    e. LOS E: 55s < Control Delay ≤ 80s
    f. LOS F: Control Delay > 80s

2. Unsignalized Intersection LOS

    a. LOS A: Control Delay ≤ 10s
    b. LOS B: 10s < Control Delay ≤ 15s
    c. LOS C: 15s < Control Delay ≤ 25s
    d. LOS D: 25s < Control Delay ≤ 35s
    e. LOS E: 35s < Control Delay ≤ 50s
    f. LOS F: Control Delay > 50s

9.1.1 Critical Movements

As defined by Halton Region's TIS guidelines, critical volume-to-capacity ratios are those which exceed 0.85 for through movements or shared through/turning movements and 0.95 for exclusive turning movements. These critical movements are highlighted in red in the summary tables.

9.2 SYNCHRO MODEL CALIBRATION

9.2.1 Modelling Input and Calibration Parameters

Key parameters assumed in the Synchro analysis include:

Lane Configurations

Existing lane configurations are assumed for the existing conditions Synchro model.

Under future horizon models, the following road improvements have been incorporated based on direction from the Region:

- Regional Road 25 widening to six lanes: only in Synchro models for the 2032 and 2037 horizon years
- Britannia Road widening to six lanes east of Regional Road 25: in Synchro models for all future horizon years (2029, 2032 and 2037)
- The collector road network as illustrated in the Boyne Road Network Assessment (**Appendix H**) for road network) for all future horizon years, including Collector Road 'E' (Etheridge Avenue), Collector Road 'L' (Rose Way), and Collector Road 'K' (Farmstead Drive)

Lost Time Adjustment

For all signalized intersections, a lost time adjustment (LTA) of -1.0 seconds was applied to all movements in accordance with the recommendations published in the City of Toronto's *Guidelines for Using Synchro 11* (dated January 15, 2021). This lost time adjustment provides allowances in the capacity analysis to better account for drivers completing their movements during amber or all-red time (a common phenomenon especially at busy intersections).

Traffic Signal Timings

Traffic signal timings have been obtained from Halton Region. The existing timing parameters were adopted for existing conditions analysis. Traffic signal timings are provided in **Appendix I**.

Under future background and future total conditions, traffic signal timings have been optimized as required to best accommodate the forecasted future travel demands and patterns and to respond to evolving traffic conditions. Where signal optimization is recommended, it has been noted in the subsequent sections discussing intersection operations. It is noteworthy that existing cycle lengths and pedestrian minimum (i.e. walk and flash-don't-walk) times were maintained in all cases.

Lane Utilization Factors

As previously noted, in the Synchro models pertaining to the 2029 horizon year and beyond, the Britannia Road widening to six lanes was assumed. Consequently, a lane utilization factor of 0.80 was applied to the eastbound and westbound through lanes for any intersection along Britannia Road to account for 20% usage of the future HOV lanes. In the Synchro models pertaining to the 2032 horizon year and beyond, the Regional Road 25 widening to six lanes was assumed. A lane utilization factor of 0.80 was applied to the northbound and southbound through lanes for any intersection along Regional Road 25 to account for 20% usage of the future HOV lanes.

Peak Hour Factors

Existing peak hour factors were obtained from the turning movement counts discussed in **Section 8.1**. For all future conditions, peak hour factors were set to 1.00 as per the Region of Peel's Synchro Guidelines.

Protected Left Turn Factors

The protected left turn factor (LTF) in the Synchro model influences the headways between vehicles making a left-turn movement on protected left-turn green phases. Values closer to 1.00 represent vehicles making left turns with smaller headways.

Under all future traffic conditions, the operations of several left-turn lanes are approaching capacity. It is expected that drivers would modify their behaviour in near-capacity conditions and operate with reduced headways. As such, a protected LTF of 1.00 (rather than a default of 0.95) has been adopted for the westbound left-turning movements at Regional Road 25 / Louis St. Laurent Avenue and Regional Road 25 / Britannia Road in the peak hours.

Traffic Count Data Inputs

All data provided by the turning movement counts obtained from Spectrum Traffic Inc. or from the Region were incorporated into the Synchro models, including pedestrian and bicycle volumes and heavy vehicle percentages. Where the intersection is not existing, such as at the proposed site access driveways, Synchro default parameters were assumed.

Synchro Defaults

Synchro defaults have been adopted for all other parameters.

9.3 ANALYSIS SCENARIOS

The following analysis scenarios have been analyzed for the weekday morning and afternoon peak hours:

1. Baseline existing traffic conditions (as illustrated in **Figure 10**);
2. 2029 Future background traffic conditions (as illustrated in **Figure 15**);
3. 2029 Future total traffic conditions (Phase 1 – south block) (as illustrated in **Figure 20)**;
4. 2032 Future background traffic conditions (as illustrated in **Figure 16**);
5. 2032 Future total traffic conditions (complete site build-out) (as illustrated in **Figure 21**);
6. 2037 Future background traffic conditions (as illustrated in **Figure 17**);
7. 2037 Future total traffic conditions (five years beyond complete site build-out) (as illustrated in **Figure 22**);

All Synchro worksheets for the scenarios are provided in **Appendix K**.

9.4 SIGNALIZED INTERSECTION ANALYSIS

9.4.1 Regional Road 25 / Louis St. Laurent Avenue

The Regional Road 25 / Louis St. Laurent Avenue intersection currently operates under traffic signal control in both the weekday morning and afternoon peak hours. Analysis results are summarized in **Table 25**.

Under existing traffic conditions, the intersection operates under capacity at overall v/c of 0.72 and 0.60 in the weekday morning and afternoon peak hours, respectively.

In the Synchro models pertaining to the 2032 horizon year and beyond, the Regional Road 25 widening to six lanes was assumed (including one HOV lane in either direction). Under all future conditions, traffic signal timings have been optimized within existing cycle lengths and pedestrian crossing allowances, as defined in the traffic signal timing plans provided by the Region.

South Block (Horizon Year of 2029)
With the buildout of the south block of the site in the horizon year of 2029, the intersection continues to operate under capacity at overall v/c of 0.82 and 0.70 in the weekday morning and afternoon peak hours, respectively.

Full Buildout (Horizon Year of 2032)
With the full buildout of the site in the horizon year of 2032, the intersection continues to operate under capacity at overall v/c of 0.89 and 0.81 in the weekday morning and afternoon peak hours, respectively.

5-Years Beyond Full Buildout (Horizon Year of 2037)
After five years beyond the site's full buildout, the intersection will continue to operate under capacity at overall v/c of 0.95 and 0.89 in the weekday morning and afternoon peak hours, respectively. Traffic operations should continue to be monitored as the surrounding area develops and as travel demand evolves into the future.

Based on the foregoing, no mitigation measures or improvements, with the exception of traffic signal timing optimization, are recommended at the intersection.

TABLE 25 REGIONAL ROAD 25 / LOUIS ST. LAURENT AVENUE TRAFFIC OPERATIONS

Movement	Existing		2029 Horizon Year				2032 Horizon Year				2037 Horizon Year			
			Future Background		Future Total		Future Background		Future Total		Future Background		Future Total	
	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS
EBL	0.77 (0.78)	D (D)	0.68 (0.73)	D (D)	0.68 (0.71)	D (D)	0.68 (0.72)	D (D)	0.68 (0.70)	D (D)	0.68 (0.72)	D (D)	0.68 (0.70)	D (D)
EBTR	0.84 (0.72)	E (E)	0.92 (0.80)	E (E)	0.92 (0.81)	E (E)	0.92 (0.80)	E (E)	0.93 (0.83)	E (E)	0.92 (0.80)	E (E)	0.93 (0.83)	E (E)
WBL	0.93 (0.83)	E (E)	0.93 (0.82)	E (D)	0.93 (0.85)	E (D)	0.94 (0.83)	E (D)	0.94 (0.88)	E (E)	0.94 (0.83)	E (D)	0.94 (0.88)	E (E)
WBTR	0.61 (0.91)	D (E)	0.58 (0.79)	D (E)	0.57 (0.77)	D (E)	0.57 (0.79)	D (E)	0.57 (0.75)	D (D)	0.57 (0.79)	D (E)	0.57 (0.75)	D (D)
NBL	0.31 (0.40)	C (B)	0.45 (0.54)	C (B)	0.48 (0.58)	C (C)	0.57 (0.69)	C (C)	0.64 (0.75)	D (C)	0.66 (0.76)	D (D)	0.72 (0.83)	D (E)
NBT	0.57 (0.42)	D (C)	0.66 (0.53)	D (C)	0.69 (0.54)	D (C)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)
NBR	0.19 (0.24)	C (C)	0.25 (0.29)	C (C)	0.27 (0.30)	C (C)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)
NBTR	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	0.77 (0.69)	D (C)	0.82 (0.72)	D (C)	0.90 (0.85)	D (D)	0.95 (0.88)	E (D)
SBL	0.25 (0.19)	C (B)	0.33 (0.30)	C (C)	0.35 (0.31)	C (C)	0.56 (0.54)	D (C)	0.58 (0.58)	D (C)	0.58 (0.60)	D (C)	0.58 (0.61)	D (C)
SBT	0.58 (0.41)	D (C)	0.67 (0.54)	D (C)	0.68 (0.57)	D (C)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)
SBR	0.06 (0.13)	C (C)	0.06 (0.12)	C (C)	0.06 (0.12)	C (C)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)
SBTR	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	0.69 (0.58)	D (C)	0.72 (0.64)	D (D)	0.93 (0.69)	E (D)	0.96 (0.75)	E (D)
Overall	**0.72 (0.60)**	**D (D)**	**0.80 (0.67)**	**D (D)**	**0.82 (0.70)**	**D (D)**	**0.86 (0.77)**	**D (D)**	**0.89 (0.81)**	**D (D)**	**0.92 (0.86)**	**D (D)**	**0.95 (0.89)**	**E (D)**

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

9.4.2 Regional Road 25 / Whitlock Avenue

The Regional Road 25 / Whitlock Avenue intersection currently operates under traffic signal control in both the weekday morning and afternoon peak hours. Analysis results are summarized in **Table 26**.

Under existing traffic conditions, the intersection operates under capacity at overall v/c of 0.58 and 0.49 in the weekday morning and afternoon peak hours, respectively.

In the Synchro models pertaining to the 2032 horizon year and beyond, the Regional Road 25 widening to six lanes was assumed (including one HOV lane in either direction).

South Block (Horizon Year of 2029)
With the buildout of the south block of the site in the horizon year of 2029, the intersection continues to operate under capacity at overall v/c of 0.66 and 0.59 in the weekday morning and afternoon peak hours, respectively.

Full Buildout (Horizon Year of 2032)
With the full buildout of the site in the horizon year of 2032, the intersection continues to operate under capacity at overall v/c of 0.63 and 0.55 in the weekday morning and afternoon peak hours, respectively.

5-Years Beyond Full Buildout (Horizon Year of 2037)
After five years beyond the site's full buildout, the intersection will continue to operate under capacity at overall v/c of 0.72 and 0.63 in the weekday morning and afternoon peak hours, respectively.

Based on the foregoing, no mitigation measures or improvements are recommended at the intersection.

TABLE 26 REGIONAL ROAD 25 / WHITLOCK AVENUE TRAFFIC OPERATIONS

Movement	Existing		2029 Horizon Year				2032 Horizon Year				2037 Horizon Year			
			Future Background		Future Total		Future Background		Future Total		Future Background		Future Total	
	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS
EBL	0.63 (0.53)	E (E)	0.69 (0.60)	E (E)	0.69 (0.60)	E (E)	0.69 (0.60)	E (E)	0.69 (0.60)	E (E)	0.69 (0.60)	E (E)	0.69 (0.60)	E (E)
EBTR	0.16 (0.13)	D (D)	0.36 (0.22)	D (D)	0.36 (0.22)	D (D)	0.36 (0.22)	D (D)	0.36 (0.22)	D (D)	0.36 (0.22)	D (D)	0.36 (0.22)	D (D)
WBL	0.36 (0.17)	D (D)	0.33 (0.15)	D (D)	0.33 (0.15)	D (D)	0.33 (0.15)	D (D)	0.33 (0.15)	D (D)	0.33 (0.15)	D (D)	0.33 (0.15)	D (D)
WBT	0.11 (0.05)	D (D)	0.13 (0.17)	D (D)	0.13 (0.17)	D (D)	0.13 (0.17)	D (D)	0.13 (0.17)	D (D)	0.13 (0.17)	D (D)	0.13 (0.17)	D (D)
WBR	0.07 (0.05)	D (D)	0.07 (0.05)	D (D)	0.07 (0.05)	D (D)	0.07 (0.05)	D (D)	0.07 (0.05)	D (D)	0.07 (0.05)	D (D)	0.07 (0.05)	D (D)
NBL	0.17 (0.14)	A (A)	0.21 (0.20)	A (A)	0.22 (0.21)	A (A)	0.28 (0.27)	B (A)	0.29 (0.30)	C (A)	0.32 (0.32)	C (A)	0.32 (0.35)	C (A)
NBT	0.37 (0.51)	A (A)	0.44 (0.61)	A (A)	0.46 (0.62)	A (A)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)
NBR	0.01 (0.03)	A (A)	0.01 (0.03)	A (A)	0.01 (0.03)	A (A)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)
NBTR	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	0.38 (0.54)	A (A)	0.41 (0.55)	A (A)	0.44 (0.64)	A (A)	0.47 (0.65)	A (A)
SBL	0.11 (0.18)	A (A)	0.12 (0.23)	A (A)	0.13 (0.23)	A (A)	0.15 (0.29)	A (A)	0.16 (0.30)	A (A)	0.18 (0.36)	A (A)	0.19 (0.38)	A (B)
SBT	0.60 (0.32)	B (A)	0.67 (0.42)	B (A)	0.68 (0.44)	B (A)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)
SBR	0.07 (0.07)	A (A)	0.08 (0.10)	A (A)	0.08 (0.10)	A (A)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)
SBTR	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	0.62 (0.40)	B (A)	0.64 (0.44)	B (A)	0.74 (0.46)	B (A)	0.75 (0.50)	B (A)

Movement	Existing		2029 Horizon Year				2032 Horizon Year				2037 Horizon Year			
			Future Background		Future Total		Future Background		Future Total		Future Background		Future Total	
	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS
Overall	**0.58 (0.49)**	**B (B)**	**0.65 (0.59)**	**B (B)**	**0.66 (0.59)**	**B (B)**	**0.62 (0.54)**	**B (B)**	**0.63 (0.55)**	**B (B)**	**0.71 (0.62)**	**B (B)**	**0.72 (0.63)**	**B (B)**

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

9.4.3 Regional Road 25 / Etheridge Avenue / Future Collector Road

The Regional Road 25 / Etheridge Avenue / Future Collector Road intersection currently operates under traffic signal control in both the weekday morning and afternoon peak hours. Analysis results are summarized in **Table 27**.

Under existing traffic conditions, the intersection operates under capacity at overall v/c of 0.58 and 0.49 in the weekday morning and afternoon peak hours, respectively.

In the Synchro models pertaining to the 2032 horizon year and beyond, the Regional Road 25 widening to six lanes was assumed (including one HOV lane in either direction). Under all future conditions, given the new east leg that will connect to the intersection, traffic signal timings have been optimized within existing cycle lengths and pedestrian crossing allowances, as defined in the timing plans provided by the Region.

South Block (Horizon Year of 2029)
With the buildout of the south block of the site in the horizon year of 2029, the intersection continues to operate under capacity at overall v/c of 0.72 and 0.63 in the weekday morning and afternoon peak hours, respectively.

Full Buildout (Horizon Year of 2032)
With the full buildout of the site in the horizon year of 2032, the intersection continues to operate under capacity at overall v/c of 0.69 and 0.59 in the weekday morning and afternoon peak hours, respectively.

5-Years Beyond Full Buildout (Horizon Year of 2037)
After five years beyond the site's full buildout, the intersection will continue to operate under capacity at overall v/c of 0.78 and 0.67 in the weekday morning and afternoon peak hours, respectively.

Based on the foregoing, no mitigation measures or improvements are recommended at the intersection.

TABLE 27 REGIONAL ROAD 25 / ETHERIDGE AVENUE / COLLECTOR ROAD TRAFFIC OPERATIONS

Movement	Existing		2029 Horizon Year				2032 Horizon Year				2037 Horizon Year			
			Future Background		Future Total		Future Background		Future Total		Future Background		Future Total	
	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS
EBL	0.53 (0.54)	E (E)	0.40 (0.38)	D (D)	0.57 (0.43)	D (D)	0.40 (0.38)	D (D)	0.69 (0.52)	E (D)	0.40 (0.38)	D (D)	0.69 (0.52)	E (D)
EBR	0.04 (0.02)	D (D)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)
EBTR	-- (--)	-- (--)	0.04 (0.02)	D (D)	0.05 (0.02)	D (D)	0.04 (0.02)	D (D)	0.06 (0.02)	D (D)	0.04 (0.02)	D (D)	0.06 (0.02)	D (D)
WBL	-- (--)	-- (--)	0.55 (0.38)	E (E)	0.55 (0.38)	E (E)	0.55 (0.38)	E (E)	0.56 (0.38)	E (E)	0.55 (0.38)	E (E)	0.56 (0.38)	E (E)
WBTR	-- (--)	-- (--)	0.03 (0.02)	D (E)	0.03 (0.02)	D (E)	0.03 (0.02)	D (E)	0.03 (0.02)	D (E)	0.03 (0.02)	D (E)	0.03 (0.02)	D (E)
NBL	0.13 (0.12)	A (A)	0.18 (0.14)	A (A)	0.28 (0.33)	D (A)	0.21 (0.17)	B (A)	0.46 (0.52)	D (B)	0.24 (0.21)	D (A)	0.46 (0.56)	E (C)
NBT	0.30 (0.48)	A (A)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)
NBTR	-- (--)	-- (--)	0.38 (0.66)	A (A)	0.38 (0.68)	A (A)	0.33 (0.57)	A (A)	0.33 (0.58)	A (A)	0.39 (0.67)	A (A)	0.39 (0.69)	A (A)
SBTR	0.61 (0.35)	A (A)	0.74 (0.42)	A (A)	0.77 (0.48)	B (A)	0.64 (0.36)	A (A)	0.68 (0.43)	A (A)	0.76 (0.42)	A (A)	0.80 (0.50)	A (A)
SBL	-- (--)	-- (--)	0.08 (0.23)	A (A)	0.08 (0.24)	A (B)	0.10 (0.28)	A (B)	0.10 (0.29)	A (B)	0.13 (0.35)	A (C)	0.13 (0.36)	A (C)
Overall	**0.58 (0.49)**	**A (A)**	**0.68 (0.60)**	**B (A)**	**0.72 (0.63)**	**B (A)**	**0.60 (0.53)**	**A (A)**	**0.69 (0.59)**	**B (B)**	**0.69 (0.61)**	**A (A)**	**0.78 (0.67)**	**B (B)**

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

9.4.4 Regional Road 25 / Britannia Road

The Regional Road 25 / Britannia Road intersection currently operates under traffic signal control in both the weekday morning and afternoon peak hours. Analysis results are summarized in **Table 28**.

Under existing traffic conditions, the intersection operates under capacity at overall v/c of 0.73 and 0.71 in the weekday morning and afternoon peak hours, respectively.

In the Synchro models pertaining to the 2029 horizon year and beyond, the Britannia Road widening to six lanes was assumed (including one HOV lane in either direction). In the Synchro models pertaining to the 2032 horizon year and beyond, the Regional Road 25 widening to six lanes was assumed (including one HOV lane in either direction). Under all future conditions, traffic signal timings have been optimized within existing cycle lengths and pedestrian crossing allowances, as defined in the traffic signal timing plans provided by the Region.

South Block (Horizon Year of 2029)

With the buildout of the south block of the site in the horizon year of 2029, the intersection continues to operate under capacity at overall v/c of 0.85 and 0.78 in the weekday morning and afternoon peak hours, respectively.

Full Buildout (Horizon Year of 2032)

With the full buildout of the site in the horizon year of 2032, the intersection continues to operate under capacity at overall v/c of 0.82 and 0.89 in the weekday morning and afternoon peak hours, respectively.

5-Years Beyond Full Buildout (Horizon Year of 2037)

Prior to the site development in the 2037 horizon, given the extensive background growth that was considered (discussed in **Section 8.3**), the overall intersection and its movements will operate at near or over-capacity conditions in both peak hours. The shared southbound through-right lane group, the westbound left turn and the shared northbound through-right lane group will be constrained based on the adopted growth allowances at the intersection. Traffic operations should continue to be monitored prior to the recommendation of any improvements as the surrounding area develops and as travel demand evolves into the future horizon of 2037. As traffic operations at the intersection approach capacity in the future, non-local drivers in the area will have access to alternative corridors to bypass areas of congestion. Furthermore, lane utilization factors of 0.80 have been assumed in all directions at the intersection, with the assumption that only 20% of travel demand will be HOV users. Visitors and residents in the area will be encouraged to carpool and to reduce congestion as well as vehicle emissions. Increased carpooling (versus the use of single-occupancy vehicles) will improve the lane utilization factors in all directions at the intersection as more drivers use the HOV lanes and will significantly improve the available capacity at the intersection.

Five years beyond the site's buildout, site-related impacts will be mostly minimal on the critical lane groups that are already operating near, at or over capacity.

Based on the foregoing, no mitigation measures or improvements aside from traffic signal timing optimization are recommended at the intersection.

TABLE 28 REGIONAL ROAD 25 / BRITANNIA ROAD TRAFFIC OPERATIONS

Movement	Existing		2029 Horizon Year				2032 Horizon Year				2037 Horizon Year			
			Future Background		Future Total		Future Background		Future Total		Future Background		Future Total	
	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS
EBL	0.31 (0.25)	E (E)	0.31 (0.24)	E (E)	0.31 (0.27)	E (E)	0.31 (0.24)	E (E)	0.31 (0.30)	E (E)	0.33 (0.27)	E (E)	0.33 (0.33)	E (E)
EBT	0.64 (0.39)	D (D)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)
EBR	0.41 (0.02)	D (D)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)
EBTR	-- (--)	-- (--)	0.71 (0.40)	D (D)	0.71 (0.39)	D (D)	0.71 (0.40)	D (D)	0.71 (0.38)	D (D)	0.87 (0.40)	D (D)	0.87 (0.38)	D (D)
WBL	0.96 (0.73)	F (E)	0.83 (0.93)	E (F)	0.83 (0.93)	E (F)	0.86 (0.98)	E (F)	0.86 (0.98)	E (F)	0.92 (1.07)	E (F)	0.92 (1.07)	E (F)
WBTR	0.52 (0.75)	D (D)	0.33 (0.71)	C (D)	0.34 (0.72)	C (D)	0.34 (0.73)	C (D)	0.35 (0.89)	C (D)	0.35 (0.76)	C (D)	0.36 (0.92)	C (D)
NBL	0.26 (0.58)	E (E)	0.26 (0.59)	E (E)	0.26 (0.59)	E (E)	0.26 (0.60)	E (E)	0.26 (0.61)	E (E)	0.29 (0.64)	E (E)	0.29 (0.65)	E (E)
NBT	0.45 (0.67)	C (C)	0.65 (0.74)	D (C)	0.70 (0.78)	D (C)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)
NBR	0.12 (0.24)	B (B)	0.14 (0.33)	C (C)	0.14 (0.34)	C (C)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)
NBTR	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	0.75 (0.88)	D (D)	0.77 (0.95)	D (D)	0.90 (1.07)	D (E)	0.91 (1.15)	D (F)
SBL	0.60 (0.38)	D (E)	0.49 (0.42)	D (E)	0.51 (0.47)	D (E)	0.50 (0.43)	D (E)	0.64 (0.52)	D (E)	0.61 (0.45)	D (E)	0.78 (0.57)	E (E)
SBT	0.72 (0.42)	C (B)	0.93 (0.48)	D (B)	0.94 (0.50)	E (B)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)
SBR	0.01 (0.03)	B (B)	0.01 (0.03)	B (B)	0.02 (0.03)	B (B)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)

SBTR	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)	0.84 (0.46)	D (B)	0.87 (0.48)	D (B)	1.05 (0.57)	E (B)	1.08 (0.60)	F (B)
Overall	**0.73 (0.71)**	**D (D)**	**0.84 (0.76)**	**D (D)**	**0.85 (0.78)**	**D (D)**	**0.79 (0.85)**	**D (D)**	**0.82 (0.89)**	**D (D)**	**0.92 (0.97)**	**E (E)**	**0.94 (1.01)**	**E (E)**

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

9.4.5 Britannia Road / Farmstead Drive

The Britannia Road / Farmstead Drive intersection currently operates under traffic signal control in both the weekday morning and afternoon peak hours. Analysis results are summarized in **Table 29**.

Under existing traffic conditions, the intersection operates under capacity at overall v/c of 0.19 and 0.20 in the weekday morning and afternoon peak hours, respectively.

In the Synchro models pertaining to the 2029 horizon year and beyond, the Britannia Road widening to six lanes was assumed (including one HOV lane in either direction).

South Block (Horizon Year of 2029)
With the buildout of the south block of the site in the horizon year of 2029, the intersection continues to operate under capacity at overall v/c of 0.22 and 0.23 in the weekday morning and afternoon peak hours, respectively.

Full Buildout (Horizon Year of 2032)
With the full buildout of the site in the horizon year of 2032, the intersection continues to operate under capacity at overall v/c of 0.23 and 0.24 in the weekday morning and afternoon peak hours, respectively.

5-Years Beyond Full Buildout (Horizon Year of 2037)
After five years beyond the site's full buildout, the intersection will continue to operate under capacity at overall v/c of 0.25 and 0.26 in the weekday morning and afternoon peak hours, respectively.

Based on the foregoing, no mitigation measures or improvements are recommended at the intersection.

TABLE 29 BRITANNIA ROAD / FARMSTEAD DRIVE TRAFFIC OPERATIONS

Movement	Existing		2029 Horizon Year				2032 Horizon Year				2037 Horizon Year			
			Future Background		Future Total		Future Background		Future Total		Future Background		Future Total	
	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS
EBL	0.03 (0.03)	A (A)	0.03 (0.03)	A (A)	0.03 (0.04)	A (A)	0.03 (0.03)	A (A)	0.03 (0.05)	A (A)	0.03 (0.03)	A (A)	0.03 (0.06)	A (A)
EBT	0.14 (0.07)	A (A)	0.18 (0.09)	A (A)	0.18 (0.09)	A (A)	0.19 (0.09)	A (A)	0.19 (0.10)	A (A)	0.21 (0.10)	A (A)	0.21 (0.11)	A (A)
WBTR	0.09 (0.18)	A (A)	0.12 (0.22)	A (A)	0.13 (0.22)	A (A)	0.13 (0.24)	A (A)	0.13 (0.24)	A (A)	0.14 (0.26)	A (A)	0.15 (0.26)	A (A)
SBL	0.53 (0.37)	D (D)	0.51 (0.35)	D (D)	0.51 (0.35)	D (D)	0.51 (0.35)	D (D)	0.51 (0.35)	D (D)	0.51 (0.35)	D (D)	0.51 (0.35)	D (D)
SBR	0.01 (0.01)	D (D)	0.01 (0.01)	D (D)	0.02 (0.01)	D (D)	0.01 (0.01)	D (D)	0.02 (0.01)	D (D)	0.01 (0.01)	D (D)	0.02 (0.01)	D (D)
Overall	**0.19 (0.20)**	**A (A)**	**0.22 (0.23)**	**A (A)**	**0.22 (0.23)**	**A (A)**	**0.23 (0.24)**	**A (A)**	**0.23 (0.24)**	**A (A)**	**0.25 (0.26)**	**A (A)**	**0.25 (0.26)**	**A (A)**

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

9.4.6 Britannia Road / Rose Way

The Britannia Road / Rose Way intersection will operate under traffic signal control in both the weekday morning and afternoon peak hours. Analysis results are summarized in **Table 30**.

In the Synchro models pertaining to the 2029 horizon year and beyond, the Britannia Road widening to six lanes was assumed (including one HOV lane in either direction).

South Block (Horizon Year of 2029)
With the buildout of the south block of the site in the horizon year of 2029, the intersection operates under capacity at overall v/c of 0.26 and 0.30 in the weekday morning and afternoon peak hours, respectively.

Full Buildout (Horizon Year of 2032)
With the full buildout of the site in the horizon year of 2032, the intersection continues to operate under capacity at overall v/c of 0.28 and 0.33 in the weekday morning and afternoon peak hours, respectively.

5-Years Beyond Full Buildout (Horizon Year of 2037)
After five years beyond the site's full buildout, the intersection will continue to operate under capacity at overall v/c of 0.30 and 0.35 in the weekday morning and afternoon peak hours, respectively.

Based on the foregoing, no mitigation measures or improvements are recommended at the intersection.

TABLE 30 BRITANNIA ROAD / ROSE WAY TRAFFIC OPERATIONS

Movement	Existing		2029 Horizon Year				2032 Horizon Year				2037 Horizon Year			
			Future Background		Future Total		Future Background		Future Total		Future Background		Future Total	
	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS
EBL	--	--	0.05 (0.20)	A (A)	0.05 (0.21)	A (A)	0.05 (0.21)	A (A)	0.05 (0.22)	A (A)	0.06 (0.23)	A (A)	0.06 (0.25)	A (A)
EBT	--	--	0.23 (0.20)	A (A)	0.24 (0.21)	A (A)	0.24 (0.22)	A (A)	0.27 (0.23)	A (A)	0.27 (0.24)	A (A)	0.29 (0.25)	A (A)
WBTR	--	--	0.22 (0.30)	A (A)	0.23 (0.31)	A (A)	0.24 (0.32)	A (A)	0.25 (0.34)	A (A)	0.26 (0.35)	A (A)	0.27 (0.37)	A (A)
SBL	--	--	0.34 (0.24)	E (E)	0.34 (0.24)	E (E)	0.34 (0.24)	E (E)	0.34 (0.24)	E (E)	0.34 (0.24)	E (E)	0.34 (0.24)	E (E)
SBR	--	--	0.05 (0.03)	D (E)	0.05 (0.03)	D (E)	0.05 (0.03)	D (E)	0.05 (0.03)	D (E)	0.05 (0.03)	D (E)	0.05 (0.03)	D (E)
Overall	--	--	**0.24 (0.29)**	**A (A)**	**0.26 (0.30)**	**A (A)**	**0.26 (0.31)**	**A (A)**	**0.28 (0.33)**	**A (A)**	**0.28 (0.34)**	**A (A)**	**0.30 (0.35)**	**A (A)**

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

9.5 UNSIGNALIZED INTERSECTION ANALYSIS

The traffic operations at unsignalized intersections in the study area (the proposed site access points), are summarized in **Table 31**.

Under all future conditions, the proposed site access points will operate at acceptable levels-of-service at LOS C or better.

TABLE 31 UNSIGNALIZED INTERSECTION TRAFFIC OPERATIONS

Movement	Existing		2029 Horizon Year				2032 Horizon Year				2037 Horizon Year			
			Future Background		Future Total		Future Background		Future Total		Future Background		Future Total	
	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
Regional Road 25 / North Block Site Access (Right-In / Right-Out)														
EBR	--	--	--	--	--	--	--	--	B (B)	14.7 (11.5)	--	--	C (B)	16.8 (12.1)
Regional Road 25 / South Block Site Access (Right-In / Right-Out)														
EBR	--	--	--	--	B (B)	10.7 (10.8)	--	--	A (A)	9.9 (8.9)	--	--	B (A)	10.9 (9.1)
Etheridge Avenue / Site Access Points (Full Movements)														
EBLTR	--	--	--	--	--	--	--	--	A (A)	0.2 (0.7)	--	--	A (A)	0.2 (0.7)
WBLTR	--	--	--	--	A (A)	1.8 (2.8)	--	--	A (A)	1.5 (2.4)	--	--	A (A)	1.5 (2.4)
NBLTR	--	--	--	--	A (A)	9.9 (9.9)	--	--	B (B)	10.1 (10.4)	--	--	B (B)	10.1 (10.4)
SBLTR	--	--	--	--	--	--	--	--	B (B)	11.7 (12.7)	--	--	B (B)	11.7 (12.7)

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

9.6 JUSTIFICATION FOR ACCESS ALONG REGIONAL ROAD 25

A supplementary analysis was undertaken at the intersections along Etheridge Avenue (including the site access and the intersections with Regional Road 25), to evaluate a scenario without right-in / right-out accesses on Regional Road 25. It is noted that the site plan currently includes one right-in/ right-out access on each of the south and north blocks of the site.

9.6.1 Traffic Analysis and Queuing

The analysis results are summarized in **Table 32** and **Table 33** for the Regional Road 25 / Etheridge Avenue and Etheridge Avenue / Site Accesses intersections, respectively. Both conditions (with and without access to Regional Road 25) provide adequate access onto the wider area road network. It is however critical for the comparison to focus on the eastbound left-turn and eastbound through/ right movements, on the west approach of the intersection of Regional Road 25 and Etheridge Avenue.

The 95th percentile eastbound left-turn queue length on Regional Road 25 / Etheridge Avenue, is 62 metres (with access on Regional Road) and 70 metres (without access on Regional Road 25), during the morning peak hours, leaving just one vehicle-length (assumed as approximately 7.5 metres including headways) of vehicle storage to the site access driveways along Etheridge Avenue. The v/c of this eastbound left-turn movement increases from 0.69 (with access on Regional Road) 25 to 0.77 (without access on Regional Road 25), in the morning peak period.

Without access along Regional Road 25, the 95th percentile eastbound through-right queue at the intersection of Etheridge and Regional Road 25, increases from 11 metres to 39 metres, an increase of 3 to 4 vehicle-lengths, when compared to the scenario that includes access along Regional Road 25. The v/c of this eastbound through-right movement increases from 0.06 (with access on Regional Road) 25 to 0.31 (without access on Regional Road 25), in the morning peak period.

The lack of alternative access for the site along Regional Road 25, increases the risk that during peak periods of the day, eastbound queues on Etheridge could extend from Regional Road 25, and block the site driveways. As queues and delays along Etheridge increase, there is a much greater risk that residents and visitors will shortcut through the residential neighbourhood located west of the site.

TABLE 32 NO RIRO SCENARIO – REGIONAL ROAD 25 / ETHERIDGE AVENUE

Movement	2037 Horizon Year							
	Base Case – With Access onto RR25[3]				Supplementary Case – No Access onto RR25			
	V/C	LOS	50th% Queue (m)	95th% Queue (m)	V/C	LOS	50th% Queue (m)	95th% Queue (m)
Regional Road 25 / Etheridge Avenue								
EBL	0.69 (0.52)	E (D)	41.8 (28.3)	62.4 (46.4)	0.77 (0.58)	E (D)	48.3 (32.1)	69.9 (51.1)
EBTR	0.06 (0.02)	D (D)	0.0 (0.0)	11.0 (0.0)	0.31 (0.06)	D (D)	17.0 (0.0)	38.5 (3.3)
WBL	0.56 (0.38)	E (E)	16.9 (10.4)	31.7 (22.4)	0.58 (0.40)	E (E)	16.9 (10.4)	31.6 (22.4)
WBTR	0.03 (0.02)	D (E)	0.0 (0.0)	0.2 (0.0)	0.03 (0.02)	D (E)	0.0 (0.0)	1.4 (0.0)
NBL	0.46 (0.56)	E (C)	7.9 (20.6)	11.8 (23.0)	0.48 (0.56)	E (C)	8.9 (20.6)	13.2 (24.0)
NBTR	0.39 (0.69)	A (A)	11.1 (70.0)	15.6 (66.3)	0.39 (0.69)	A (A)	11.1 (69.7)	15.7 (67.0)
SBTR	0.80 (0.50)	A (A)	200.3 (81.9)	176.9 (113.1)	0.80 (0.51)	A (A)	194.9 (82.3)	193.1 (114.5)
SBL	0.13 (0.36)	A (C)	0.8 (2.9)	1.1 (15.1)	0.13 (0.36)	A (C)	0.8 (3.0)	1.2 (14.8)
Overall	**0.78 (0.67)**	**B (B)**	--	--	**0.79 (0.68)**	**B (B)**	--	--

Notes:
1. XX (XX) – Weekday Morning Peak Hour (Weekday Afternoon Peak Hour).
2. All queue lengths are in metres.
3. Base case includes one right-in/ right-out movement along Regional Road 25 on each of the north and south blocks.

TABLE 33 NO RIRO SCENARIO – SITE ACCESS ONTO ETHERIDGE AVENUE

Movement	2037 Horizon Year					
	Base Case – With Access onto RR25			Supplementary Case – No Access onto RR25		
	V/C	LOS	95th% Queue	V/C	LOS	95th% Queue
Etheridge Avenue / Site Accesses						
EBLTR	A (A)	0.2 (0.7)	0.1 (0.2)	A (A)	0.2 (0.7)	0.1 (0.2)
WBLTR	A (A)	1.5 (2.4)	0.4 (1.4)	A (A)	2.3 (3.1)	0.8 (2.4)
NBLTR	B (B)	10.1 (10.4)	2.7 (1.8)	B (A)	10.4 (10.0)	5.2 (3.0)
SBLTR	B (B)	11.7 (12.7)	2.7 (1.8)	C (C)	15.8 (18.2)	7.8 (5.6)

Notes:
1. XX (XX) – Weekday Morning Peak Hour (Weekday Afternoon Peak Hour).
2. All queue lengths are in metres.

9.6.2 Alternative Access for Urgent Road Closures and Emergencies

In the event of an unforeseen road closure on Etheridge at the site driveways (due to a collision or urgent road or utility work), the provision of alternate points of access along Regional Road 25, would maintain critical access to the north and south blocks. Without alternate access on Regional Road 25, residents and visitors would be totally unable to exit or enter the site in the event of a closure on Etheridge.

In the event of a closure at the intersection of Regional Road 25 and Etheridge, without alternate access along Regional Road 25, all site traffic would be forced to travel through the residential neighbourhood west of the site, to travel to and from the site.

9.6.3 Summary of Justification for Access along Regional Road 25

Based on the foregoing, the provision of the proposed right-in / right-out accesses along Regional Road 25 are recommended for the following reasons:

- Reduced overall delays at the intersection of Regional Road 25 and Etheridge Avenue;
- Reduced eastbound queuing along Etheridge at Regional Road 25 and reduced risk that peak queues extend beyond site driveways;
- Reduced risk of neighbourhood shortcutting in the adjacent residential area;
- Provides an alternate access in the event of urgent road closures and emergencies; and
- Improved and efficient flow of traffic across the blocks.

9.7 SENSITIVITY ANALYSIS: ADDITIONAL UNITS NORTH PARCEL

As per the Town's comment, a sensitivity analysis was undertaken for the furthest horizon year of 2037 in the scenario for the additional property on the north block (Block 8 "hold-out" property) that is not currently owned by the developer. The potential for a total of 144 residential units were assumed to be built on Block 8 for the sensitivity analysis, with a full site build-out of 1,571 residential units.

The sensitivity trip generation is summarized in **Table 34**. The overall capacity analysis tables are provided in **Table 35** and **Table 36**, while detailed capacity analysis tables (showing each movement) are provided in **Appendix L.**

In summary, if an additional 144 residential units are constructed on the north block on Block 8, as a result of the acquisition of the "hold-out" property, the conclusions of the sensitivity analysis remain the same as presented in **Sections 9.4** and **9.5**. The additional impacts of trips related to the 144 residential units on all study area intersections are minimal and contribute less than a second of additional delays at the site access points.

TABLE 34 SENSITIVITY ANALYSIS – TRIP GENERATION SUMMARY

	AM Peak Hour			PM Peak Hour		
	In	Out	2-Way	In	Out	2-Way
Residential Site Trips (Full Build) (1,571 units)	**95**	**280**	**375**	**280**	**170**	**450**
Phase 1 – South Block Only (792 units)	50	145	195	145	90	235
Phase 2 – North Block Only (635 + 144 = 779 units)	45	135	180	135	80	215

Notes:
1. All site trips are rounded to the nearest 5.

TABLE 35 SENSITIVITY ANALYSIS – SIGNALIZED INTERSECTION TRAFFIC OPERATIONS

Intersection	2037 Horizon Year			
	Future Total - Base		Future Total - Sensitivity	
	V/C	LOS	V/C	LOS
Regional Road 25 / Louis St. Laurent Avenue	0.95 (0.89)	E (D)	0.95 (0.89)	E (D)
Regional Road 25 / Whitlock Avenue	0.72 (0.63)	B (B)	0.72 (0.63)	B (B)
Regional Road 25 / Etheridge Avenue	0.78 (0.67)	B (B)	0.79 (0.67)	B (B)
Regional Road / Britannia Road	0.94 (1.01)	E (E)	0.95 (1.01)	E (E)
Britannia Road / Farmstead Drive	0.25 (0.26)	A (A)	0.25 (0.26)	A (A)
Britannia Road / Rose Way	0.30 (0.35)	A (A)	0.30 (0.35)	A (A)

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

TABLE 36 SENSITIVITY ANALYSIS – UNSIGNALIZED INTERSECTION TRAFFIC OPERATIONS

Intersection	2037 Horizon Year			
	Future Total - Base		Future Total - Sensitivity	
	LOS	Delay (s)	LOS	Delay (s)
Regional Road 25 / North Block Site Access	C (B)	16.8 (12.1)	C (B)	17.3 (12.3)
Regional Road 25 / South Block Site Access	B (A)	10.9 (9.1)	B (A)	10.9 (9.1)
Etheridge Avenue / Site Access Points	B (B)	11.7 (12.7)	B (B)	11.8 (13.3)

Notes:
1. XX (XX) – Weekday Morning Peak Hour (Weekday Afternoon Peak Hour).
2. The movements with the greatest delays are summarized in the table above.

9.8 POTENTIAL ROAD IMPROVEMENTS AT REGIONAL ROAD 25 / BRITANNIA ROAD

As per the Town's comment, the modelled future lane configurations along Regional Road 25 are not finalized as the MCEA for the Regional Road 25 improvements is still in the early phases. Therefore, the future six-lane cross-section for Regional Road 25 could include six standard travel lanes, similar to the completed Britannia Road widening west of Regional Road 25, instead of four standard travel lanes and two high-occupancy vehicle (HOV) lanes.

Given the above and that the intersection of Regional Road 25 / Britannia Road is currently expected to operate at capacity during the 2037 horizon year, two road improvement options were tested at the intersection as per the Town's recommendations to mitigate capacity concerns:

- **Option A:** The implementation of six standard travel lanes along Regional Road 25 (as opposed to the base model's assumption of one HOV lane on either side of the road); and
- **Option B:** The construction of an auxiliary northbound right-turn lane.

The results of the analysis for the above two options are provided in **Table 37** for the Regional Road 25 / Britannia Road intersection. Of the two options, Option A would present the best possible solution to mitigate the capacity issues at the intersection, although the northbound movement would still operate at v/c 1.02, during the weekday afternoon peak hour. Option B would be effective at mitigating congestion in the northbound direction by separating right-turning vehicles from the through traffic but is not as effective in improving operations for southbound traffic in the weekday morning peak hours.

As previously discussed, traffic operations should continue to be monitored prior to the recommendation of any improvements as the surrounding area develops and as travel demand evolves into the future horizon of 2037. As traffic operations at the intersection approach capacity in the future, non-local drivers in the area will have access to alternative corridors to bypass areas of congestion.

The future cross-section for Regional Road 25 is to be confirmed via MCEA and Detailed Design process. Future traffic operations results can be verified through future Site Plan Applications.

TABLE 37 REGIONAL ROAD 25 / BRITANNIA ROAD WITH ROAD IMPROVEMENTS

Movement	2037 Horizon Year					
	Future Total - Base		Future Total – Option A (6 lanes on RR25 - no HOV lanes)		Future Total – Option B (separate northbound right-turn lane)	
	V/C	LOS	V/C	LOS	V/C	LOS
EBL	0.33 (0.33)	E (E)	0.33 (0.31)	E (E)	0.33 (0.33)	E (E)
EBTR	0.87 (0.38)	D (D)	0.86 (0.38)	D (D)	0.87 (0.39)	D (D)
WBL	0.92 (1.07)	E (F)	0.89 (0.98)	E (F)	1.03 (0.98)	F (F)
WBTR	0.36 (0.92)	C (D)	0.35 (0.91)	C (D)	0.38 (0.91)	D (D)
NBL	0.29 (0.65)	E (E)	0.29 (0.65)	E (E)	0.29 (0.65)	E (E)
NBTR	0.91 (1.15)	D (F)	0.82 (1.02)	D (E)	-- (--)	-- (--)
NBT	-- (--)	-- (--)	-- (--)	-- (--)	0.70 (0.88)	D (D)
NBR	-- (--)	-- (--)	-- (--)	-- (--)	0.20 (0.58)	C (C)
SBL	0.78 (0.57)	E (E)	0.77 (0.57)	E (E)	0.79 (0.56)	E (E)
SBTR	1.08 (0.60)	F (B)	0.96 (0.53)	E (B)	1.04 (0.60)	E (C)
Overall	**0.94 (1.01)**	**E (E)**	**0.88 (0.93)**	**D (D)**	**0.95 (0.85)**	**E (D)**

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

9.9 TRAFFIC ANALYSIS SUMMARY

A summary of the comprehensive traffic analysis at key study area signalized intersections is provided below.

Regional Road 25 / Louis St. Laurent Avenue
After five years beyond the site's full buildout, the intersection will continue to operate under capacity at overall v/c of 0.95 and 0.89 in the weekday morning and afternoon peak hours, respectively. Traffic operations should continue to be monitored as the surrounding area develops and as travel demand evolves into the future. Based on the foregoing, **no mitigation measures or improvements, with the exception of traffic signal timing optimization, are recommended** at the intersection.

Regional Road 25 / Whitlock Avenue
After five years beyond the site's full buildout, the intersection will continue to operate under capacity at overall v/c of 0.72 and 0.63 in the weekday morning and afternoon peak hours, respectively. Based on the foregoing, **no mitigation measures or improvements are recommended** at the intersection.

Regional Road 25 / Etheridge Avenue / Future Collector Road
After five years beyond the site's full buildout, the intersection will continue to operate under capacity at overall v/c of 0.78 and 0.67 in the weekday morning and afternoon peak hours, respectively. Based on the foregoing, **no mitigation measures or improvements are recommended** at the intersection.

Regional Road 25 / Britannia Road
In the Synchro models pertaining to the 2029 horizon year and beyond, the Britannia Road widening to six lanes was assumed. In the Synchro models pertaining to the 2032 horizon year and beyond, the Regional Road 25 widening to six lanes was assumed. Under all future conditions, traffic signal timings have been optimized within existing cycle lengths and pedestrian crossing allowances, as defined in the traffic signal timing plans provided by the Region.

Prior to the site development in the 2037 horizon, given the extensive background growth that was considered, the overall intersection and its movements will operate at near or over-capacity conditions in both peak hours. The shared southbound through-right lane group, the westbound left turn and the shared northbound through-right lane group will be constrained, based on the adopted growth allowances at the intersection. Traffic operations should continue to be monitored prior to the recommendation of any improvements as the surrounding area develops and as travel demand evolves into the future horizon of 2037. Five years beyond the site's buildout, site-related impacts will be mostly minimal on the critical lane groups that are already operating near, at or over capacity. Based on the foregoing, **no mitigation measures or improvements, with the exception of traffic signal timing optimization, are recommended** at the intersection.

Britannia Road / Farmstead Drive
In the Synchro models pertaining to the 2029 horizon year and beyond, the Britannia Road widening to six lanes was assumed. After five years beyond the site's full buildout, the intersection will continue to operate under capacity at overall v/c of 0.25 and 0.26 in the weekday morning and afternoon peak hours, respectively. Based on the foregoing, **no mitigation measures or improvements are recommended** at the intersection.

Britannia Road / Rose Way

In the Synchro models pertaining to the 2029 horizon year and beyond, the Britannia Road widening to six lanes was assumed. After five years beyond the site's full buildout, the intersection will continue to operate under capacity at overall v/c of 0.30 and 0.35 in the weekday morning and afternoon peak hours, respectively. Based on the foregoing, **no mitigation measures or improvements are recommended** at the intersection.

Sensitivity Analysis for Block 8 ("Holdout Property")

Where an additional 144 units are constructed as a result of the acquisition of Block 8 ("the holdout property"), the previous conclusions of the sensitivity analysis remain valid. The additional impacts of trips related to the 144 units on all study area intersections are minimal and contribute less than a second of additional delays at the site access points.

Potential Road Improvements at Regional Road 25 / Britannia Road

Option A (standard six lanes without HOV lanes) would present the best possible solution to mitigating the capacity issues at the intersection although the northbound movement would still operate at v/c 1.02 during the weekday afternoon peak hour. Option B (constructing an auxiliary northbound right turn lane) would be effective in mitigating congestion in the northbound direction by separating right turns from through traffic but is not as effective in improving operations for southbound traffic in the weekday morning peak hours. As previously discussed, traffic operations should continue to be monitored prior to the recommendation of any improvements as the surrounding area develops and as travel demand evolves into the future horizon of 2037. As traffic operations at the intersection approach capacity in the future, non-local drivers in the area will have access to alternative corridors to bypass areas of congestion.

Based on the comprehensive traffic analysis, the proposed development can be accommodated on the future transportation network.

9.10 TRAFFIC SIGNAL WARRANT ASSESSMENT

A traffic signal warrant assessment was undertaken at the intersection of the proposed site access driveways (new aligned 4-legged intersection) on Etheridge Avenue, based on the Justification 7 methodology outlined in the Ontario Traffic Manual (OTM) Book 12. It is noted that the intersection is approximately 80 metres west of Regional Road 25 / Etheridge Avenue. In order to be conservative, the traffic signal warrant analysis is based on a scenario **without any access along Regional Road 25**.

The results of the traffic signal warrant assessment are summarized in **Table 38**. The detailed calculation sheet is provided in **Appendix J.** As the traffic signal warrant based on Justification 7, is only met at **44%** of the required 150%, a traffic signal at the Etheridge Avenue / Site Accesses is not warranted.

Although the potential development of the additional 144 residential units on Block 8 was not included as part of the traffic signal assessment, as the warrant score is only 44%, the impact of the score related to the traffic volumes generated by the additional 144 residential units, would be minimal and would not result in the requirement of a traffic signal at this location.

TABLE 38 TRAFFIC SIGNAL WARRANT – JUSTIFICATION 7 (2037 VOLUMES)

Justification	Description (Average Hourly Values[3])	Minimum Requirement (1 lane each direction/ restricted flow)	Compliance		
			Sectional		Entire % (≥150)[2]
			Actual Traffic Volumes	% of Required	
Etheridge Avenue / Site Accesses					
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches	720	320	44%	**44%**
	B. Vehicle volume, along minor streets	170	103	60%	
2. Delay to Cross Traffic	A. Vehicle volume, major street	720	218	30%	**30%**
	B. Combined volume crossing artery from minor streets	75	55	73%	

Notes:
1. The minimum requirement values are based on a four-legged intersection onto a single-lane corridor with restricted flow.
2. For future intersections, the OTM manual states that the warrant should be met at 150% (as opposed to 120% for an existing intersection with future volume estimates).
3. Average hourly volumes were derived based on the formula presented in the OTM Book 12.
   AHV = (weekday morning peak hour volumes + weekday afternoon peak hour volumes) ÷ 4

10.0 QUEUING ANALYSIS

For signalized intersections, the Synchro analysis provides results for two operational measures related to queuing and defines those measures as follows:

1) Mean (or 50th) percentile queue is defined as the maximum queue length during a typical cycle and has a 50% probability of being observed across the total number of cycles in the hour.
2) 95th percentile queue is defined as having a 5% probability of being observed over the total number of cycles in the hour.

For the site access points, the Synchro analysis only provides results for 95th percentile queues.

The following sections summarize the queue results for key storage lanes at the study area intersections.

10.1 SIGNALIZED INTERSECTION QUEUING ANALYSIS

10.1.1 Regional Road 25 / Louis St. Laurent Avenue

The storage lengths and queuing results for the movements at the Regional Road 25 / Louis St. Laurent Avenue intersection are summarized in **Table 39**.

Most of the typical (or 50th percentile) queues at the intersection are contained within the provided storage lengths. Under existing conditions, the westbound left-turn queuing exceeds the provided storage lengths. All queues that exceed storage lengths are contained within adjacent lane groups (i.e. the through lanes).

Site-related impacts (i.e. the difference in queue lengths between future background and future total conditions in any horizon year) are minimal on most movements. The site will generate an additional 2 to 3 car-lengths on the westbound left-turn queue in the weekday afternoon peak hour, and only 1 additional car-length in the weekday morning peak hour. The site will also generate an additional 1 to 2 car-lengths on the northbound left turn queue in any peak hour.

TABLE 39 REGIONAL ROAD 25 / LOUIS ST. LAURENT AVENUE QUEUING SUMMARY

Movement (Available Storage Length)	Existing		2029 Horizon Year				2032 Horizon Year				2037 Horizon Year			
			Future Background		Future Total		Future Background		Future Total		Future Background		Future Total	
	50th%	95th%	50th%	95th%	50th%	95th%	50th%	95th%	50th%	95th%	50th%	95th%	50th%	95th%
EBL (90m)	46.4 (42.8)	63.5 (73.6)	43.2 (41.0)	62.6 (60.2)	43.2 (40.3)	62.6 (58.3)	43.2 (40.9)	62.6 (59.7)	43.2 (39.5)	62.6 (58.3)	43.2 (40.9)	62.6 (59.7)	43.2 (39.5)	62.6 (58.3)
WBL (35m)	89.2 (56.0)	142.2 (83.7)	112.7 (68.5)	172.4 (96.4)	114.6 (72.4)	176.2 (105.9)	116.5 (69.7)	179.3 (98.6)	120.2 (79.1)	185.9 (115.9)	116.5 (69.7)	179.3 (98.6)	120.2 (79.1)	185.9 (115.9)
NBL (65m)	15.2 (21.9)	27.8 (33.7)	18.2 (28.0)	30.9 (45.8)	19.1 (29.5)	32.1 (46.9)	18.2 (28.9)	30.9 (53.1)	20.0 (33.7)	33.7 (64.4)	18.2 (35.6)	38.0 (66.5)	20.0 (44.9)	46.0 (81.9)
NBR (65m)	4.6 (0.0)	26.5 (16.6)	10.4 (5.0)	34.5 (26.9)	12.4 (5.9)	38.0 (28.6)	--							
SBL (80m)	10.6 (9.1)	21.1 (16.5)	11.0 (12.1)	20.8 (22.7)	11.0 (12.4)	20.8 (22.7)	11.0 (12.2)	20.8 (28.3)	11.0 (12.8)	20.8 (31.6)	11.0 (12.2)	20.8 (38.5)	11.0 (12.8)	20.8 (37.1)
SBR (90m)	0.0 (0.0)	10.8 (14.8)	0.0 (0.0)	8.3 (16.8)	0.0 (0.0)	8.3 (16.8)	--							

Notes:
1. XX (XX) – Weekday Morning Peak Hour (Weekday Afternoon Peak Hour).
2. All values shown above are in metres (m).
3. Red shaded queues identifies where queue length exceeds available storage length.

10.1.2 Regional Road 25 / Whitlock Avenue

The storage lengths and queuing results for the movements at the Regional Road 25 / Whitlock Avenue intersection are summarized in **Table 40**.

Most of the typical (or 50th percentile) queues at the intersection are contained within the provided storage lengths. Under existing conditions, the eastbound left turn queuing exceeds the provided storage lengths. All queues that exceed storage lengths are contained within adjacent lane groups (i.e. the through lanes).

Site-related impacts (i.e. the difference in queue lengths between future background and future total conditions in any horizon year) are minimal on all movements.

TABLE 40 REGIONAL ROAD 25 / WHITLOCK AVENUE QUEUING SUMMARY

Movement (Available Storage Length)	Existing		2029 Horizon Year				2032 Horizon Year				2037 Horizon Year			
			Future Background		Future Total		Future Background		Future Total		Future Background		Future Total	
	50th%	95th%	50th%	95th%	50th%	95th%	50th%	95th%	50th%	95th%	50th%	95th%	50th%	95th%
EBL (35m)	29.5 (21.3)	47.6 (37.2)	37.5 (27.2)	57.3 (45.1)	37.5 (27.2)	57.3 (45.1)	37.5 (27.2)	57.3 (45.1)	37.5 (27.2)	57.3 (45.1)	37.5 (27.2)	57.3 (45.1)	37.5 (27.2)	57.3 (45.1)
WBL (65m)	13.4 (6.5)	26.0 (15.3)	12.1 (6.1)	23.8 (14.4)	12.1 (6.1)	23.8 (14.4)	12.1 (6.1)	23.8 (14.4)	12.1 (6.1)	23.8 (14.4)	12.1 (6.1)	23.8 (14.4)	12.1 (6.1)	23.8 (14.4)
WBR (65m)	0.0 (0.0)	16.1 (14.7)	0.0 (0.0)	14.7 (14.0)	0.0 (0.0)	14.7 (14.0)	0.0 (0.0)	14.7 (14.0)	0.0 (0.0)	14.7 (14.0)	0.0 (0.0)	14.7 (14.0)	0.0 (0.0)	14.7 (14.0)
NBL (100m)	0.0 (3.7)	1.8 (6.9)	0.8 (1.4)	3.7 (3.4)	0.9 (1.4)	3.2 (3.1)	1.6 (1.6)	6.9 (4.5)	1.5 (1.6)	6.0 (4.3)	2.9 (1.4)	9.6 (3.4)	2.3 (1.3)	8.1 (3.5)
NBR (25m)	0.0 (0.0)	0.7 (0.5)	0.0 (0.4)	0.1 (1.7)	0.0 (0.3)	0.0 (1.7)	--							
SBL (100m)	2.5 (2.3)	6.7 (6.2)	2.6 (2.6)	7.2 (6.9)	2.6 (2.6)	7.2 (6.9)	2.6 (2.6)	7.2 (6.9)	2.6 (2.6)	7.2 (6.9)	2.6 (2.6)	7.2 (10.1)	2.6 (2.6)	7.2 (11.8)
SBR (25m)	2.2 (2.4)	9.1 (8.9)	3.1 (4.8)	11.2 (13.8)	3.1 (5.2)	11.2 (14.4)	--							

Notes:
1. XX (XX) – Weekday Morning Peak Hour (Weekday Afternoon Peak Hour).
2. All values shown above are in metres (m)
3. Red shaded queues identifies where queue length exceeds available storage length.

10.1.3 Regional Road 25 / Etheridge Avenue / Future Collector Road

The storage lengths and queuing results for the movements at the Regional Road 25 / Etheridge Avenue intersection are summarized in **Table 41**.

Most of the typical (or 50th percentile) queues at the intersection are contained within the provided storage lengths. Under existing conditions, the eastbound left-turn queuing exceeds the provided storage lengths. Although the site traffic results in longer eastbound left-turn queues (impacts of 3 to 4 car-lengths), the future queues that exceed storage lengths could be contained within adjacent lane groups (i.e. the through lanes).

TABLE 41 REGIONAL ROAD 25 / ETHERIDGE AVENUE / COLLECTOR ROAD QUEUING SUMMARY

Movement (Available Storage Length)	Existing		2029 Horizon Year				2032 Horizon Year				2037 Horizon Year			
			Future Background		Future Total		Future Background		Future Total		Future Background		Future Total	
	50th%	95th%	50th%	95th%	50th%	95th%	50th%	95th%	50th%	95th%	50th%	95th%	50th%	95th%
EBL (40m)	27.3 (21.1)	45.3 (37.1)	22.9 (17.2)	37.9 (31.1)	34.1 (23.3)	52.3 (39.5)	22.9 (17.2)	37.9 (31.1)	41.8 (28.3)	62.4 (46.4)	22.9 (17.2)	37.9 (31.1)	41.8 (28.3)	62.4 (46.4)
WBL (40m)	--		16.9 (10.3)	31.7 (22.4)	16.9 (10.4)	31.7 (22.4)	16.9 (10.3)	31.7 (22.4)	16.9 (10.4)	31.7 (22.4)	16.9 (10.3)	31.7 (22.4)	16.9 (10.4)	31.7 (22.4)
NBL (70m)	0.9 (0.6)	2.1 (1.7)	0.3 (1.5)	1.0 (3.4)	2.0 (3.5)	6.0 (7.4)	0.4 (1.5)	1.4 (3.0)	7.5 (7.9)	14.6 (21.4)	0.4 (1.8)	1.5 (2.4)	7.9 (20.6)	11.8 (23.0)
SBL (70m)	--		0.8 (0.8)	1.0 (4.5)	0.8 (0.7)	1.0 (5.4)	0.9 (1.4)	1.0 (7.1)	0.9 (2.1)	1.4 (8.4)	0.7 (2.1)	0.7 (14.6)	0.8 (2.9)	1.1 (15.1)

Notes:
1. XX (XX) – Weekday Morning Peak Hour (Weekday Afternoon Peak Hour).
2. All values shown above are in metres (m).
3. Red shaded queues identifies where queue length exceeds available storage length.

10.1.4 Regional Road 25 / Britannia Road

The storage lengths and queuing results for the movements at the Regional Road 25 / Britannia Road intersection are summarized in **Table 42**.

Most of the typical (or 50th percentile) queues at the intersection are contained within the provided storage lengths. Although the site traffic results in longer southbound left-turn queues (impacts of 3 to 4 car-lengths), the future queues that exceed storage lengths could be contained within adjacent lane groups (i.e. the through lanes).

TABLE 42 REGIONAL ROAD 25 / BRITANNIA ROAD QUEUING SUMMARY

Movement (Available Storage Length)	Existing		2029 Horizon Year				2032 Horizon Year				2037 Horizon Year			
			Future Background		Future Total		Future Background		Future Total		Future Background		Future Total	
	50th%	95th%	50th%	95th%	50th%	95th%	50th%	95th%	50th%	95th%	50th%	95th%	50th%	95th%
EBL (60m)	8.0 (4.4)	15.3 (10.2)	8.0 (5.3)	15.3 (11.7)	8.0 (6.0)	15.3 (12.7)	8.0 (5.3)	15.3 (11.7)	8.0 (6.7)	15.3 (13.7)	8.7 (6.0)	16.3 (12.7)	8.7 (7.4)	16.3 (14.6)
WBL (120m)	44.3 (31.3)	74.5 (47.5)	55.9 (42.4)	80.0 (70.1)	56.0 (42.2)	79.8 (69.8)	59.0 (44.6)	86.2 (74.9)	59.0 (44.6)	86.3 (75.1)	64.6 (~51.0)	97.4 (83.4)	64.6 (~51.3)	97.3 (83.6)
NBL (90m)	6.5 (30.5)	13.2 (43.0)	6.7 (31.4)	13.4 (44.1)	6.7 (31.4)	13.4 (44.1)	6.7 (33.4)	13.4 (46.3)	6.7 (33.4)	13.4 (46.8)	7.4 (36.7)	14.3 (51.5)	7.4 (36.7)	14.3 (52.7)
NBR (90m)	0.0 (4.2)	14.6 (25.3)	0.0 (10.8)	17.3 (39.5)	0.0 (12.4)	17.3 (43.3)	--							
SBL (90m)	36.0 (15.2)	52.5 (25.7)	40.6 (17.0)	56.9 (28.0)	48.2 (21.3)	64.7 (33.6)	43.7 (17.8)	59.3 (29.2)	56.8 (25.6)	83.3 (39.3)	48.2 (19.3)	75.7 (31.3)	61.4 (27.8)	104.1 (41.2)
SBR (90m)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	--							

Notes:
1. XX (XX) – Weekday Morning Peak Hour (Weekday Afternoon Peak Hour).
2. All values shown above are in metres (m)
3. Red shaded queues identifies where queue length exceeds available storage length.

10.1.5 Britannia Road / Farmstead Drive

The storage lengths and queuing results for the movements at the Britannia Road / Farmstead Drive intersection are summarized in **Table 43**.

All queues will be contained under existing storage lengths. Site-related impact on any movement is up to 1 car-length.

TABLE 43 BRITANNIA ROAD / FARMSTEAD DRIVE QUEUING SUMMARY

Movement (Available Storage Length)	Existing		2029 Horizon Year				2032 Horizon Year				2037 Horizon Year			
			Future Background		Future Total		Future Background		Future Total		Future Background		Future Total	
	50th%	95th%	50th%	95th%	50th%	95th%	50th%	95th%	50th%	95th%	50th%	95th%	50th%	95th%
EBL (20m)	0.6 (0.5)	2.4 (1.7)	0.6 (0.4)	2.3 (1.6)	0.6 (0.6)	2.3 (1.9)	0.6 (0.4)	2.3 (1.6)	0.6 (0.7)	2.3 (2.2)	0.6 (0.4)	2.3 (1.6)	0.6 (0.7)	2.3 (2.2)
SBL	19.0 (12.0)	33.9 (24.5)	18.4 (11.1)	33.1 (23.1)	18.4 (11.1)	33.1 (23.1)	18.4 (11.1)	33.1 (23.1)	18.4 (11.1)	33.1 (23.1)	18.4 (11.1)	33.1 (23.1)	18.4 (11.1)	33.1 (23.1)
SBR	0.0 (0.0)	7.2 (6.6)	0.0 (0.0)	7.0 (6.3)	0.0 (0.0)	7.7 (7.2)	0.0 (0.0)	7.0 (6.3)	0.0 (0.0)	8.5 (7.2)	0.0 (0.0)	7.0 (6.3)	0.0 (0.0)	8.5 (7.2)

Notes:
1. XX (XX) – Weekday Morning Peak Hour (Weekday Afternoon Peak Hour).
2. All values shown above are in metres (m).
3. Red shaded queues identifies where queue length exceeds available storage length.

10.1.6 Britannia Road / Rose Way

The storage lengths and queuing results for the movements at the Britannia Road / Farmstead Drive intersection are summarized in **Table 44**.

All queues will be contained under existing storage lengths. Site-related impact on any movement is negligible.

TABLE 44 BRITANNIA ROAD / ROSE WAY QUEUING SUMMARY

Movement (Available Storage Length)	Existing		2029 Horizon Year				2032 Horizon Year				2037 Horizon Year			
			Future Background		Future Total		Future Background		Future Total		Future Background		Future Total	
	50th%	95th%	50th%	95th%	50th%	95th%	50th%	95th%	50th%	95th%	50th%	95th%	50th%	95th%
EBL (50m)	--		2.3 (1.3)	5.0 (2.5)	2.2 (1.2)	4.7 (3.4)	2.0 (2.9)	3.7 (4.5)	1.8 (2.6)	3.1 (4.3)	1.8 (2.7)	2.9 (4.4)	1.7 (2.7)	2.4 (4.1)
SBL (50m)			14.3 (7.7)	27.8 (18.0)	14.3 (7.7)	27.8 (18.0)	14.3 (7.7)	27.8 (18.0)	14.3 (7.7)	27.8 (18.0)	14.3 (7.7)	27.8 (18.0)	14.3 (7.7)	27.8 (18.0)
SBR			0.0 (0.0)	15.3 (13.0)	0.0 (0.0)	15.3 (13.0)	0.0 (0.0)	15.3 (13.0)	0.0 (0.0)	15.3 (13.0)	0.0 (0.0)	15.3 (13.0)	0.0 (0.0)	15.3 (13.0)

Notes:
1. XX (XX) – Weekday Morning Peak Hour (Weekday Afternoon Peak Hour).
2. All values shown above are in metres (m)
3. Red shaded queues identifies where queue length exceeds available storage length.

10.2 UNSIGNALIZED INTERSECTION ANALYSIS

The queue lengths at the proposed site access driveways are summarized in **Table 45**. Under all future conditions, the site access driveways will operate at queues of up to 1 car length.

TABLE 45 SITE ACCESS QUEUING SUMMARY

	Movement	2029 Future Total (metres)	2032 Future Total (metres)	2037 Future Total (metres)
Regional Road 25 / North Block Site Driveway (RIRO)	EBR	--	3.2 (1.3)	3.9 (1.4)
Regional Road 25 / South Block Site Driveway (RIRO)	EBR	2.5 (1.6)	2.1 (1.0)	2.5 (1.1)
Etheridge Avenue / Site Accesses (Full Moves)	EBLTR	--	0.1 (0.2)	0.1 (0.2)
	WBLTR	0.4 (1.4)	0.4 (1.4)	0.4 (1.4)
	NBLTR	2.6 (1.6)	2.7 (1.8)	2.7 (1.8)
	SBLTR	--	2.7 (1.8)	2.7 (1.8)

Notes:
1. XX (XX) – Weekday Morning Peak Hour (Weekday Afternoon Peak Hour).
2. All values shown above are in metres (m).

10.3 QUEUING SUMMARY

A summary of the queuing analysis is provided as follows:

Regional Road 25 / Louis St. Laurent Avenue
Site-related impacts (i.e. the difference in queue lengths between future background and future total conditions in any horizon year) are minimal on most movements. The site will generate an additional 2 to 3 car-lengths on the westbound left-turn queue in the weekday afternoon peak hour, and only 1 additional car-length in the weekday morning peak hour. The site will also generate an additional 1 to 2 car-lengths on the northbound left turn queue in any peak hour.

Regional Road 25 / Whitlock Avenue
Most of the typical (or 50th percentile) queues at the intersection are contained within the provided storage lengths. Site-related impacts (i.e. the difference in queue lengths between future background and future total conditions in any horizon year) are minimal on all movements.

Regional Road 25 / Etheridge Avenue / Future Collector Road
Although the site traffic results in longer eastbound left-turn queues, the future queues that exceed storage lengths could be contained within adjacent lane groups (i.e. the through lanes).

Regional Road 25 / Britannia Road
Most of the typical (or 50th percentile) queues at the intersection are contained within the provided storage lengths. Although the site traffic results in longer southbound left-turn queues (impacts of 3 to 4 car-lengths), the future queues that exceed storage lengths could be contained within adjacent lane groups (i.e. the through lanes).

Britannia Road / Farmstead Drive
All future queues will be contained under existing storage lengths. Site-related impact on any movement is up to 1 car-length.

Britannia Road / Rose Way
All future queues will be contained under existing storage lengths. Site-related impact on any movement is negligible.

Unsignalized Driveways
At the unsignalized intersections in the study area (Region Road right-in/right-out access points on each block and on Etheridge Avenue at the site driveways), under all future conditions, the site access driveways will operate at queues of up to 1 car length.

Based on the foregoing queuing review, the proposed development can be accommodated on the future transportation network.

11.0 RECOMMENDATIONS AND CONCLUSIONS

As outlined in the previous sections, the following provides the conclusions of the study and recommendations that are proposed as part of the development of the site:

- Vehicle access and site circulation for each block is proposed via a driveway across each block that provides a connection between a new 4-legged intersection on Etheridge Avenue and a new right-in/ right-out only access (one on each block) at Regional Road 25. The justification for access along Regional Road 25 includes the following:
    - Reduced overall delays at the intersection of Regional Road 25 and Etheridge Avenue;
    - Reduced eastbound queues along Etheridge at Regional Road 25, which reduces the risk that peak queues extend beyond site driveways;
    - Reduced risk of neighbourhood shortcutting in the adjacent residential area;
    - Provides an alternate access in the event of urgent road closures and emergencies; and
    - Improved and efficient flow of traffic across the blocks.

- As the proposed new 4-legged intersection of the north and south block driveways with Etheridge Avenue is just over 80 metres from the signalized intersection of Regional Road 25 at Etheridge Avenue, a pedestrian crossover is not recommended to be installed across Etheridge Avenue. The installation of pedestrian warning signs could however be considered.

- The development of the site includes walkways throughout both the north and south blocks that will connect to a future sidewalk on the west side of Regional Road 25 as well as to the existing sidewalks along Etheridge Avenue. The pedestrian linkages to Etheridge Avenue will provide connectivity to an existing walking trail along the Natural Heritage System (NHS) as well as to the adjacent neighbourhood. The walkways throughout the site with connectivity to sidewalks on Etheridge Avenue and to Regional Road 25 will also provide connectivity to transit stops in order to encourage transit trips to/from the site.

- Resident parking is to be provided through a connected below-grade structure on each block, while non-resident parking (resident visitor and retail) is to be shared and provided at-grade on each block. It is acknowledged that parking standards outlined in Zoning By-law 016-2014 (HUSP Urban Area – March 2023) could be considered to overstate the parking needs of a residential development based on the evolving transportation context, parking demand studies and a comprehensive Transportation Demand Management Plan.

- A total parking supply of 1,917 parking spaces is proposed for the site, inclusive of 966 and 951 parking spaces for the south and north blocks, respectively. The development proposes a provision of a minimum resident parking rate of 1.0 space per unit, with non-resident shared parking proposed to be provided at a minimum rate of 0.22 spaces per unit. As the resident visitor parking requirement is greater than the retail parking requirement, the proposed non-resident rate is based on the resident visitor supply. The proposed parking supply is appropriate for the site based upon the evolving transportation context, observed parking demands at the proxy sites and proposed TDM measures.

- A total supply of 902 bicycle parking spaces is proposed for the site, inclusive of 463 and 439 spaces for the south and north blocks, respectively. The proposed bicycle parking supply exceeds the Zoning By-law minimum requirements and will meet the needs of the site.

- The proposed Transportation Demand Management (TDM) Plan aims to reduce automobile use through an on-going strategy that supports and promotes the use of non-auto transportation modes. Proposed TDM measures for the site include pedestrian facilities with a focus on connectivity, bicycle parking/ bicycle repair stations, an appropriate vehicle parking supply, resident traveller information and unbundled parking.

- The traffic analysis is conservative and based on 846 residential units on the south block (site plans now includes 792 residential units), as the site statistics evolved throughout the final design process. The 635 residential units on the north block does not include the Block 8 “hold-out” property. The potential for an additional 144 residential units on Block 8 is addressed as part of a sensitivity analysis that demonstrates that the development of Block 8 (1,571 total residential units on the site) has a negligible impact on traffic operations.

- The Phase 1 (south block) proposed development is anticipated to generate **195 and 235 two-way vehicle trips** during the weekday morning and afternoon peak hours, respectively. At full buildout, the proposed development is anticipated to generate in the order of **345 and 410 two-way vehicle trips,** during the morning and afternoon peak hours, respectively. If an additional 144 residential units are constructed on the north block as a result of the acquisition of the “hold-out” property, at full buildout, the proposed development is anticipated to generate in the order of **375 and 450 two-way vehicle trips** during the morning and afternoon peak hours, respectively.

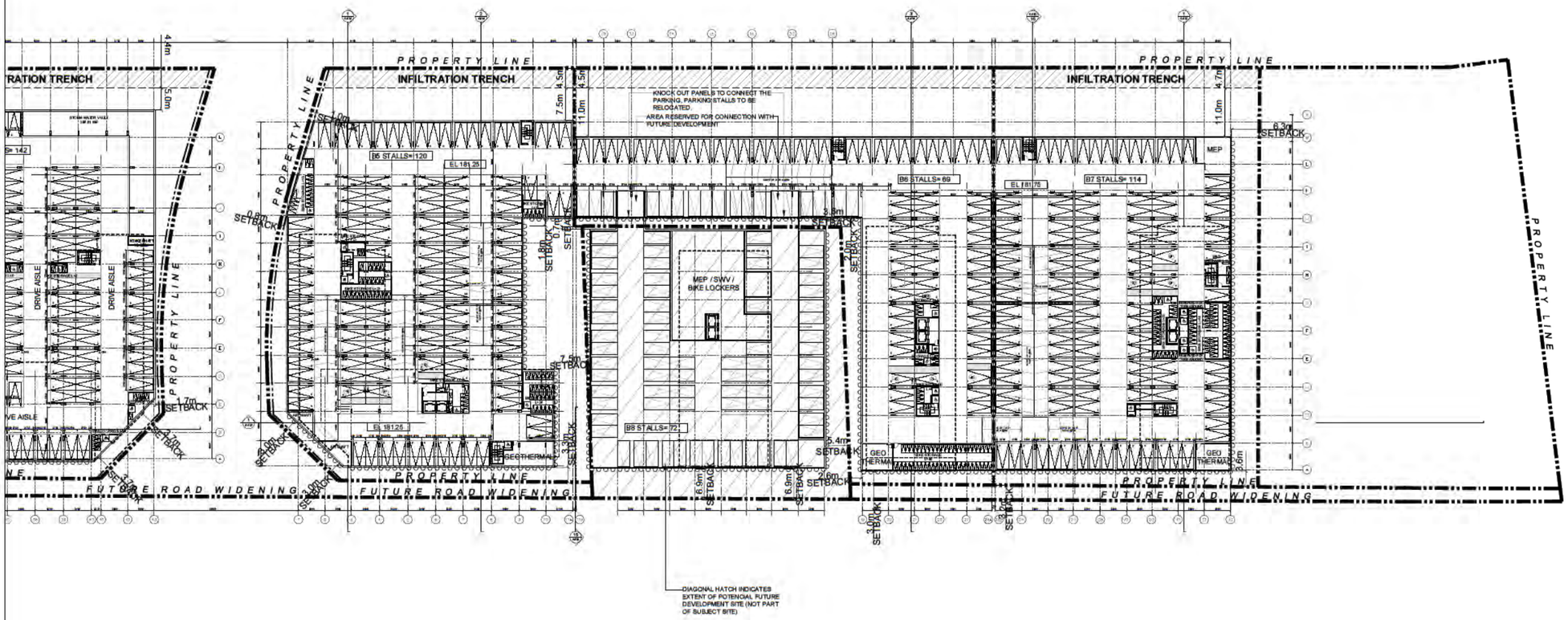
- The traffic analysis was completed for a typical weekday for both the morning and afternoon peak periods and indicated that in 2037, all study area intersections will operate acceptably, with the recommended optimization of traffic signal timings at the intersections of Regional Road 25 / Louis St. Laurent Avenue and at Regional Road 25 / Britannia Road.

- A traffic signal warrant assessment was undertaken at the intersection of the proposed site access driveways (new aligned 4-legged intersection) at Etheridge Avenue based on the Justification 7 methodology outlined in the Ontario Traffic Manual (OTM) Book 12. It is noted that the intersection is approximately 80 metres west of Regional Road 25 / Etheridge Avenue. As the traffic signal warrant is only met at 44% of the required 150%, a traffic signal at the Etheridge Avenue / Site Accesses is not warranted.

- The queuing review indicates no concerns at any of the signalized and unsignalized intersections in the study area. The impact of the site on queuing is only modest and can be accommodated on the existing and future road network.

Based on the comprehensive traffic analysis, the proposed development can be accommodated on the future transportation network.

APPENDIX A: ARCHITECTURAL DRAWINGS



02	REVISED FOR ZBA	11 AUGUST 2023
01	ISSUED FOR ZBA	04 JULY 2023

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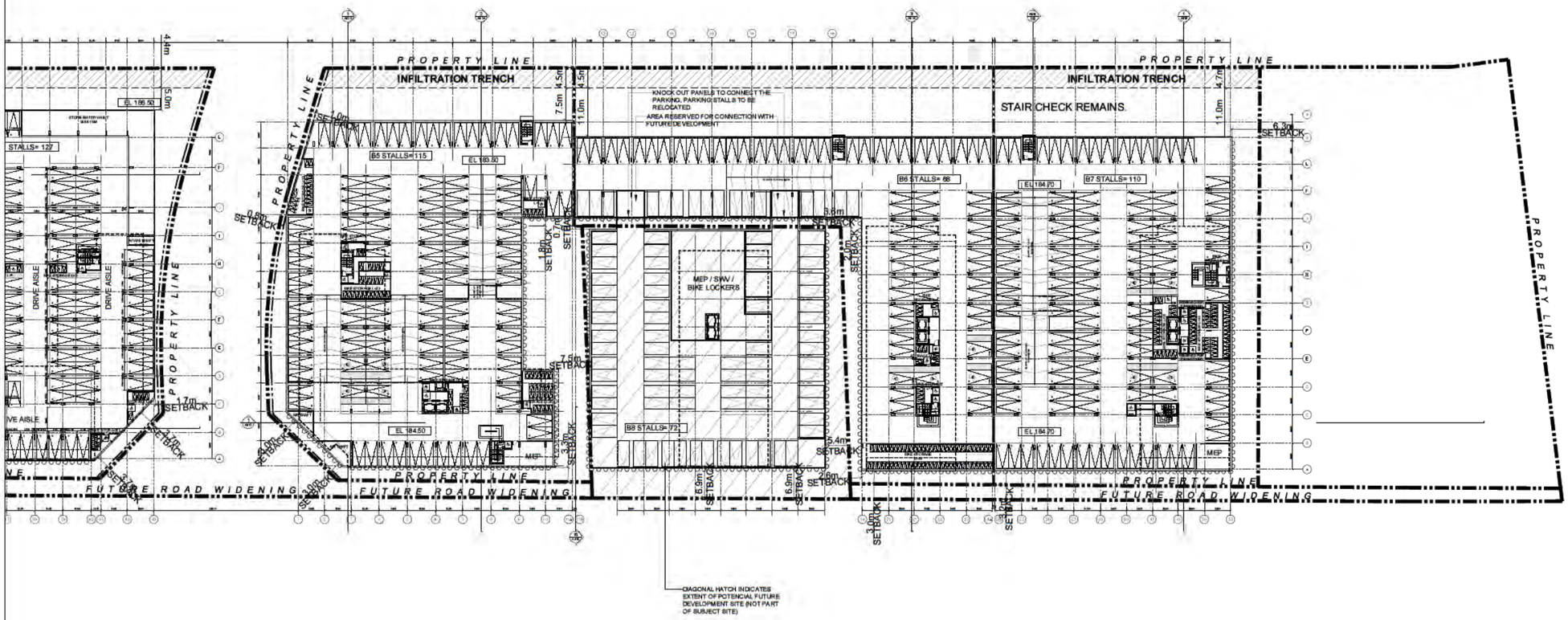
MILTON WEST, ONTARIO

Drawn: JA	Scale: 1:500
Checked: BL	Date: 2024-01-16

Title:
NORTH BLOCK PARKING LEVEL P2

Project No: 22-210	Drawing No: A203



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PN

Drawn: JA	Scale: 1:500
Checked: BL	Date: 2024-01-16

Title:
NORTH BLOCK
PARKING LEVEL P1

Project No.: 22-210	Drawing No.: A204

NATURAL HERITAGE SYSTEM (NHS)

(NHS)

ETHERIDGE AVENUE

ROAD NO. 25 (REGIONAL ROAD)

PROPERTY LINE

FUTURE ROAD WIDENING

GREEN AREA
4,298.61 SM

GREEN AREA
369.79 SM

EXISTING DEDICATION

BUILDING 1

BUILDING 5

BUILDING 6

BUILDING 7

BUILDING 8

RETAIL ENTRANCE

INTERIOR AMENITY 435.20SM

RETAIL 5,029.52 SF 467.26 SM

NORTH RETAIL PLAZA

RETAIL 5,195.87 SF 482.69 SM

INTERIOR AMENITY 170.36 SM

SUB-ELECTRICAL ROOM

MAIL/ PARCEL

LOBBY

ADMIN

INTERIOR AMENITY

EXTERIOR AMENITY - BUILDING #6 576 SM

INTERIOR AMENITY 476.32 SM

SURFACE PARKING 1381.16 SM

SURFACE PARKING 1200.37 SM

SURFACE PARKING 708.53 SM

ACCESS TO P1

VISITORS PHASE 5 P= 44

12 VISITOR HORIZONTAL BIKE PARKING STALLS 600x1800

VISITORS PHASE 6 P= 43

VISITORS PHASE 7 P= 53

DROP OFF

LOADING

MOVE-IN BULKY

FIRE ROUTE

SECONDARY CONDO ENTRANCE

CONDO ENTRANCE

DASHED LINE INDICATES CANOPY ABOVE

SIAMESE CONNECTIONS

10 VISITOR HORIZONTAL BIKE PARKING STALLS 600x1800

DASHED LINE INDICATES EXTENT OF PARKING BELOW

EXISTING FIRE HYDRANT

PROPOSED FIRE HYDRANT

BIKE REPAIR STATION

TWO CHUTE SYSTEM WITH Bi-SORTER

DIAGONAL HATCH INDICATES EXTENT OF POTENCIAL FUTURE DEVELOPMENT SITE (NOT PART OF SUBJECT SITE)

7.5m RADIUS CURVE

6m RADIUS CURVE

37.7m SETBACK

4.1m SETBACK

6.7m SETBACK

9.6m SETBACK

7.4m SETBACK

16.7m SETBACK

18.5m SETBACK

6.8m SETBACK

6.6m SETBACK

NOTE

NOTE 1: (LOADING AREA)
1.THE BINS SHOULD BE PROPERLY POSITIONED IN THE COLLECTION AREA ON THE DAY OF COLLECTION BEFORE 7 AM.
2.THE DRIVER IS NOT REQUIRED TO EXIT THE COLLECTION VEHICLE TO FACILITATE COLLECTION.
3.PROPERTY MANAGEMENT IS RESPONSIBLE FOR MOVING BINS DURING COLLECTION.
4.THE REGION WILL NOT BE RESPONSIBLE FOR EMPTYING BINS THAT ARE INACCESSIBLE TO THE COLLECTION VEHICLE.
5.PROPERTY MANAGEMENT MUST BE VISIBLE TO WASTE COLLECTION VEHICLE ON APPROACH TO SITE, OTHERWISE THE WASTE COLLECTION VEHICLE WILL NOT ENTER THE SITE.
6.PROPERTY MANAGEMENT WILL BE RESPONSIBLE FOR SAFELY MANEUVERING WASTE COLLECTION VEHICLES INTO AND/OR OUT OF, AS WELL AS AROUND THE SITE.
7.PROPERTY MANAGEMENT STAFF WILL BE RESPONSIBLE FOR MOVING BINS TO THE STAGING AREA AT THE TIME OF COLLECTION AND RETURNING TO STORAGE ROOM FOLLOWING COLLECTION.

KEYPLAN

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130 QUEEN'S QUAY EAST, SUITE 700, WEST TOWER
TORONTO, ON CANADA M5A 0P6
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INFO@COREARCHITECTS.COM
WWW.COREARCHITECTS.COM

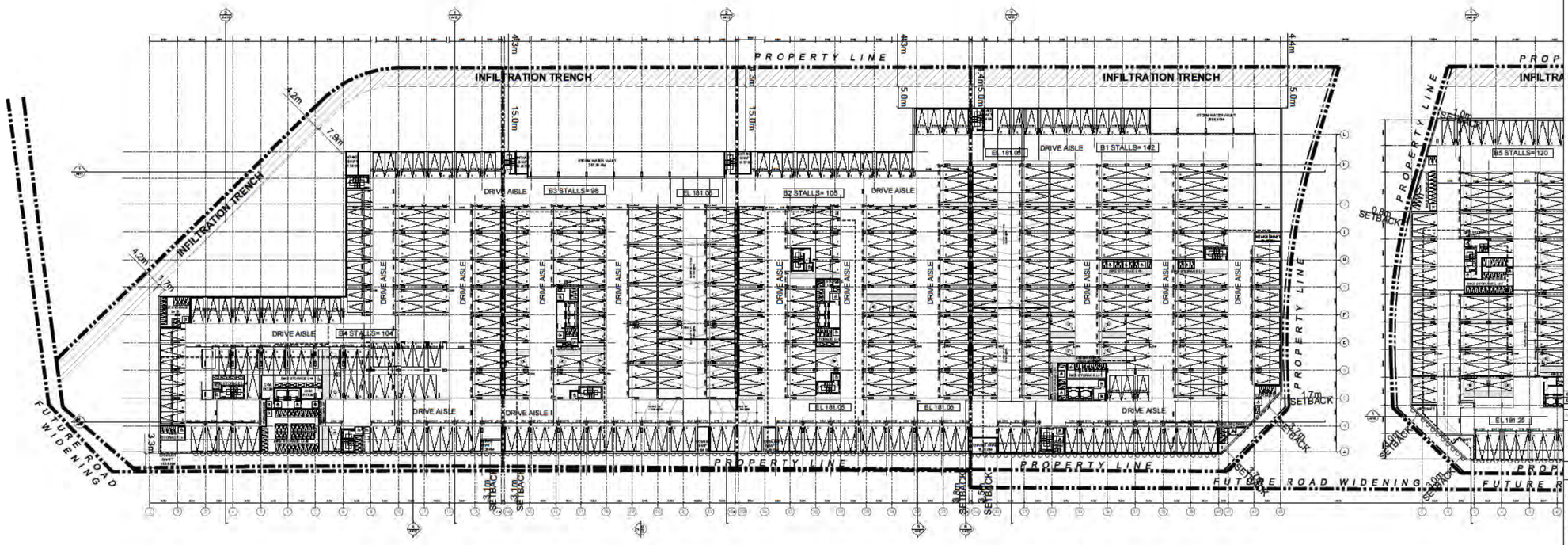
FRAMGARD MATTAMY

MILTON WEST, ONTARIO

Project: MA	Scale: 1:500
Checked: BL	Date: 2024-01-16

Title:
NORTH BLOCK
GROUND FLOOR PLAN

Project No: 22-210	Drawing No: A205



COREARCHITECTS
130 QUEEN'S QUAY EAST, SUITE 700, WEST TOWER
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FRAMGARD MATTAMY

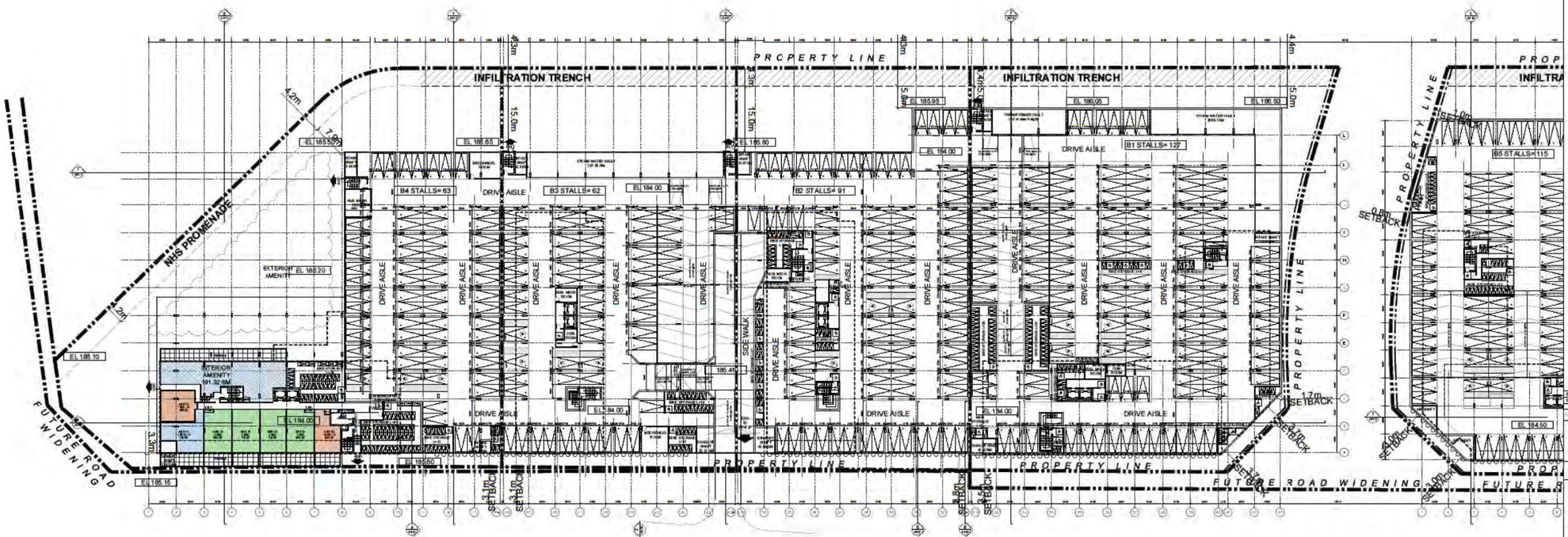
MILTON WEST, ONTARIO

PN

Project: JA
Scale: 1:500
Checked: BL
Date: 2024-01-16

Title:
SOUTH BLOCK
PARKING LEVEL P2

Project No: 22-210
Drawing No: A252



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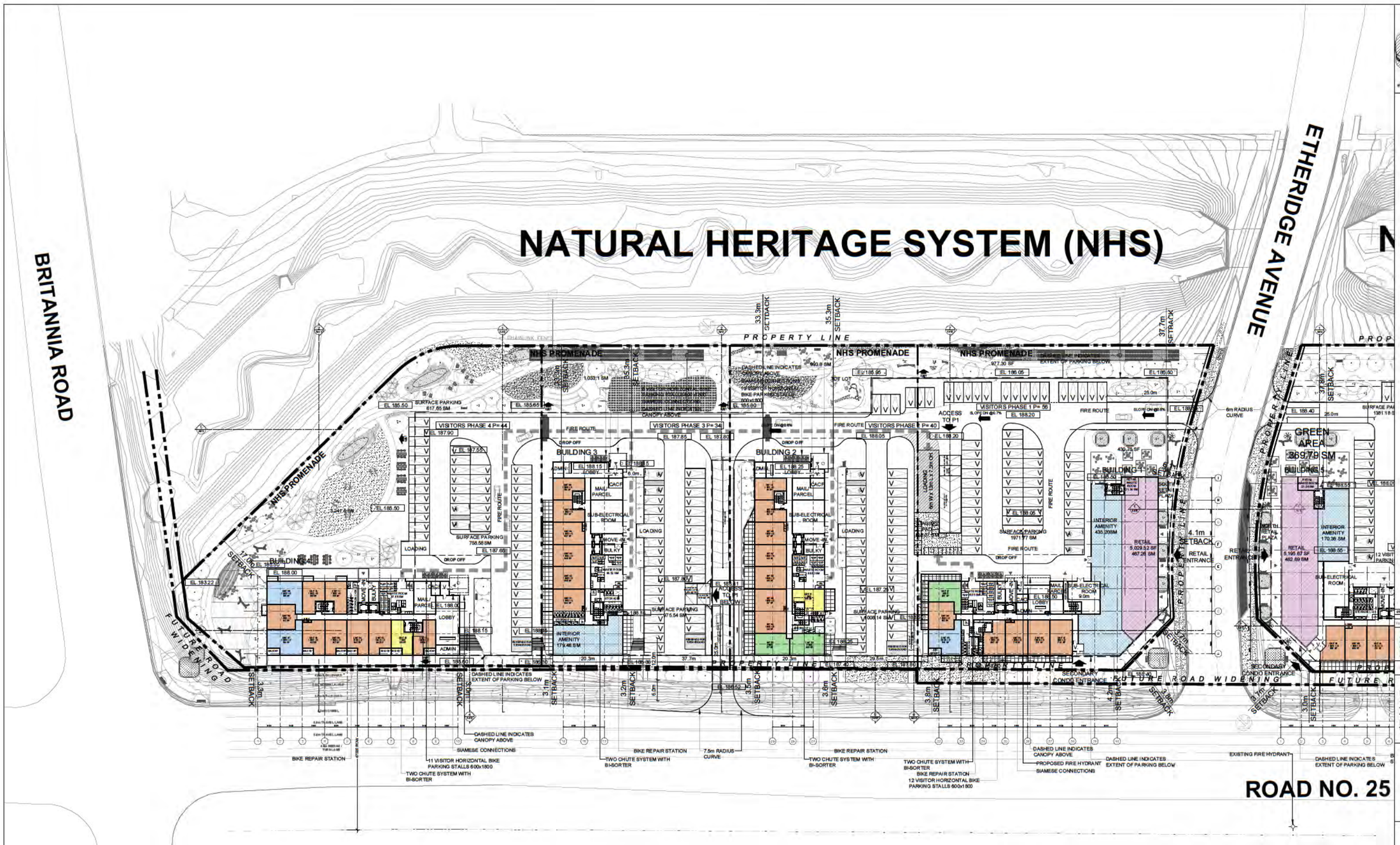
FRAMGARD MATTAMY

MILTON WEST, ONTARIO

Drawn: AA	Scale: 1:500
Checked: BL	Date: 2024-01-16

Title:
SOUTH BLOCK
PARKING LEVEL P1

Project No: 22-210	Drawing No: A253



KEYPLAN

COREARCHITECTS
180 QUEENS QUAY EAST, SUITE 700, WEST TOWER
TORONTO, ON CANADA M5A 0R6
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INFO@COREARCHITECTS.COM
WWW.CORE ARCHITECTS.COM

FRAMGARD MATTAMY

MILTON WEST, ONTARIO

PN.

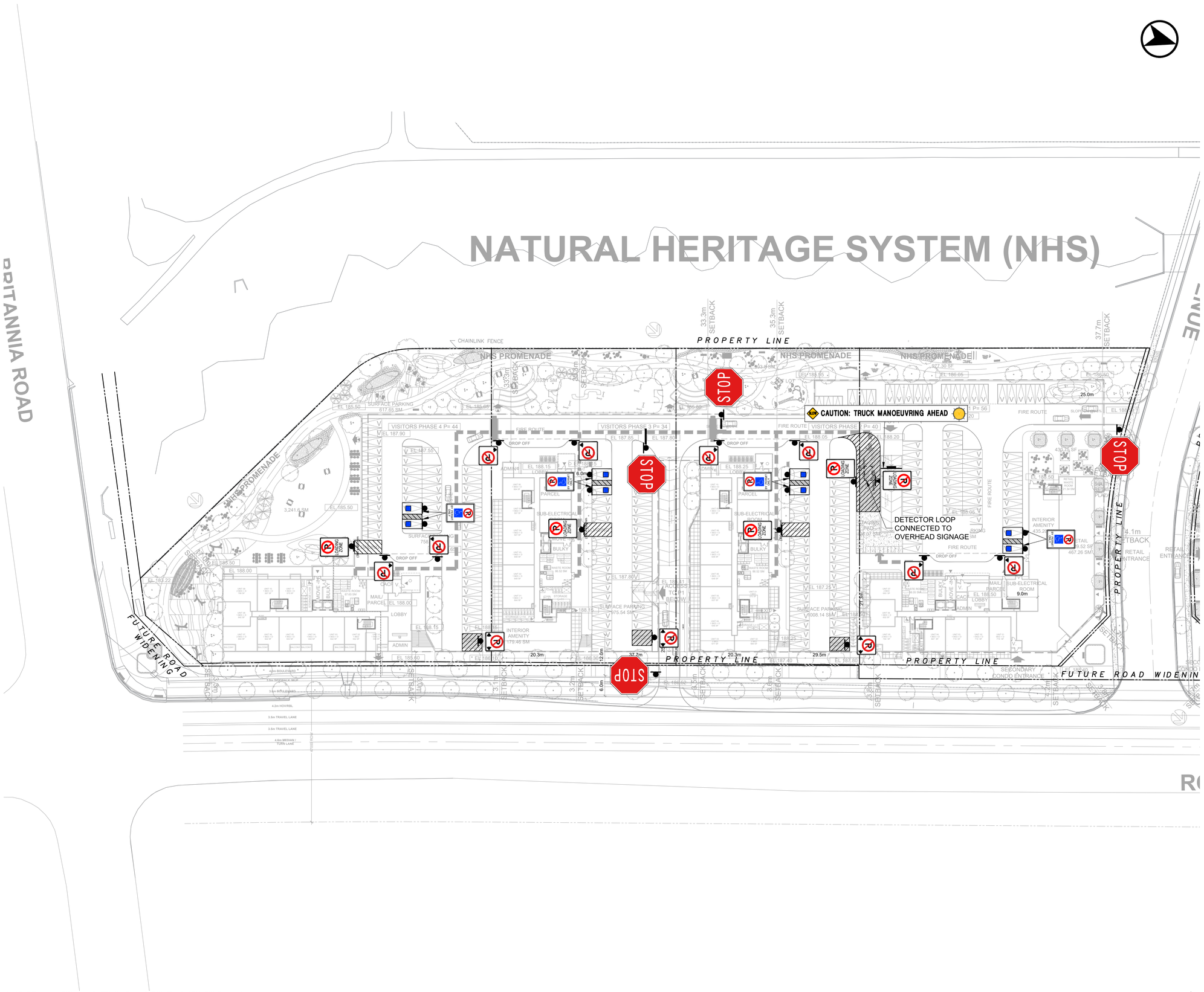
Drawn: JA	Scale: 1:500
Checked: BL	Date: 2024-01-16

Title:

SOUTH BLOCK
GROUND FLOOR PLAN

Project No.: 22-210	Drawing No.: A254

APPENDIX B: TRAFFIC SIGNAGE AND PAVEMENT MARKING PLAN



PAVEMENT MARKING:

(NOTE-ALL MARKINGS MUST CONFORM TO THE ONTARIO TRAFFIC MANUAL (OTM) BOOK 11

- 10cm (4 in.) YELLOW SOLID
- THROUGH ARROW (3m (10 ft.))
- ALL STOP BARS TO BE 60cm (2 ft.) WHITE SOLID
- ZONE PAINTING
  - 10cm SOLID TRAFFIC YELLOW
  - 45° ANGLE
  - 60cm O/C
- PEDESTRIAN CROSSING
  - COLD PLASTIC "POLYMERIC"
  - WIDTH AS SHOWN
  - PATTERN: 60cm PAINTED, 60cm GAP
  - TRAFFIC WHITE
- INTERNATIONAL SYMBOL OF ACCESS
  - 1.5m x 1.5m
  - 10cm BORDER - TRAFFIC WHITE
  - SYMBOL - TRAFFIC WHITE
  - BLUE BACKGROUND

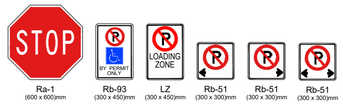
SIGN MOUNT LEGEND:

ALL SIGNS ARE SHOWN IN APPROXIMATE LOCATIONS AND TO BE DETERMINED ON SITE. SIGNS MUST BE VISIBLE TO DRIVER AND NOT OBSTRUCTED BY LANDSCAPE.

- PROPOSED POST
- PROPOSED POST PROTECTION
- PROPOSED WALL/COLUMN MOUNT SIGN
- PROPOSED WALL/COLUMN PERPENDICULAR
- SUSPENDED SIGN
- CONVEX MIRROR

SIGNAGE LEGEND:

(NOTE-ALL SIGNAGE MUST CONFORM TO THE ONTARIO TRAFFIC MANUAL (OTM) BOOK 5 AND 6



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EMAIL bagroup@bagroup.com
MOVEMENT IN URBAN ENVIRONMENTS
BAGROUP.COM

REGIONAL ROAD 25 & BRITANNIA ROAD

SIGNAGE AND PAVEMENT MARKING PLAN

SOUTH BLOCK - GROUND FLOOR

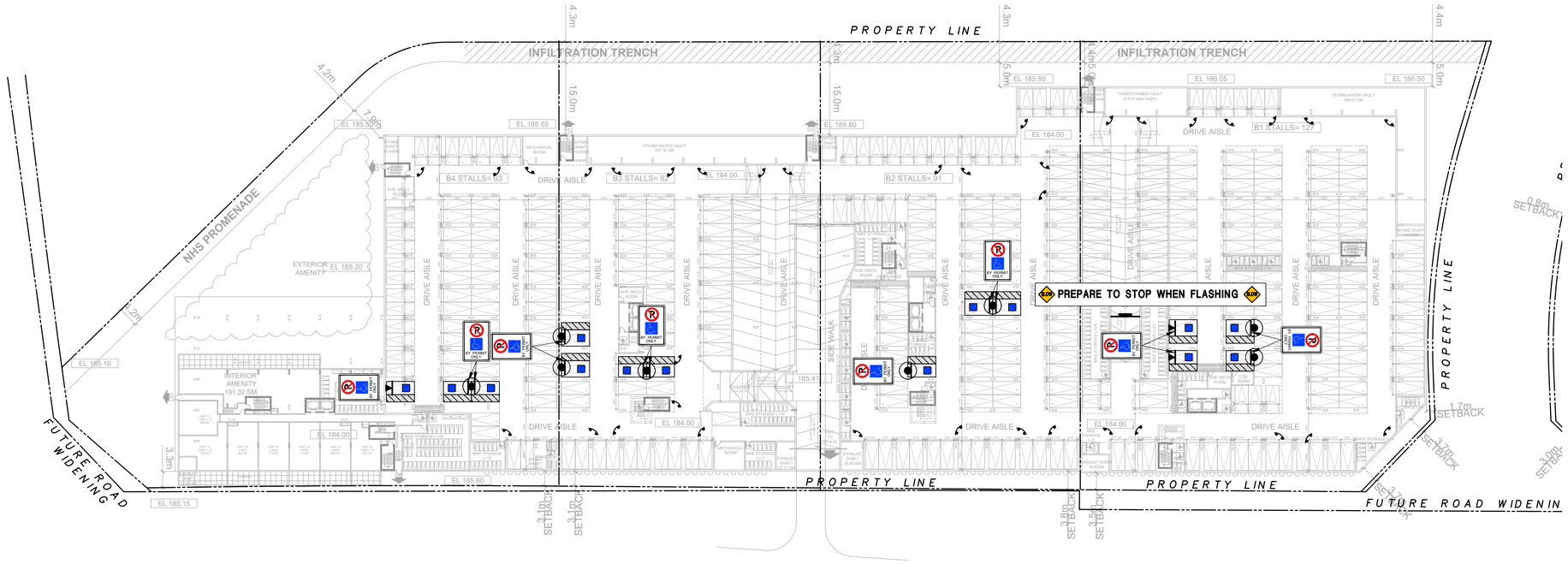
Date: January 19, 2024

Project No.: 6374-70

Scale: 1:500 (0 5 10 15 20m)

SN-01

Date Plotted: January 19, 2024 Filename: J:\6374-70\bal\Signage Plan\2. Jan 19-2024\ba-Regional Road 25 And Britannia-Signage-Jan19-2024.dwg



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SIGNAGE LEGEND:

(NOTE-ALL SIGNAGE MUST CONFORM TO
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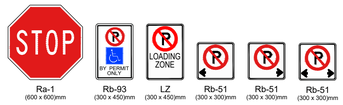
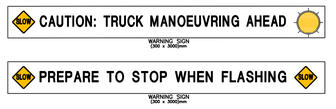


Ra-1 (600 x 600)mm | Rb-93 (300 x 450)mm | LZ (300 x 450)mm | Rb-51 (300 x 300)mm | Rb-51 (300 x 300)mm | Rb-51 (300 x 300)mm



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REGIONAL ROAD 25 & BRITANNIA ROAD

SIGNAGE AND PAVEMENT MARKING PLAN

SOUTH BLOCK - P1 LEVEL

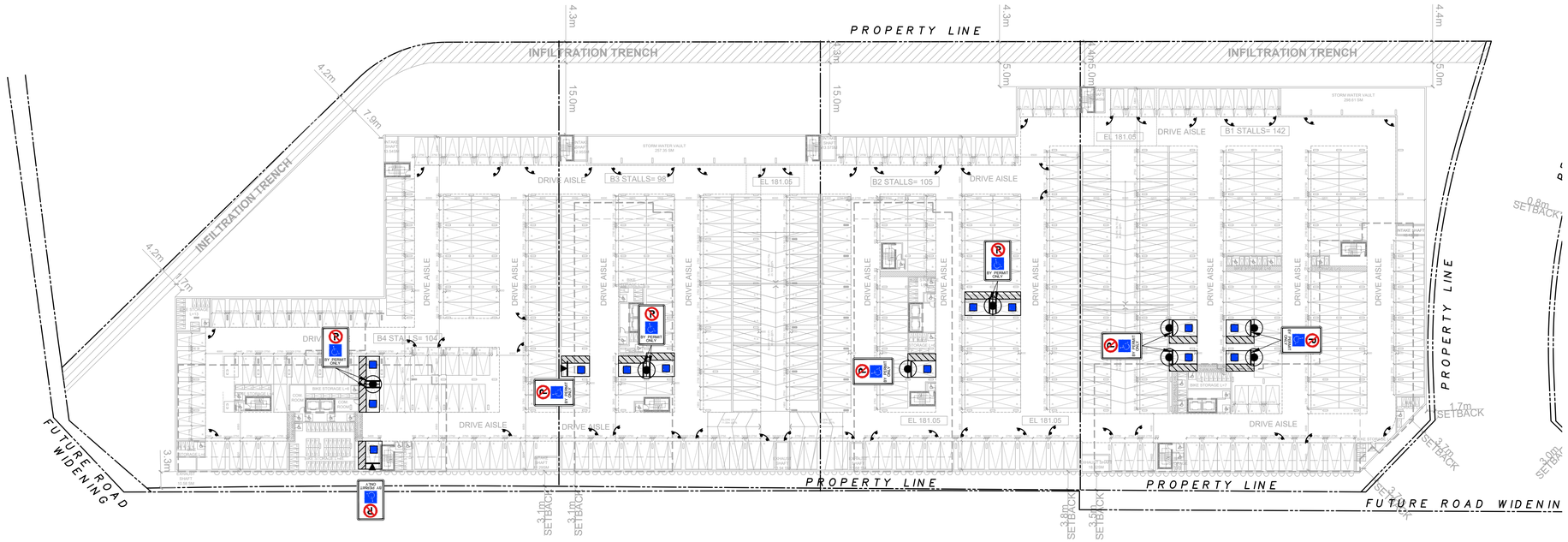
Date: January 19, 2024

Project No.: 6374-70

Scale: 1:500 (0 5 10 15 20m)

SN-02

Date Plotted: January 19, 2024 Filename: J:\6374-70\bal\Signage Plan\2. Jan 19-2024\ba-Regional Road 25 And Britannia-Signage-Jan19-2024.dwg



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  - COLD PLASTIC "POLYMERIC"
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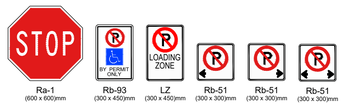

Rb-1 (600 x 600)mm | Rb-93 (300 x 450)mm | LZ (300 x 450)mm | Rb-51 (300 x 300)mm | Rb-51 (300 x 300)mm | Rb-51 (300 x 300)mm

WARNING SIGN
DIN = 300/mm

WARNING SIGN
DIN = 300/mm

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REGIONAL ROAD 25 & BRITANNIA ROAD

SIGNAGE AND PAVEMENT MARKING PLAN

SOUTH BLOCK - P2 LEVEL

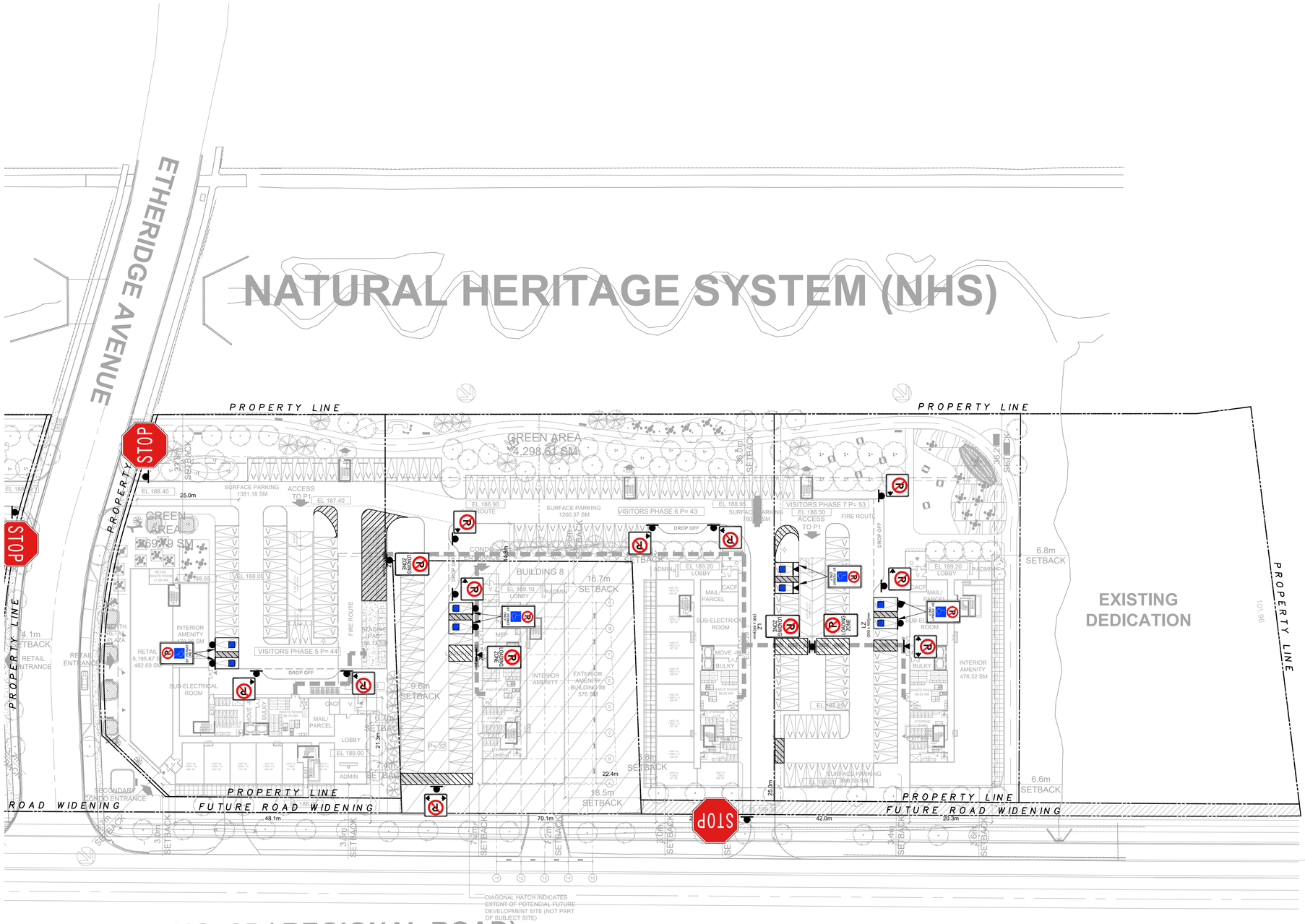
Date: January 19, 2024

Project No.: 6374-70

Scale: 1:500 (0, 5, 10, 15, 20m)

SN-03

Date Plotted: January 19, 2024 Filename: J:\6374-70\bal\Signage Plan\2. Jan 19-2024\ba-Regional Road 25 And Britannia-Signage-Jan19-2024.dwg



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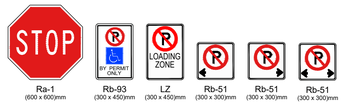

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REGIONAL ROAD 25 & BRITANNIA ROAD

SIGNAGE AND PAVEMENT MARKING PLAN

NORTH BLOCK - GROUND FLOOR

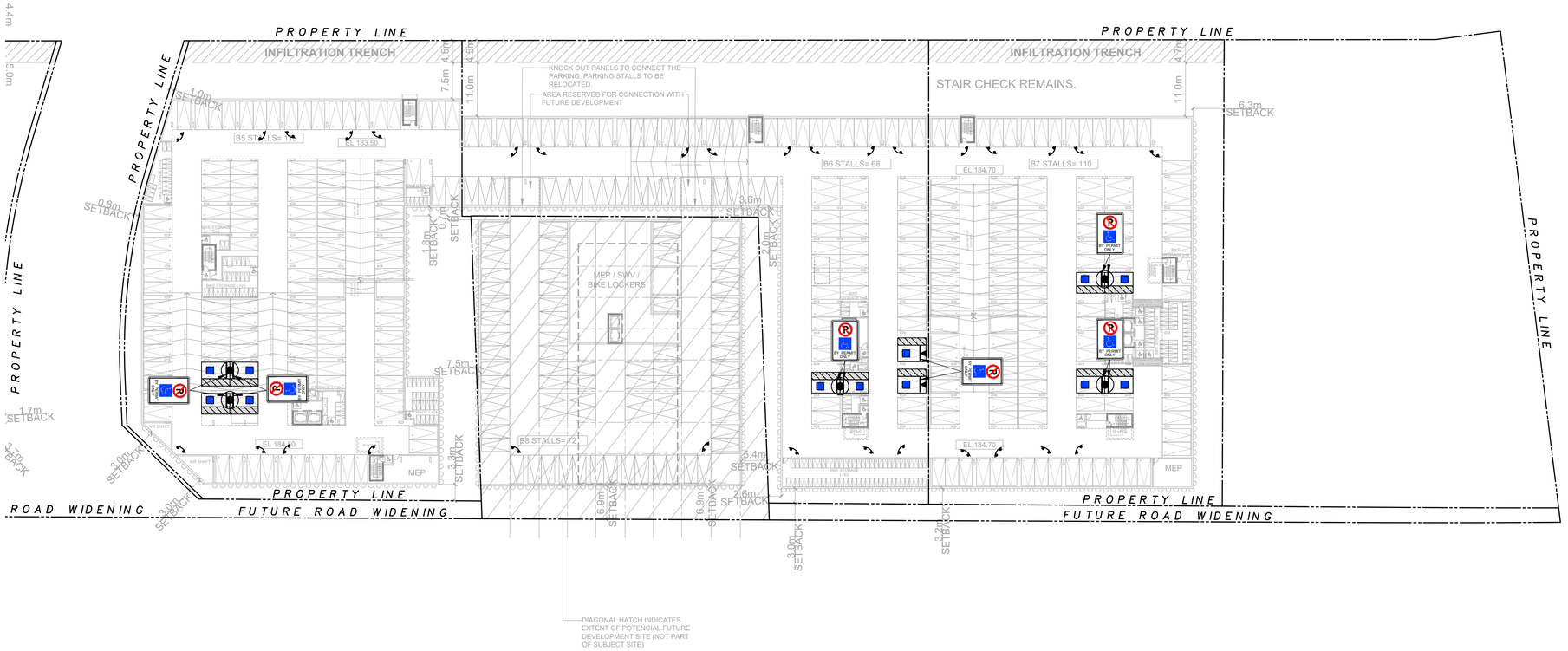
Date: January 19, 2024

Project No.: 6374-70

Scale: 1:500 (0, 5, 10, 15, 20m)

SN-04

Date Plotted: January 19, 2024 Filename: J:\6374-70\bd\Signage Plan\2. Jan 19-2024\ba-Regional Road 25 And Britannia-Signage-Jan19-2024.dwg



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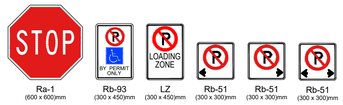

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REGIONAL ROAD 25 & BRITANNIA ROAD

SIGNAGE AND PAVEMENT MARKING PLAN

NORTH BLOCK - P1 LEVEL

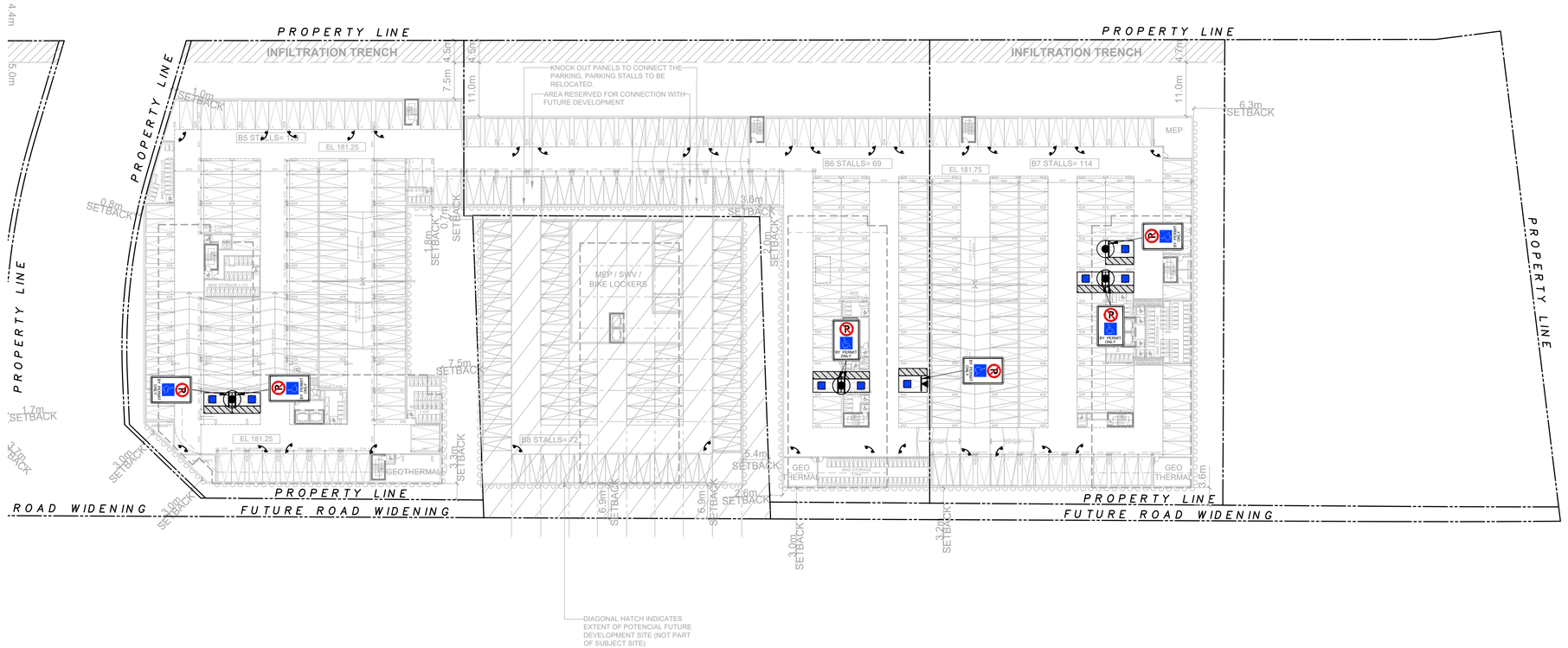
Date: January 19, 2024

Project No.: 6374-70

Scale: 1:500 (0, 5, 10, 15, 20m)

SN-05

Date Plotted: January 19, 2024 Filename: J:\6374-70\bd\Signage Plan\2. Jan 19-2024\ba-Regional Road 25 And Britannia-Signage-Jan19-2024.dwg



PAVEMENT MARKING:

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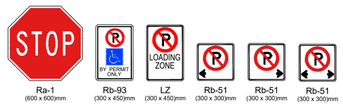

Ra-1 (600 x 600)mm | Rb-93 (300 x 450)mm | LZ (300 x 450)mm | Rb-51 (300 x 300)mm | Rb-51 (300 x 300)mm | Rb-51 (300 x 300)mm

WARNING SIGN (300 x 300)mm

WARNING SIGN (300 x 300)mm

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REGIONAL ROAD 25 & BRITANNIA ROAD

SIGNAGE AND PAVEMENT MARKING PLAN

NORTH BLOCK - P2 LEVEL

Date: January 19, 2024

Project No.: 6374-70

Scale: 1:500 (0 5 10 15 20m)

SN-06

Date Plotted: January 19, 2024 Filename: J:\6374-70\bal\Signage Plan\2. Jan 19-2024\ba-Regional Road 25 And Britannia-Signage-Jan19-2024.dwg

APPENDIX C: TOWN AND REGION COMMENTS

Memorandum

TO:

Matt Krusto
Supervisor, Transportation Development Review
Infrastructure Planning & Policy
Public Works, Halton Region
matt.krusto@halton.ca

Heide Schlegl
Manager, Traffic
Town of Milton
heide.schlegl@milton.ca

FROM:	**PROJECT:**	**DATE:**
Deanna Green, P.Eng.	Proposed Mixed-Use Development	December 9, 2022

SUBJECT: Traffic Impact Study Terms of Reference – Proposed Mixed-Use Development
Regional Road 25 & Britannia Road, Town of Milton, Region of Halton

1.0 INTRODUCTION

BA Group has been retained by Mattamy Corporation to provide transportation consulting services related to the proposed development of a site (herein referred to as "the site") on the northwest quadrant of the intersection of Regional Road 25 & Britannia Road, in the Town of Milton ("the Town"), in the Region of Halton.

The preliminary development concept includes five residential buildings (up to 15 levels) with a total GFA that could range from approximately 93,000 m^2 to 148,000 m^2, along with some retail. The development would likely be developed in phases over two blocks. Parking is to be provided both at-grade and through a below-grade structure. Access and site circulation is proposed via a new north-south driveway that would run across the rear of both blocks and create a new 4-legged intersection on Etheridge Avenue. Vehicle access for each of the two blocks will also be considered along Regional Road 25.

The traffic impact study will be completed in accordance with Halton Region's Transportation Impact Study Guidelines as outlined in the following sections.

Traffic study should also follow Town of Milton Transportation Impact Study Terms of Reference for Development Applications.

2.0 PROPOSED SCOPE OF WORK

2.1 DESCRIPTION OF THE PROPOSAL

The Transportation Impact Study will provide a full description of the proposed redevelopment and will include elements such as:

- Municipal address;
- Existing land uses or permitted use provisions in an Official Plan, Official Plan Amendments, Zoning By-law etc.;
- Proposed land uses and relevant planning regulations to be used in the study;
- Total building sizes and building locations;
- A summary of each type of use with the proposed number of residential units and non-residential Gross Floor Area (GFA) for each building;
- Expected date of occupancy;
- Nearby intersections and accesses to adjacent developments and those on the opposite side of the road, including type of traffic control;
- Proposed access points and type of access (full movement, right-in-right-out, turning movement restrictions, etc.);
- Nearby transit facilities/stops;
- Near-by Active Transportation Facilities – sidewalks, multi-use trails, bike lanes, etc.,

2.2 STUDY AREA

The study area and traffic analysis will include the following intersections:

1. Regional Road 25 & Britannia Road
2. Regional Road 25 & Etheridge Avenue
3. Regional Road 25 & Whitlock Avenue
4. Regional Road 25 & Louis St.Laurent Avenue
5. Britannia Road & Farmstead Drive
6. Britannia Road & Bronte Street S/ First Line
7. Britannia Road & Thompson Road S/ Third Line
8. Proposed site access on Etheridge Drive (proposed new 4-legged intersection)

Include Britannia Rd at Rose Way and Regional Road 25 at Site accesses.

2.3 TRANSPORTATION CONTEXT

A description of the existing transportation system in the study area, will identify relevant information, such as the following:

- All adjacent and nearby roads, indicating the number of lanes, and posted speed;
- All adjacent/across and affected intersections/access, indicating type of control, access type, lane configurations, lane widths, and any turning or similar restrictions;
- If appropriate, on-street parking spaces/standing/stopping restrictions in the vicinity of the site and those which would affect the operation of key intersections being analyzed;
- Transit routes and stops;
- Heavy vehicle prohibitions and restrictions;
- All pedestrian and cyclist routes; and
- Other transportation facilities as appropriate.

Potential future transportation improvements that are currently being considered that may facilitate the traffic demand generated by the site will be identified. These improvements will be described to a level of detail sufficient to assess implications for travel to/from the site. In each case, the status and expected date of implementation will be identified.

2.4 PARKING & LOADING CONTEXT

2.4.1.1 Parking

The requirements of the prevailing Town Zoning By-law will be reviewed for both motor vehicles and bicycles in order to confirm the parking needs of the proposed development. If reduced parking rates are proposed, appropriate proxy data will be provided along with justification for any reductions.

Terms of reference for the parking study should also be circulated to Town Staff.

2.4.1.2 Loading

The requirements of the prevailing Town Zoning By-law will be reviewed to confirm the development's loading supply requirements. An appropriate loading facility supply for site will be provided.

2.5 TRANSPORTATION DEMAND MANAGEMENT (TDM)

The TDM Plan will be included with the TIS and will include a wide variety of initiatives aimed at reducing the amount of travel by single occupant vehicles to achieve a more sustainable travel mode share, particularly during the peak travel hours of the day.

The TDM Plan will consider initiatives such as but not limited to the following:

- Promotion and support for reduced single occupant vehicle use through carpool programs;
- Promotion of transit:
- Consideration of bicycle/pedestrian facilities and connectivity;
- Information for residents regarding sustainable travel options;
- Potential for a reduced parking supply.

2.6 HORIZON YEAR AND TIME PERIODS FOR ANALYSIS

The site build-out year will be confirmed as part of the study. It is proposed that the traffic analysis include the following scenarios:

- Existing conditions;
- Future background conditions (build-out year to be determined) – with corridor growth and area background development traffic;
- Future total conditions (build-out year to be determined) – at build-out of site and inclusive of site generated traffic;
- Future total conditions – 5-years beyond build-out with site generated traffic.

Horizon years must also be identified for any interim phases of development where phasing, temporary access measures, and planned transportation system improvements are anticipated. Improvements required for each phase must also be identified.

The analysis will be completed for both the AM and PM peak periods of the day, during a typical weekday.

2.7 TRAFFIC ANALYSIS

2.7.1 Existing Traffic Conditions

The traffic analysis will include a representative picture of the existing transportation conditions with exhibits that show the existing traffic volumes and turning movements for all modes of transportation for roadways and intersections in the study area including pedestrian/cyclist volumes and heavy truck movements.

All traffic data collection undertaken will include pedestrians, cyclists and motor vehicles on a typical weekday, during typical morning and afternoon peak periods. BA Group will work with the Town & Region to obtain historical counts and supplement available data with new traffic counts recently completed by Spectrum, on behalf of BA Group on November 29, 2022.

2.7.2 Background Traffic

2.7.2.1 Corridor Growth

The background traffic growth rate in traffic along corridors in the study area, will be established in consultation with Town & Region staff.

2.7.2.2 Background Developments

All significant developments under construction, approved, or in the approval process within the study area and are likely to occur by the specific horizon years will be identified and recognized in the study. The land-

use type and magnitude of the probable future developments in the horizon years will be identified through consultation with Town staff.

2.7.2.3 Transportation Network Improvements

Changes to the present or planned transportation network will be determined from the approved Town & Region capital improvement programs. A realistic assessment of timing and certainty will be made. The impacts of the transportation system changes will be identified.

2.7.2.4 Transit/HOV Considerations

The TIS will evaluate the impacts of site generated transit demand for the relevant time periods and scenarios on all transit services and transit stops/stations/terminals where ridership will be increased by 5% or more by site generated transit demand.

For HOV analysis, the lane analysis must use a lane utilization factor of 0.80 for the assumption that 20% is assumed as the HOV lane usage.

2.7.3 Estimation of Travel Demand

2.7.3.1 Trip Generation

Traffic volumes expected to be generated by the site will be forecast using the latest edition of the ITE Trip Generation Manual, unless local & more reliable trip generation data is available.

Trip generation parameters will be selected using the principles as described in Chapter 3 of the ITE Trip Generation Handbook. The estimation of traffic volumes generated by the site will be based on the full build-out of the proposed residential redevelopment.

All trip generation assumptions and adjustments assumed in the calculation of "new" vehicle trips will be documented and justified in terms of previous research or proxy surveys.

2.7.3.2 Trip Distribution

All trip distribution assumptions will be documented and justified. Due consideration will be given to potential differences in trip distribution patterns associated with different time periods.

2.7.3.3 Trip Assignments

Traffic assignments will consider logical routings, available and projected roadway capacities and travel times. Traffic assignments will be estimated using “hand assignment” based on knowledge of the proposed/future road network in the study area.

2.7.3.4 Summary of Traffic Demand Estimates

Traffic volume figures will be provided that illustrate the assignment of all site-generated traffic volumes and pass-by volumes (if applicable) separately to the local road network, as well as to the individual site access locations by direction and by turning movement where required.

For both the AM and PM peak period, the traffic volumes figures will summarize:

- Existing Conditions: existing traffic/transit volumes;
- Future Background: existing plus background growth for each horizon year; and
- Future Total: existing plus background growth plus site generated volumes for each horizon year.

A summary of the future traffic demands (each combination of horizon year and peak period for both site generated and total future traffic conditions) will be provided in the figures. Pass-by traffic assumptions will be clearly identified and illustrated on the figures.

2.7.3.5 Evaluation of Impacts of Site Traffic

The evaluation of the impacts of site traffic will be undertaken for both the AM and PM Peak of each horizon year. The existing volumes, existing plus background growth and existing plus background growth plus site-generated traffic by direction and by turning movement will be included, as well as the scenarios with and without any relevant major transportation system improvements.

2.7.4 Capacity Analysis

A capacity analysis at the study intersections will assess the operations of individual intersections and movements expected to be impacted by the proposed redevelopment. The evaluation of signalized and unsignalized intersections impacted by site traffic volumes will be provided in a tabular format. The objective will be to maintain existing levels of service as best as possible.

The intersection capacity analysis will be completed using Synchro Version 11 and a combination of Highway Capacity Manual (HCM) 2000 and HCM 6 methodologies. A saturation flow rate of 1,900 vehicles per hour will be utilized in the analysis.

The analysis will include the mitigation of impacts to signalized intersection operations where:

- Volume/capacity (v/c) ratios for overall intersection operations, through movements, or shared through/turning movements increased to 0.85 or above:
- V/C ratios for exclusive movements increased to 0.95 or above; or
- Queues for an individual movement are projected to exceed available turning lane storage.

The analysis will also include mitigation at unsignalized intersections where:

- Level of service (LOS), based on average delay per vehicle, on individual movements exceeds LOS “D”, or
- The estimated 95th percentile queue length for an individual movement exceeds the available queue storage.

Actual PHFs should be assumed for all intersection (existing) analysis. A PHF of 1.0 should be assumed for all proposed/future unsignalized and signalized intersection analysis for Town roads.

Regional staff will be contacted to obtain current traffic signal timings at existing signalized intersections in the study area. All proposed adjustments to traffic signal timings, phasing and cycle lengths will be evaluated in terms of pedestrian crossing time, effect on queue lengths, adequacy of existing storage and effects on the existing traffic signal co-ordination.

2.7.5 Safety Analysis

Potential safety or operational issues associated with the following, as applicable, will be identified:

- Weaving;
- Merging;
- Transit operational conflicts
- Corner clearances;
- Sight distances;
- Vehicle-pedestrian conflicts;
- Traffic infiltration;
- Access conflicts;
- Cyclist movements;
- Heavy truck movement conflicts;
- Queuing

2.7.6 Collision Analysis

If requested by the Town & Region, if there is a collision history at any of the study area intersections that could be impacted by site generated traffic, a request to the Town & Region will be made to obtain the relevant collision data. The collision data will be reviewed and assessed, with respect to the impact of the proposed redevelopment.

2.7.7 Site Access and Circulation

All proposed site access points on Town & Region roads will be evaluated in terms of capacity, safety and sight distance & adequacy of queue storage capacity. This evaluation will be similar in scope to that for the signalized and unsignalized intersections described previously.

Proposed access points will be evaluated with respect to existing access points and intersections, on-street weaving problems, need for acceleration or deceleration lanes and pedestrian and cycling safety.

On-site parking and circulation systems will be evaluated to demonstrate appropriate clear throat distances and avoid any possible queuing onto Town & Region roads.

Sight lines will be evaluated based on the Transportation Association of Canada (TAC Manual).

Proposed truck/courier loading facilities and access to these facilities will be evaluated to ensure that they are adequately sized, designed and provided with suitable access so that they will not adversely affect traffic and transit operations on Town & Region roads.

Any required turning or other restrictions will be identified.

2.7.8 Transportation System Mitigation Measures

2.7.8.1 Required Roadway Improvements

If any physical and operational road network deficiencies are identified in the TIS, solutions will be provided that are feasible and economic to implement.

Functional design plans will be provided for any recommended physical improvements.

2.7.8.2 Traffic Signal Improvements

Any traffic signal operational deficiencies that are identified in the TIS will be addressed and solutions will be provided that are feasible to implement.

2.7.8.3 Preliminary Cost Estimate

A preliminary cost estimate will be provided for all recommended infrastructure improvements.

2.8 RECOMMENDATIONS

A summary of the key findings with respect to the transportation impact of the proposed redevelopment will be presented along with a summary of the recommended improvements if necessary.

Any recommendations for improvements will consider the following:

- Timing of short-range and long-range network improvements that are already planned and scheduled;
- Expected time schedule of adjacent developments;
- Logical sequencing of various improvements or segments;
- Right-of-way needs and availability of additional right-of-way within the appropriate time frames;

2.9 DOCUMENTATION AND REPORTING

The structure and format of the TIS will adhere to the scope of work outlined in this document and include the following:

- Executive Summary
- Site/Development Description (Site plan to be provided);
- Study Area (Map identifying the study area and site to be provided);
- Parking and Loading Context
- Transportation Demand Management (TDM) Plan
- Existing Conditions (Exhibit to be provided);
- Analysis Periods;
- Background Traffic Demand – Existing and Future Background (Exhibits to be provided);
- Site Generated Traffic (Exhibits to be provided);
- Level of Service Analysis;
- Total Traffic Demand – Future Background plus Site Generated Traffic (Exhibits to be provided);
- Improvement Alternatives Required to Mitigate Traffic Impacts
- Traffic Impacts for Future Background and Total Traffic with and without mitigation measures (Tabular summaries to be provided);
- Access Considerations; and
- Recommendations.

The TIS will include a main document, supplemented by a technical appendices containing detailed analysis worksheets, traffic counts data, traffic signal timings and other data as required.

Transportation study must be prepared under the supervision of a qualified, experienced and registered Professional Engineer in the Province of Ontario with specific training in traffic and transportation engineering and several years of experience related to preparing traffic studies for existing or proposed developments. All reports must be signed and stamped by the Engineer.

For any modal trip reductions, include a section detailing the recommended proportion (as a percentage) of trip reduction (if any) applied to gross trips to account for transit or alternate modes and identifies land uses subject to modal split. Justification and rationale for the trip reductions should also be discussed. Any modal split assumption must be reviewed and approved by Town staff prior to applying the reduction to the trip generation.

A safety review should also be included:
The safety review section identifies the potential of safety or operational issues associated with the following, as applicable:

•Weaving;
•Merging;
•Collision history;
•Corner clearances;
•Sight distances;
•Vehicle-pedestrian conflicts;
•School crossings;
•Traffic infiltration;
•Access conflicts;
•Cyclist movements;
•Heavy truck movement conflicts; and,
•Any other issue identified by Town staff or the consultant.

The Safety Review must include all modes of transportation that might access or travel through, and in the proximity of, the proposed development.

In addition, a detailed review of the roadway geometry related to MTO/TAC guidelines for:

•Sight distances (stopping distance, intersection sight triangles, departure sight distance, decision sight distance) utilizing MTO guidelines for approach and departure sight distances for all existing roadways to be impacted directly by the development, accesses, entrances, new roadways, etc.;
•Roadway curves (vertical and horizontal) standards;
•Roadway cross-sections & lane widths;
•Clear zone;
•Conflicting vehicle movements within and adjacent to the development; and,
•On-site vehicle swept path analysis (AutoTurn) utilizing the proper design vehicles (buses, fire trucks, garbage trucks, etc., as appropriate).

If Transportation Demand Management (TDM) reductions are being applied to trip generation, a TDM plan should be prepared that identifies existing and future (proposed) sustainable forms of transportation, routes, and infrastructure within the study area. Plan should describe and evaluate the potential impacts and changes to pedestrian, cycling, and transit modal split associated with the development/redevelopment.

From: Deanna Green
To: Deanna Green
Subject: Updated Methodology from Region Darren LornMarch 15, 2023 TIS for Britannia & Regional Road 25 proposed development
Date: March 15, 2023 1:28:52 PM
Attachments: image001.png
image002.jpg

From: Loro, Darren <Darren.Loro@halton.ca>
Sent: March 15, 2023 10:57 AM
To: Deanna Green <Deanna.Green@bagroup.com>; Nathan H. Yau <yau@bagroup.com>
Cc: Krusto, Matt <Matt.Krusto@halton.ca>; kavleen.sachdeva@milton.ca
Subject: RE: Terms of Reference - TIS for Britannia & Regional Road 25 proposed development

Hi Deanna and Nathan,

Thanks for a very productive discussion this morning about the future background volume forecasting methodology, and for bringing up the issues now rather than later to discuss.

As mentioned in the meeting, Kavleen and I have discussed and agreed upon an alternate future background volume forecasting methodology for you to follow that uses the latest information and data available in the area. This should [hopefully] help mitigate the issues that you identified.

We've noted the updates in the e-mail chain below in red. If you have any further questions or concerns, please let me know and we can discuss further.

Cheers,
Darren

From: Loro, Darren
Sent: Thursday, December 22, 2022 9:11 AM
To: 'Deanna Green' <Deanna.Green@bagroup.com>
Cc: Nathan H. Yau <yau@bagroup.com>; 'Christine.Chea@mattamycorp.com' <Christine.Chea@mattamycorp.com>; 'Anthony.Sotomayor@mattamycorp.com' <Anthony.Sotomayor@mattamycorp.com>; Krusto, Matt <Matt.Krusto@halton.ca>; heide.schlegl@milton.ca; kavleen.sachdeva@milton.ca
Subject: RE: Terms of Reference - TIS for Britannia & Regional Road 25 proposed development

Hi Deanna,

Thank you for the preliminary trip generation forecasts. Please see Transportation Planning's comments in blue on the proposed Terms of Reference below.

Let me know if you have any questions or want to discuss further.

Cheers, and have a happy holiday!
Darren

1.0 INTRODUCTION

BA Group has been retained by Mattamy Corporation to provide transportation consulting services related to the proposed development of a site (herein referred to as "the site") on the northwest quadrant of the intersection of Regional Road 25 & Britannia Road, in the Town of Milton ("the Town"), in the Region of Halton.

The preliminary development concept includes five residential buildings (up to 15 levels) with a total GFA that could range from approximately 93,000 m2 to 148,000 m2, along with some retail. The development would likely be developed in phases over two blocks. Parking is to be provided both at-grade and through a below-grade structure. Access and site circulation is proposed via a new north-south driveway that would run across the rear of both blocks and create a new 4-legged intersection on Etheridge Avenue. Vehicle access for each of the two blocks will also be considered along Regional Road 25. As discussed in Halton Region's pre-consultation comments for this development proposal, Halton Region's Access By-law (NO.32-17) Section 6.1 (a) states that *"access to a Regional Road from private property shall be permitted only where such access is necessary because access to a local road is not feasible."* As access to Regional Road 25 can be provided via Etheridge Avenue, any proposed access to Regional Road

25 would need to be justified via a Transportation Impact Study (TIS) and will need to be approved by Halton Region's Senior Management. See comments below for further discussion.

The traffic impact study will be completed in accordance with Halton Region's Transportation Impact Study Guidelines as outlined in the following sections. The Region's TIS Guidelines are available online at: https://www.halton.ca/Repository/Transportation-Impact-Study-Guidelines.

2.0 PROPOSED SCOPE OF WORK

2.1 DESCRIPTION OF THE PROPOSAL

The Transportation Impact Study will provide a full description of the proposed redevelopment and will include elements such as:

- Municipal address;
- Existing land uses or permitted use provisions in an Official Plan, Official Plan Amendments, Zoning By-law etc.;
- Proposed land uses and relevant planning regulations to be used in the study;
- Total building sizes and building locations;
- A summary of each type of use with the proposed number of residential units and non-residential Gross Floor Area (GFA) for each building;
- Expected date of occupancy; Development phasing and expected timing of each major phase build-out should be identified in this section.
- Nearby intersections and accesses to adjacent developments and those on the opposite side of the road, including type of traffic control;
- Proposed access points and type of access (full movement, right-in-right-out, turning movement restrictions, etc.);
- Nearby transit facilities/stops;
- Near-by Active Transportation Facilities – sidewalks, multi-use trails, bike lanes, etc.,

2.2 STUDY AREA

The study area and traffic analysis will include the following intersections:

1. Regional Road 25 & Britannia Road Acceptable.
2. Regional Road 25 & Etheridge Avenue Acceptable.
3. Regional Road 25 & Whitlock Avenue Acceptable.
4. Regional Road 25 & Louis St.Laurent Avenue Acceptable.
5. Britannia Road & Farmstead Drive Acceptable.
6. Britannia Road & Rose Way (future background and total conditions only).
6. ~~Britannia Road & Bronte Street S/ First Line~~ This intersection can be omitted from the study scope.
7. ~~Britannia Road & Thompson Road S/ Third Line~~ This intersection can be omitted from the study scope.
8. Proposed site access on Etheridge Drive (proposed new 4-legged intersection) Acceptable.
9. Any proposed site access(es) to Regional Road 25 (to be approved by Halton Region).

2.3 TRANSPORTATION CONTEXT

A description of the existing transportation system in the study area, will identify relevant information, such as the following:

- All adjacent and nearby roads, indicating the number of lanes, and posted speed;
- All adjacent/across and affected intersections/access, indicating type of control, access type, lane configurations, lane widths, and any turning or similar restrictions;
- If appropriate, on-street parking spaces/standing/stopping restrictions in the vicinity of the site and those which would affect the operation of key intersections being analyzed;
- Transit routes and stops;
- Heavy vehicle prohibitions and restrictions;
- All pedestrian and cyclist routes; and
- Other transportation facilities as appropriate.

Potential future transportation improvements that are currently being considered that may facilitate the traffic demand generated by the site will be identified. These improvements will be described to a level of detail sufficient to assess implications for travel to/from the site. In each case, the status and expected date of implementation will be identified.

2.4 PARKING & LOADING CONTEXT

2.4.1.1 Parking

The requirements of the prevailing Town Zoning By-law will be reviewed for both motor vehicles and bicycles in order to confirm the parking needs of the proposed development. If reduced parking rates are proposed, appropriate proxy data will be provided along with justification for any reductions.

2.4.1.2 Loading

The requirements of the prevailing Town Zoning By-law will be reviewed to confirm the development's loading supply requirements. An appropriate loading facility supply for site will be provided.

2.5 TRANSPORTATION DEMAND MANAGEMENT (TDM)

The TDM Plan will be included with the TIS and will include a wide variety of initiatives aimed at reducing the amount of travel by single occupant vehicles to achieve a more sustainable travel mode share, particularly during the peak travel hours of the day.

The TDM Plan will consider initiatives such as but not limited to the following:

- Promotion and support for reduced single occupant vehicle use through carpool programs;
- Promotion of transit:
- Consideration of bicycle/pedestrian facilities and connectivity;
- Information for residents regarding sustainable travel options;
- Potential for a reduced parking supply.

The proposed TDM analysis is acceptable as long as no modal split reductions are applied to the site trip generation forecasts.

2.6 HORIZON YEAR AND TIME PERIODS FOR ANALYSIS

The site build-out year will be confirmed as part of the study. It is proposed that the traffic analysis include the following scenarios:

- Existing conditions;
- Future background conditions (build-out year to be determined) – with corridor growth and area background development traffic;
- Future total conditions (build-out year to be determined) – at build-out of site and inclusive of site generated traffic;
- Future total conditions – 5-years beyond build-out with site generated traffic.

The TIS should analyze the following scenarios:

- 2022 Existing Conditions
- Future background conditions for each major phase build-out horizon year and the five-year horizon beyond full build-out.
- Future total conditions for each major phase build-out horizon year and the five-year horizon beyond full build-out.

The analysis will be completed for both the AM and PM peak periods of the day, during a typical weekday. Acceptable.

2.7 TRAFFIC ANALYSIS

2.7.1 Existing Traffic Conditions

The traffic analysis will include a representative picture of the existing transportation conditions with exhibits that show the existing traffic volumes and turning movements for all modes of transportation for roadways and intersections in the study area including pedestrian/cyclist volumes and heavy truck movements.

All traffic data collection undertaken will include pedestrians, cyclists and motor vehicles on a typical weekday, during typical morning and afternoon peak periods. BA Group will work with the Town & Region to obtain historical counts and supplement available data with new traffic counts recently completed by Spectrum, on behalf of BA Group on November 29, 2022. Acceptable. However, given the ongoing construction on Britannia Road east of Regional Road 25 for the road widening to six lanes (discussed

further below) and the potential impacts to typical travel patterns, 2022 traffic counts at the intersection of Regional Road 25 and Britannia Road should be compared to historical traffic counts. Specifically, traffic volumes for movements entering and exiting the "east leg" of the intersection (SBL, EBT, NBR, WBL, WBT, WBR) should be compared. If the traffic volumes for these specific movements are greater in the historical counts compared to the 2022 counts, then the historical traffic volumes should be used for these specific movements.

Historical traffic data can be requested at accesshalton@halton.ca.

2.7.2 Background Traffic

Halton Region's Transportation Master Plan identified the need to widen Regional Road 25 to six lanes from Highway 407 to Derry Road, with construction currently scheduled to begin in 2027 per Halton Region's 2022 Budget and Business Plan which can be accessed online at: https://www.halton.ca/Repository/2022-Budget-and-Business-Plan-Capital-Report. It is reasonable to assume that the road widening construction for this segment may take a couple of years at a minimum. Therefore, this improvement should only be accounted for under a 2030 horizon or beyond.

Halton Region's Transportation Master Plan identified the need to widen Britannia Road to six lanes from Tremaine Road to Highway 407. The segment between Tremaine Road and Regional Road 25 has already been widened, while the segment between Regional Road 25 and James Snow Parkway is currently under construction with construction expected to be completed by the end of 2024 per Halton Region's Roads Capital Projects In Progress. The widening of Britannia Road east of Regional Road 25 should be accounted for under a 2025 horizon year or beyond.

The following growth rates can be applied to the existing traffic volumes to forecast future background traffic volumes:

- 2% compounded annually on Britannia Road for all movements
- 2% compounded annually on Regional Road 25 for all movements up until the 2030 horizon, after which a growth rate of 3.8% compounded annually must be applied to through movements only on Regional Road 25. This higher growth rate should be applied to the 2030 horizon and beyond regardless if the TIS is analyzing the 2030 horizon year or not.
    - For example, if the TIS is analyzing the 2028 and 2033 horizon years, the 2% growth rate should be applied up until 2030 in the volume calculations after which the higher growth rate would be applied to the 2030 horizon year up until 2033 for through movements on Regional Road 25.

Background development traffic associated with the following properties within the Boyne Survey area should be accounted for in the future background traffic volume forecasts:

- Primont Homes residential subdivision 24T-14004/M (fronting Britannia Road, east of Regional Road 25)
- Fernbrook residential development Z-10/20 (fronting Britannia Road, east of Regional Road 25)
- Mil Con III Fieldgate residential subdivision 24T-20005/M (fronting Britannia Road, east of Regional Road 25)
- West Country Milton Properties Residential Major Node Z-21/21 (south-west corner of Regional Road 25 and Whitlock Avenue)
- Gulfbeck Developments Residential Major Node Z-11/20 (south-west corner of Regional Road 25 and Whitlock Avenue)
- Sixteen Mile Creek residential subdivision 24T-20007/M at 6439 Regional Road 25 (north-east corner of Regional Road 25 and Louis St. Laurent Avenue)
- any outstanding development build-out within the Martin East subdivision 24T-17002/M (please co-ordinate with the Town's Planning Department to confirm outstanding development build-out status and obtain the related studies)

2.7.2.1 Corridor Growth **See comments above under 2.7.2. Header.**

The background traffic growth rate in traffic along corridors in the study area, will be established in consultation with Town & Region staff.

2.7.2.2 Background Developments

All significant developments under construction, approved, or in the approval process within the study area and are likely to occur by the specific horizon years will be identified and recognized in the study. The land-use type and magnitude of the probable future developments in the horizon years will be identified through consultation with Town staff.

2.7.2.3 Transportation Network Improvements **See comments above under 2.7.2. Header.**

Changes to the present or planned transportation network will be determined from the approved Town & Region capital

improvement programs. A realistic assessment of timing and certainty will be made. The impacts of the transportation system changes will be identified.

2.7.2.4 Transit/HOV Considerations **See comments above under 2.7.2. Header.**

The TIS will evaluate the impacts of site generated transit demand for the relevant time periods and scenarios on all transit services and transit stops/stations/terminals where ridership will be increased by 5% or more by site generated transit demand. Acceptable, as long as no modal split reductions are applied to the site trip generation forecasts.

For HOV analysis, the lane analysis must use a lane utilization factor of 0.80 for the assumption that 20% is assumed as the HOV lane usage.

2.7.3 Estimation of Travel Demand

2.7.3.1 Trip Generation

Traffic volumes expected to be generated by the site will be forecast using the latest edition of the ITE Trip Generation Manual, unless local & more reliable trip generation data is available.

Trip generation parameters will be selected using the principles as described in Chapter 3 of the ITE Trip Generation Handbook. The estimation of traffic volumes generated by the site will be based on the full build-out of the proposed residential redevelopment.

All trip generation assumptions and adjustments assumed in the calculation of "new" vehicle trips will be documented and justified in terms of previous research or proxy surveys. Acceptable, as long as all relevant trip generation data excerpts are appended to the TIS.

Please provide a trip generation comparison between the current development proposal and the trip generation forecasts associated with the subject property from the Boyne RNA.

2.7.3.2 Trip Distribution

All trip distribution assumptions will be documented and justified. Due consideration will be given to potential differences in trip distribution patterns associated with different time periods. Trip distribution for the residential use should be derived from the latest Transportation Tomorrow Survey (TTS) data. All relevant trip distribution data excerpts should be appended to the TIS.

2.7.3.3 Trip Assignments

Traffic assignments will consider logical routings, available and projected roadway capacities and travel times. Traffic assignments will be estimated using “hand assignment” based on knowledge of the proposed/future road network in the study area.

2.7.3.4 Summary of Traffic Demand Estimates

Traffic volume figures will be provided that illustrate the assignment of all site-generated traffic volumes and pass-by volumes (if applicable) separately to the local road network, as well as to the individual site access locations by direction and by turning movement where required.

For both the AM and PM peak period, the traffic volumes figures will summarize:

- Existing Conditions: existing traffic/transit volumes;
- Future Background: existing plus background growth for each horizon year; and
- Future Total: existing plus background growth plus site generated volumes for each horizon year.

A summary of the future traffic demands (each combination of horizon year and peak period for both site generated and total future traffic conditions) will be provided in the figures. Pass-by traffic assumptions will be clearly identified and illustrated on the figures.

2.7.3.5 Evaluation of Impacts of Site Traffic

The evaluation of the impacts of site traffic will be undertaken for both the AM and PM Peak of each horizon year. The existing volumes, existing plus background growth and existing plus background growth plus site-generated traffic by direction and by turning movement will be included, as well as the scenarios with and without any relevant major transportation system improvements.

2.7.4 Capacity Analysis

A capacity analysis at the study intersections will assess the operations of individual intersections and movements expected to be impacted by the proposed redevelopment. The evaluation of signalized and unsignalized intersections impacted by site traffic volumes will be provided in a tabular format. The objective will be to maintain existing levels of service as best as possible.

The intersection capacity analysis will be completed using Synchro Version 11 and a combination of Highway Capacity Manual (HCM) 2000 and HCM 6 methodologies. A saturation flow rate of 1,900 vehicles per hour will be utilized in the analysis. A consistent methodology (e.g. HCM2000 or HCM6) should be applied to all capacity analysis within the TIS where the intersection control is the same (e.g. a consistent methodology should be applied for analysis of all signalized intersections).

The analysis will include the mitigation of impacts to signalized intersection operations where:

- Volume/capacity (v/c) ratios for overall intersection operations, through movements, or shared through/turning movements increased to 0.85 or above:
- V/C ratios for exclusive movements increased to 0.95 or above; or
- Queues for an individual movement are projected to exceed available turning lane storage.

These critical movements as defined in the Region's TIS Guidelines should be bolded or highlighted in the results tables.

The analysis will also include mitigation at unsignalized intersections where:

- Level of service (LOS), based on average delay per vehicle, on individual movements exceeds LOS "D", or
- The estimated 95th percentile queue length for an individual movement exceeds the available queue storage.

These critical movements as defined in the Region's TIS Guidelines should be bolded or highlighted in the results tables.

Regional staff will be contacted to obtain current traffic signal timings at existing signalized intersections in the study area. All proposed adjustments to traffic signal timings, phasing and cycle lengths will be evaluated in terms of pedestrian crossing time, effect on queue lengths, adequacy of existing storage and effects on the existing traffic signal co-ordination. Signal timing plans can be requested at accesshalton@halton.ca.

2.7.5 Safety Analysis

Potential safety or operational issues associated with the following, as applicable, will be identified:

- Weaving;
- Merging;
- Transit operational conflicts
- Corner clearances on Etheridge Avenue between Regional Road 25 and the proposed site access;
- Sight distances;
- Vehicle-pedestrian conflicts;
- Traffic infiltration;
- Access conflicts;
- Cyclist movements;
- Heavy truck movement conflicts;
- Queuing

2.7.6 Collision Analysis

If requested by the Town & Region, if there is a collision history at any of the study area intersections that could be impacted by site generated traffic, a request to the Town & Region will be made to obtain the relevant collision data. The collision data will be reviewed and assessed, with respect to the impact of the proposed redevelopment.

2.7.7 Site Access and Circulation

All proposed site access points on Town & Region roads will be evaluated in terms of capacity, safety and sight distance & adequacy of queue storage capacity. This evaluation will be similar in scope to that for the signalized and unsignalized intersections described previously.

Proposed access points will be evaluated with respect to existing access points and intersections, on-street weaving problems, need for acceleration or deceleration lanes and pedestrian and cycling safety.
On-site parking and circulation systems will be evaluated to demonstrate appropriate clear throat distances and avoid any possible queuing onto Town & Region roads.

Sight lines will be evaluated based on the Transportation Association of Canada (TAC Manual).

Proposed truck/courier loading facilities and access to these facilities will be evaluated to ensure that they are adequately sized, designed and provided with suitable access so that they will not adversely affect traffic and transit operations on Town & Region roads.

Any required turning or other restrictions will be identified.

As discussed in Halton Region's pre-consultation comments for this development proposal, Halton Region's Access By-law (NO.32-17) Section 6.1 (a) states that "*access to a Regional Road from private property shall be permitted only where such access is necessary because access to a local road is not feasible.*" As access to Regional Road 25 can be provided via Etheridge Avenue, any proposed access to Regional Road 25 would need to be justified via a TIS and will need to be approved by Halton Region's Senior Management. The justification should demonstrate that any proposed access conforms to Halton Region's Access Management Guideline (spacing, geometrics, sightlines, etc.), demonstrate the benefits of permitting access to Regional Road 25 (e.g. traffic operations, safety, circulation, etc.) and highlight any negative impacts of not permitting access to Regional Road 25.

Given the available site frontage to Regional Road 25, any proposed access on Regional Road 25 to the north or south blocks would have to operate as a right-in/right-out (RI/RO) access to conform to Halton Region's Access Management Guideline spacing requirements. The access(es) would have to be RI/RO restricted by a raised centre median on Regional Road 25.

The TIS must analyze traffic safety components associated with the proposed access(es) to Regional Road 25 including (but not limited to):

- Sightlines along Regional Road 25,
- Auxiliary right-turn lane requirements on Regional Road 25 at the site access(es);
- the proposed clear throat length at the access(es); and
- swept path analysis for the largest design vehicle anticipated to use the proposed access(es) to Regional Road 25. The access(es) should be designed to allow a simultaneous inbound movement from the design vehicle and outbound movement from a passenger car, and vice versa.

2.7.8 Transportation System Mitigation Measures

2.7.8.1 Required Roadway Improvements

If any physical and operational road network deficiencies are identified in the TIS, solutions will be provided that are feasible and economic to implement. If traffic operations issues are identified under future background or total conditions, then the TIS will need to recommend mitigation measures to address these issues (even if not necessarily triggered by the proposed development) or at the very least, rationalize the traffic operations issues if there are no feasible mitigation measures. The TIS should identify who is responsible for each recommended mitigation measure, if required.

Functional design plans will be provided for any recommended physical improvements.

2.7.8.2 Traffic Signal Improvements

Any traffic signal operational deficiencies that are identified in the TIS will be addressed and solutions will be provided that are feasible to implement.

2.7.8.3 Preliminary Cost Estimate

A preliminary cost estimate will be provided for all recommended infrastructure improvements.

2.8 RECOMMENDATIONS

A summary of the key findings with respect to the transportation impact of the proposed redevelopment will be presented along with a summary of the recommended improvements if necessary.

Any recommendations for improvements will consider the following:

- Timing of short-range and long-range network improvements that are already planned and scheduled;
- Expected time schedule of adjacent developments;
- Logical sequencing of various improvements or segments;
- Right-of-way needs and availability of additional right-of-way within the appropriate time frames;

Halton Region's Transportation Master Plan (TMP) identified the need to widen Regional Road 25 to six lanes from Highway 407 to Derry Road, and Britannia Road from Tremaine Road to Highway 407. These roadways have been identified as "C4" Corridors with an ultimate 47 metre right-of-way.

As noted in Halton Region's pre-consultation comments, any lands within 23.5 metres of the centreline of the original right-of-way of Regional Road 25 that are part of the subject property shall be dedicated to the Regional Municipality of Halton for the purpose of road right-of-way widening and future road improvements. Any **additional** lands that are part of the subject property and have been identified as required for the future widening of Regional Road 25 per a Municipal Class Environmental Assessment Study / Environmental Study Report or Detail Design Project shall be dedicated to the Regional Municipality of Halton for the purpose of road right-of-way widening and future road improvements. Any lands within 23.5m of the centreline of the existing right-of-way of Britannia Road (Regional Road 6) that are part of the subject property shall be dedicated to the Regional Municipality of Halton for the purpose of road right-of-way widening and future road improvements.

2.9 DOCUMENTATION AND REPORTING

The structure and format of the TIS will adhere to the scope of work outlined in this document and include the following:

- Executive Summary
- Site/Development Description (Site plan to be provided);
- Study Area (Map identifying the study area and site to be provided);
- Parking and Loading Context
- Transportation Demand Management (TDM) Plan
- Existing Conditions (Exhibit to be provided);
- Analysis Periods;
- Background Traffic Demand – Existing and Future Background (Exhibits to be provided);
- Site Generated Traffic (Exhibits to be provided);
- Level of Service Analysis;
- Total Traffic Demand – Future Background plus Site Generated Traffic (Exhibits to be provided);
- Improvement Alternatives Required to Mitigate Traffic Impacts
- Traffic Impacts for Future Background and Total Traffic with and without mitigation measures (Tabular summaries to be provided);
- Access Considerations; and
- Recommendations.

The TIS will include a main document, supplemented by a technical appendices containing detailed analysis worksheets, traffic counts data, traffic signal timings and other data as required.

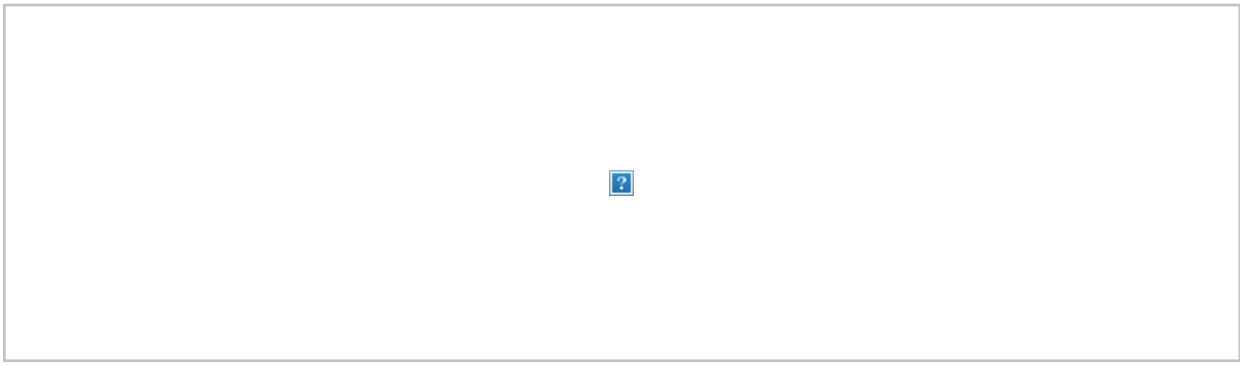
From: Deanna Green <Deanna.Green@bagroup.com>
Sent: Wednesday, December 21, 2022 3:30 PM
To: Loro, Darren <Darren.Loro@halton.ca>
Cc: Nathan H. Yau <yau@bagroup.com>
Subject: RE: Terms of Reference - TIS for Britannia & Regional Road 25 proposed development

Darren,

To assist with your review of the TIS terms of reference, please see the trip generation table below for the proposed development at Regional Road 25 & Britannia Road. Please let us know if you need anything else.

Thanks,

Deanna



From: Loro, Darren <Darren.Loro@halton.ca>
Sent: December 21, 2022 7:46 AM
To: Deanna Green <Deanna.Green@bagroup.com>
Cc: Nathan H. Yau <yau@bagroup.com>
Subject: RE: Terms of Reference - TIS for Britannia & Regional Road 25 proposed development

Hi Deanna,

Appreciate it! Look forward to hearing from you.

Cheers,
Darren

From: Deanna Green <Deanna.Green@bagroup.com>
Sent: Tuesday, December 20, 2022 4:09 PM
To: Loro, Darren <Darren.Loro@halton.ca>
Cc: Nathan H. Yau <yau@bagroup.com>
Subject: RE: Terms of Reference - TIS for Britannia & Regional Road 25 proposed development

Darren,

Great to meet you virtually as well!☺ We have followed up with the client and requested the preliminary unit count proposed for both the south and north block so that we can estimate the vehicle trips to be generated. We hope to be able to get back to you shortly.

Thank you.

Deanna

From: Loro, Darren <Darren.Loro@halton.ca>

Sent: December 20, 2022 1:57 PM
To: Deanna Green <Deanna.Green@bagroup.com>
Cc: Krusto, Matt <Matt.Krusto@halton.ca>; heide.schlegl@milton.ca
Subject: RE: Terms of Reference - TIS for Britannia & Regional Road 25 proposed development

Hi Deanna,

I am the Regional Transportation Planning Coordinator for Development Applications within Milton – nice to meet you!

Thank you for circulating this Terms of Reference for the proposed development along Regional Road 25 between Britannia Road and Etheridge Avenue. Transportation Planning is currently reviewing your proposed Terms of Reference and will provide you with comments by the end of this week before the Holiday closure. In the meantime, however, could you please provide us with preliminary trip generation forecasts for the north and south blocks of the proposed development? Appreciate it!

Cheers,
Darren

Darren Loro, C.E.T.
Project Manager I – Transportation Planning Coordination
Infrastructure Planning & Policy
Public Works
Halton Region
905-825-6000, ext. 2694 | 1-866-442-5866

From: Deanna Green <Deanna.Green@bagroup.com>
Sent: December 9, 2022 7:39 AM
To: heide.schlegl@milton.ca; Krusto, Matt <Matt.Krusto@halton.ca>
Cc: Christine Chea <Christine.Chea@mattamycorp.com>; Anthony Sotomayor <Anthony.Sotomayor@mattamycorp.com>
Subject: Terms of Reference - TIS for Britannia & Regional Road 25 proposed development

Good morning Heide & Matt,

BA Group has been retained by Mattamy Corporation to provide transportation consulting services related to the proposed development of a site on the northwest quadrant of the intersection of Regional Road 25 & Britannia Road, in the Town of Milton.

The preliminary development concept includes five residential buildings (up to 15 levels) with a total GFA that could range from approximately 93,000 m^2 to 148,000 m^2, along with some retail. Access and site circulation is proposed via a new north-south driveway that would run across the rear of both blocks and create a new 4-legged intersection on Etheridge Avenue. Vehicle access for each of the two blocks will also be considered along Regional Road 25.

The traffic impact study will be completed in accordance with Halton Region's Transportation Impact Study Guidelines as outlined in the attached Terms of Reference. Can you please let us know if the attached Terms of Reference would be acceptable for the TIS?

Thanks very much.

Deanna

Deanna Green, MSc.P.Eng.
Associate

BA Consulting Group Ltd.
300 - 45 St. Clair Ave. W.
Toronto, ON M4V 1K9

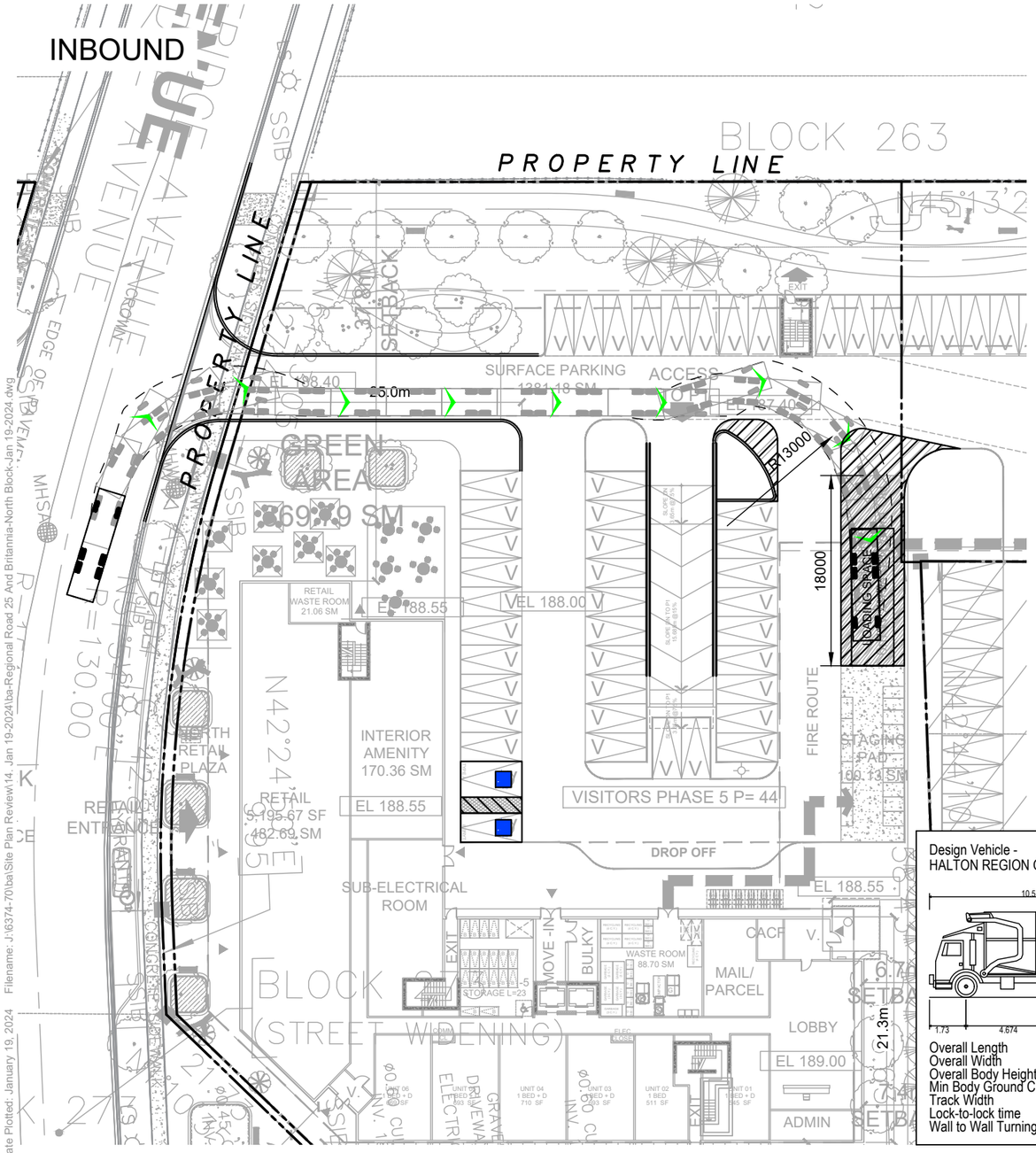
TEL 416 961 7110 x149
EMAIL Deanna.Green@bagroup.com

Image removed by sender. BA Consulting Group Ltd

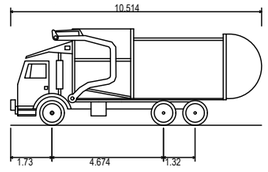
APPENDIX D: VEHICLE MANOEUVRING DIAGRAMS

INBOUND

OUTBOUND



Design Vehicle -
HALTON REGION GARBAGE, YR 2008-2014



Overall Length	10.514m
Overall Width	2.570m
Overall Body Height	4.040m
Min Body Ground Clearance	0.391m
Track Width	2.570m
Lock-to-lock time	5.00s
Wall to Wall Turning Radius	13.715m

BA Group

REGIONAL ROAD 25 & BRITANNIA ROAD

VEHICLE MANOEUVRING DIAGRAM
HALTON REGION GARBAGE TRUCK
NORTH BLOCK

Project:	RR 25 & BRITANNIA
Project No.	6374-70
Date:	January 19, 2024
Revised:	--

Scale 1:500 (0 5 10 15 20m)

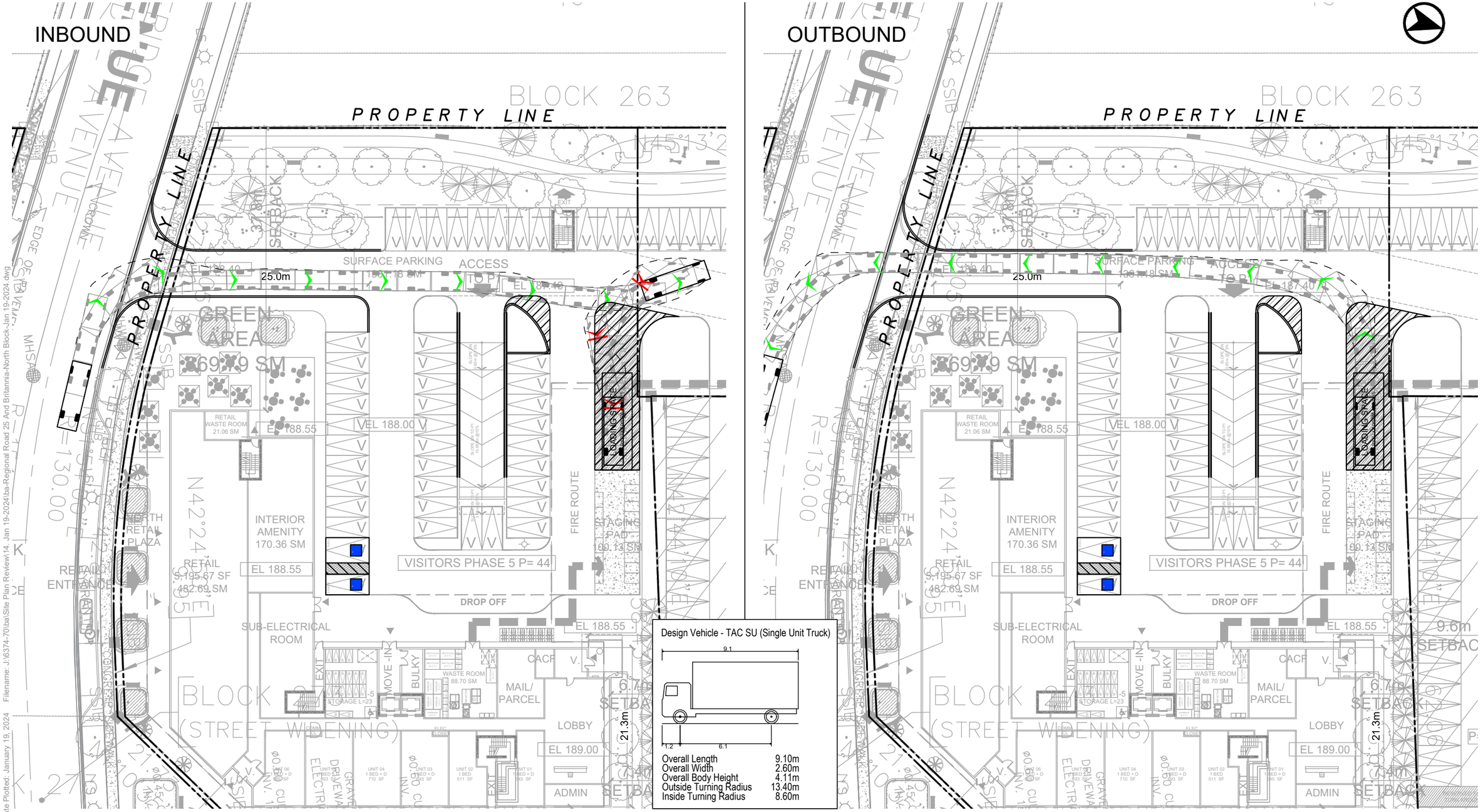
Drawing No. VMD-01

Filename: J:\6374-70\ba\Site Plan Review\14. Jan 19-2024\ba-Regional Road 25 And Britannia-North Block-Jan 19-2024.dwg

Date Plotted: January 19, 2024

INBOUND

OUTBOUND



Filename: J:\6374-70\ba\Site Plan Review\14. Jan 19-2024\ba-Regional Road 25 And Britannia-North Block-Jan 19-2024.dwg

Date Plotted: January 19, 2024

BA Group

REGIONAL ROAD 25 & BRITANNIA ROAD

VEHICLE MANOEUVRING DIAGRAM

SINGLE UNIT TRUCK

NORTH BLOCK

Project:	RR 25 & BRITANNIA
Project No.	6374-70
Date:	January 19, 2024
Revised:	--

Scale 1:500 (0 5 10 15 20m)

Drawing No. VMD-02

INBOUND

OUTBOUND

PROPERTY LINE

SETBACK

EXIT

SURFACE PARKING
1381.18 SM

ACCESS
TO P1

EL 188.40

25.0m

EL 187.40

GREEN AREA
669.79 SM

RETAIL WASTE ROOM
21.06 SM

EL 188.55

EL 188.00

LOADING SPACE

FIRE ROUTE

STAGING PAD
160.13 SM

NORTH RETAIL PLAZA

INTERIOR AMENITY
170.36 SM

RETAIL ENTRANCE

RETAIL
5,195.67 SF
482.69 SM

VISITORS PHASE 5 P= 44

DROP OFF

SUB-ELECTRICAL ROOM

EL 188.55

9.6m SETBACK

BLOCK 2

(STREET WIDENING)

MOVE -IN

BULKY

WASTE ROOM
88.70 SM

CACF

V.

MAIL/ PARCEL

LOBBY

EL 189.00

ADMIN

6.7m SETBACK

21.3m

(7.4m) SETBACK

P=3

SECONDARY CONDO ENTRANCE

PROPERTY LINE

FUTURE ROAD WIDENING

48.1m

CULVERT

3.0m SETBACK

3.5m SETBACK

EDGE OF PAVEMENT

Design Vehicle - CUBEVAN (Ford E350)

Overall Length	7.70m
Overall Width	2.45m
Overall Body Height	3.66m
Outside Turning Radius	9.49m
Inside Turning Radius	5.68m

Filename: J:\6374-70\ba\Site Plan Review\14 Jan 19-2024\ba-Regional Road 25 And Britannia-North Block-Jan 19-2024.dwg

Date Plotted: January 19, 2024

BA Group

REGIONAL ROAD 25 & BRITANNIA ROAD

VEHICLE MANOEUVRING DIAGRAM

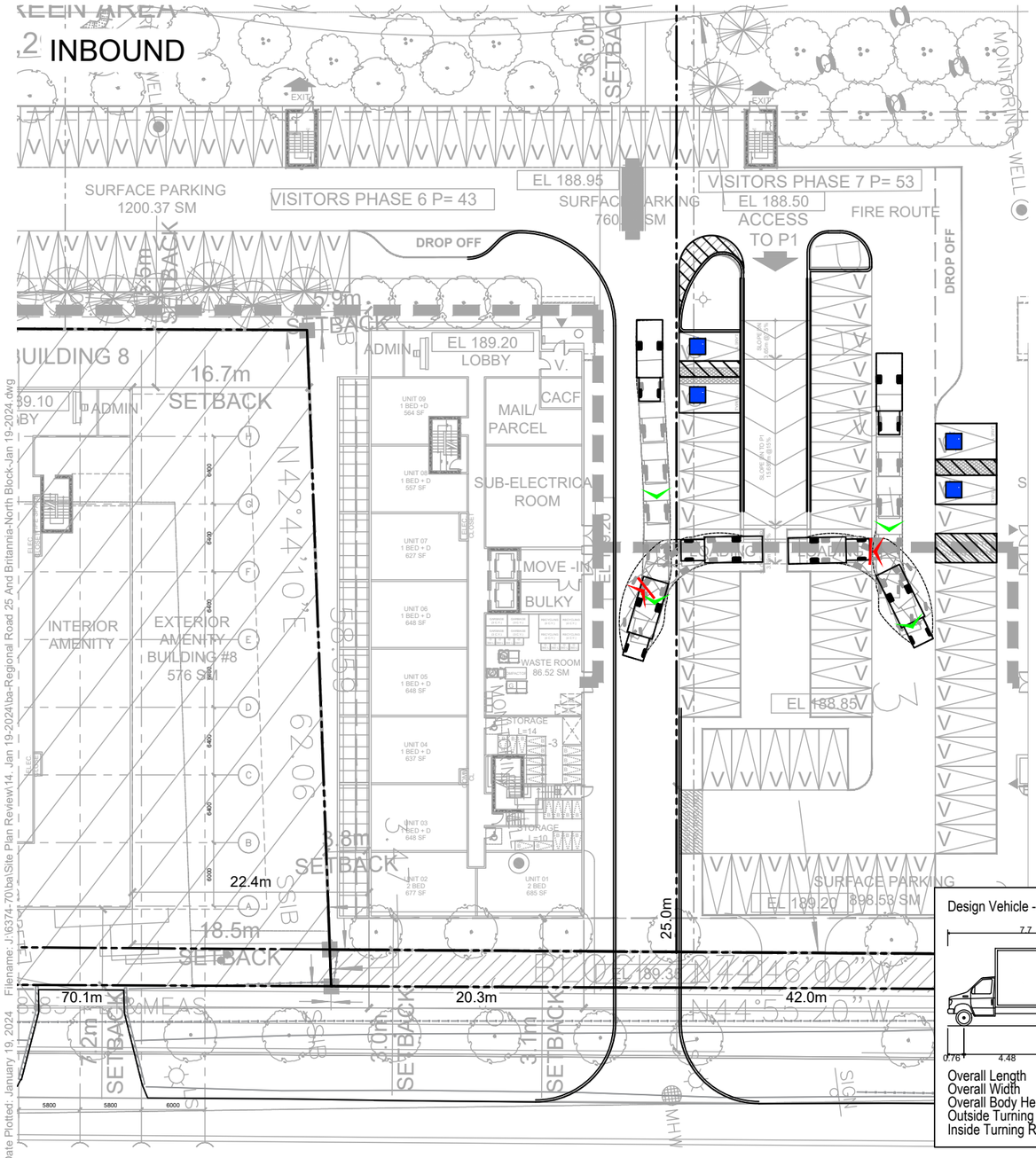
CUBE VAN

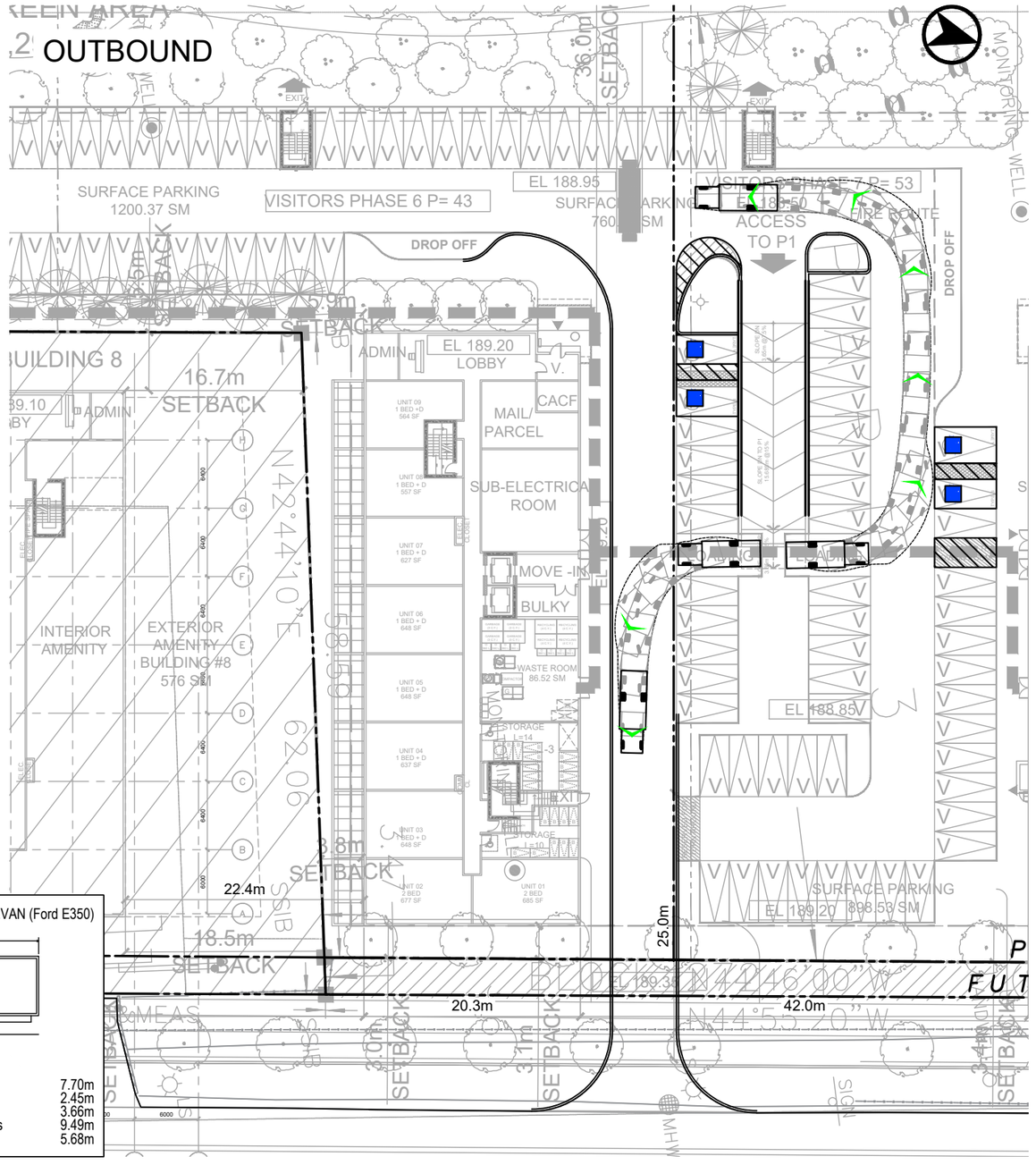
BUILDING 5

Project:	RR 25 & BRITANNIA
Project No.	6374-70
Date:	January 19, 2024
Revised:	--

Scale 1:500 (0 5 10 15 20m)

Drawing No. VMD-03





Filename: J:\6374-70\ba\Site Plan Review\14 Jan 19-2024\ba-Regional Road 25 And Britannia-North Block-Jan 19-2024.dwg
Date Plotted: January 19, 2024

BA Group

REGIONAL ROAD 25 & BRITANNIA ROAD

VEHICLE MANOEUVRING DIAGRAM

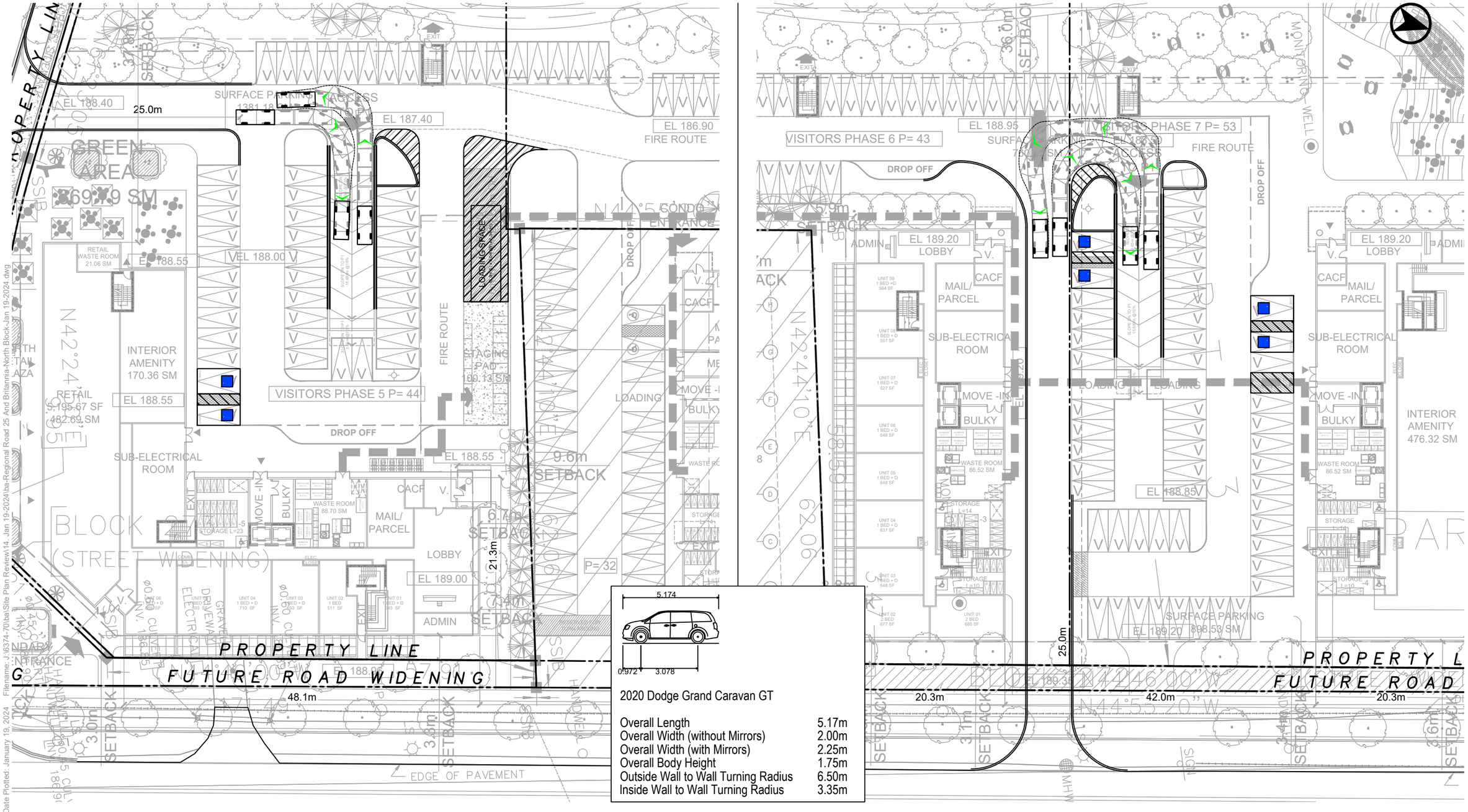
CUBE VAN

BUILDING 6 AND BUILDING 7

Project:	RR 25 & BRITANNIA
Project No.	6374-70
Date:	January 19, 2024
Revised:	--

Scale 1:500 (0 5 10 15 20m)

Drawing No. VMD-04



BA Group

REGIONAL ROAD 25 & BRITANNIA ROAD

VEHICLE MANOEUVRING DIAGRAM
95TH PERCENTILE VEHICLE
DODGE GRAND CARAVAN

Project:	RR 25 & BRITANNIA
Project No.	6374-70
Date:	January 19, 2024
Revised:	--

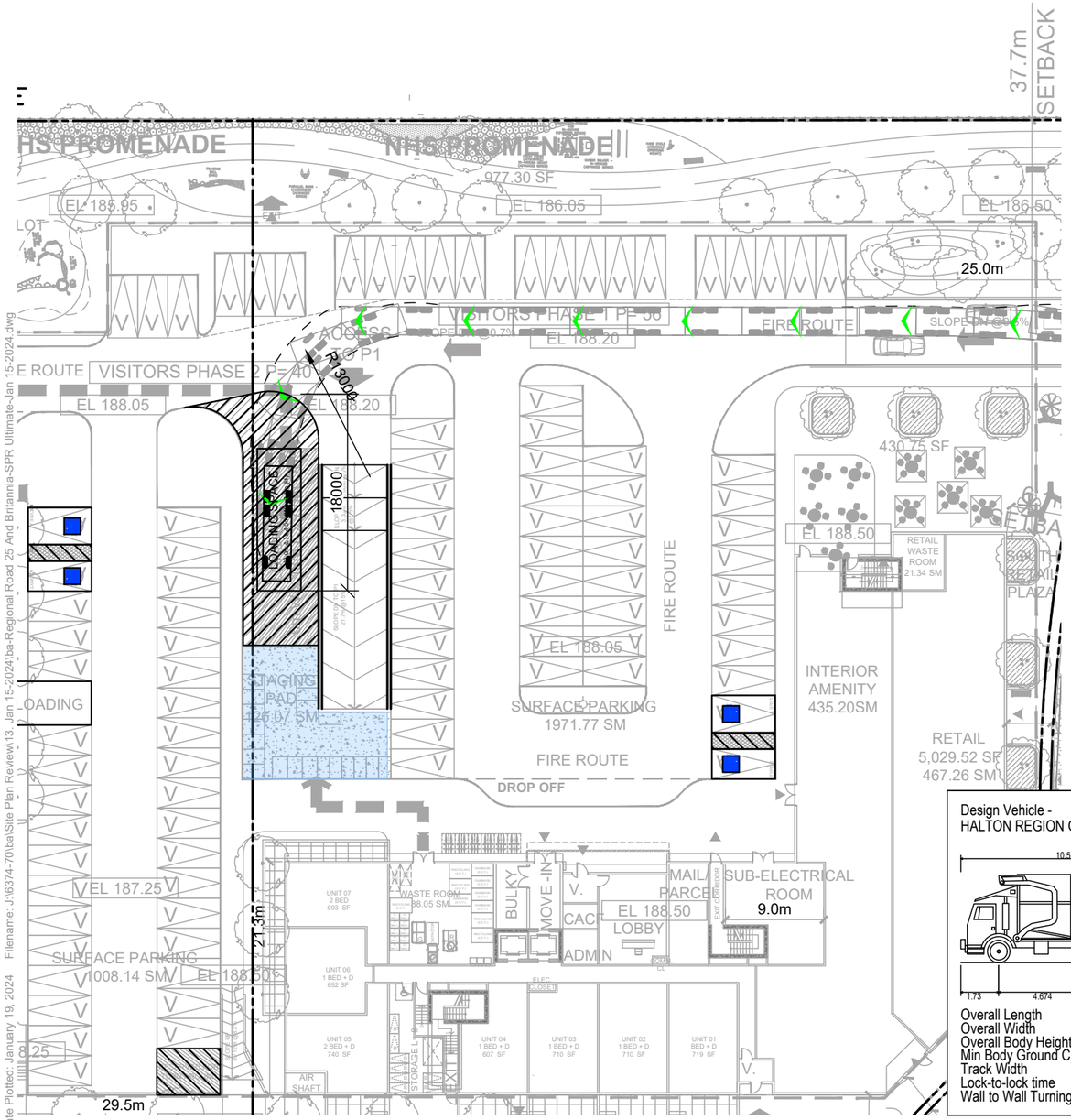
Scale 1:500 (0, 5, 10, 15, 20m)

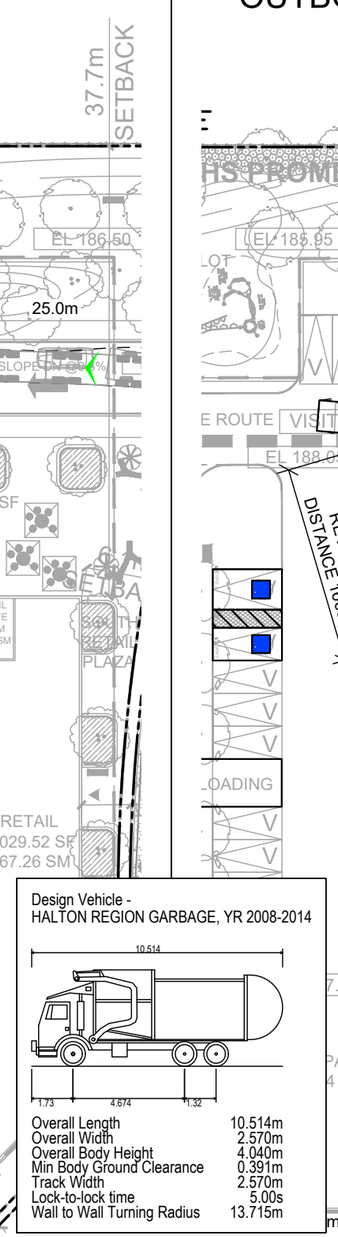
Drawing No. VMD-05

Filename: J:\6374-70\ba\Site Plan Review\14. Jan 19-2024\ba-Regional Road 25 And Britannia-North Block-Jan 19-2024.dwg
Date Plotted: January 19, 2024

INBOUND

OUTBOUND





Design Vehicle -
HALTON REGION GARBAGE, YR 2008-2014

Overall Length	10.514m
Overall Width	2.570m
Overall Body Height	4.040m
Min Body Ground Clearance	0.391m
Track Width	2.570m
Lock-to-lock time	5.00s
Wall to Wall Turning Radius	13.715m

Filename: J:\6374-70\ba\Site Plan Review\13. Jan 15-2024\ba-Regional Road 25 And Britannia-SPR Ultimate-Jan 15-2024.dwg
Date Plotted: January 19, 2024

BA Group

REGIONAL ROAD 25 & BRITANNIA ROAD

VEHICLE MANOEUVRING DIAGRAM
HALTON REGION GARBAGE TRUCK
SOUTH BLOCK

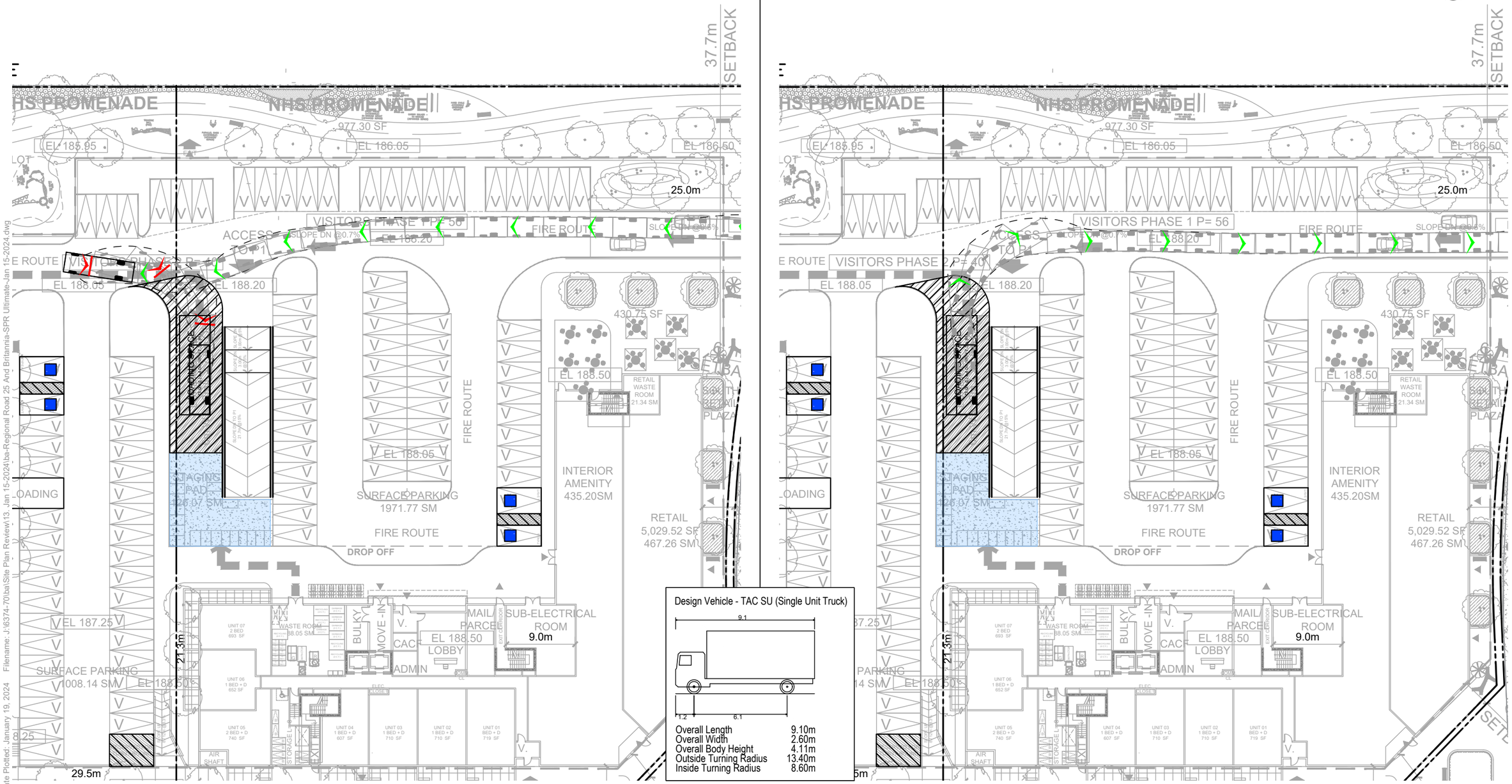
Project:	RR 25 & BRITANNIA
Project No.	6374-70
Date:	January 19, 2024
Revised:	--

Scale 1:500 — 0 5 10 15 20m

Drawing No. VMD-01

INBOUND

OUTBOUND



Design Vehicle - TAC SU (Single Unit Truck)

Overall Length	9.10m
Overall Width	2.60m
Overall Body Height	4.11m
Outside Turning Radius	13.40m
Inside Turning Radius	8.60m

BA Group

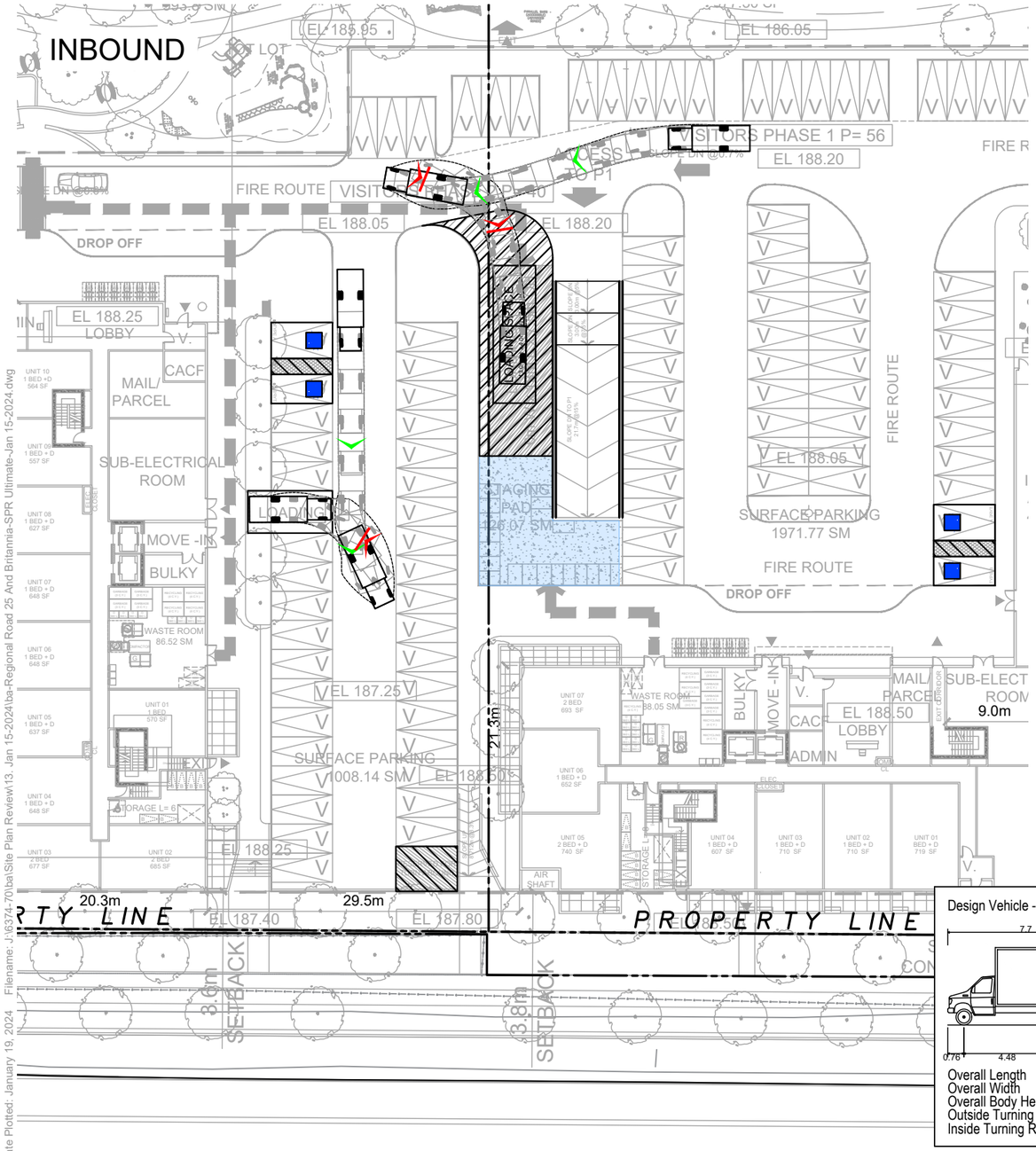
REGIONAL ROAD 25 & BRITANNIA ROAD

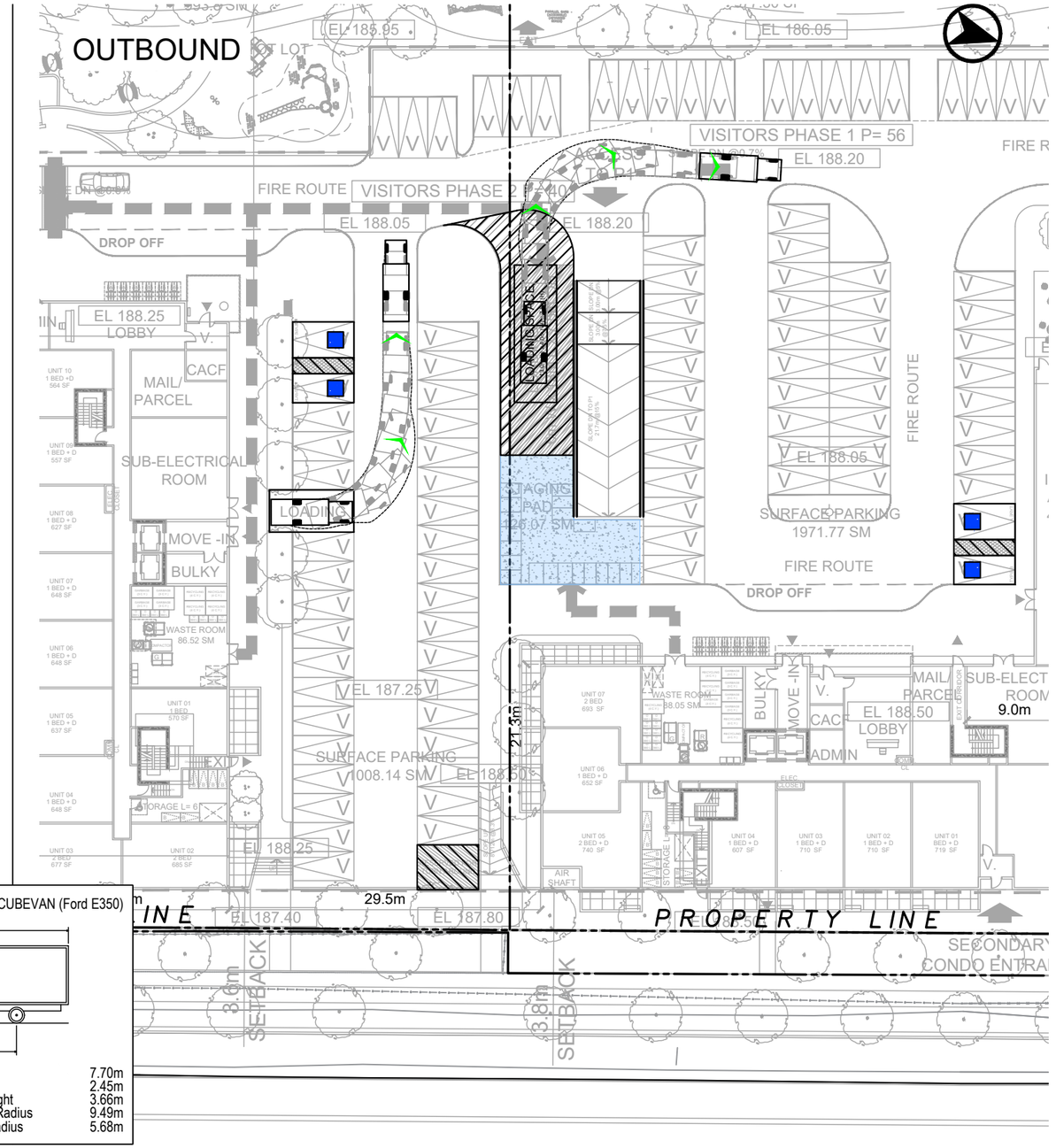
VEHICLE MANOEUVRING DIAGRAM
SINGLE UNIT TRUCK
SOUTH BLOCK

Project:	RR 25 & BRITANNIA
Project No.	6374-70
Date:	January 19, 2024
Revised:	--

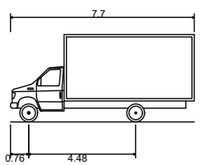
Scale 1:500 — 0 5 10 15 20m

Drawing No. VMD-02





Design Vehicle - CUBEVAN (Ford E350)



Overall Length	7.70m
Overall Width	2.45m
Overall Body Height	3.66m
Outside Turning Radius	9.49m
Inside Turning Radius	5.68m

Filename: J:\6374-70\ba\Site Plan Review\13. Jan 15-2024\ba-Regional Road 25 And Britannia-SPR Ultimate-Jan 15-2024.dwg

Date Plotted: January 19, 2024

BA Group

REGIONAL ROAD 25 & BRITANNIA ROAD

VEHICLE MANOEUVRING DIAGRAM

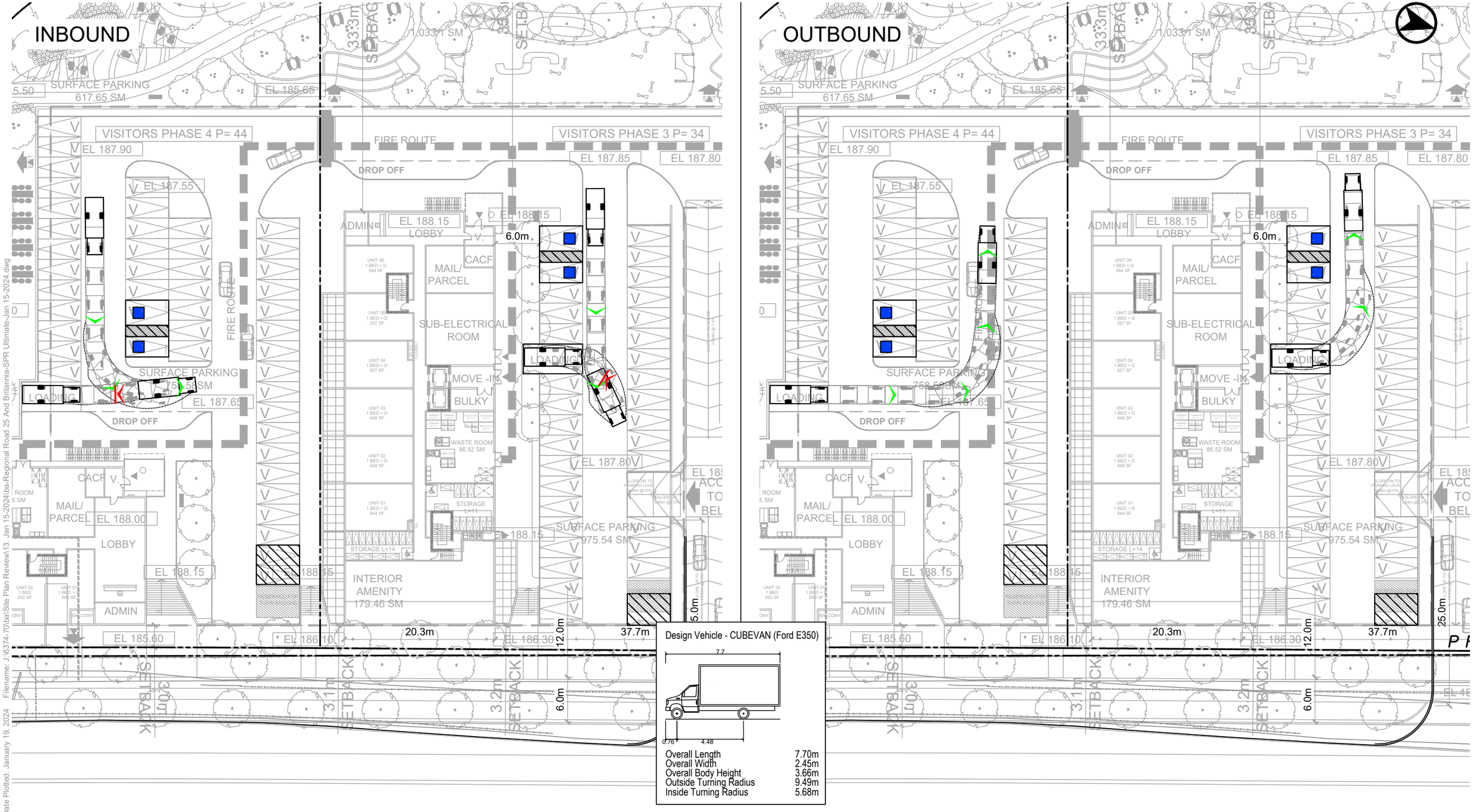
CUBE VAN

BUILDING 1 AND BUILDING 2

Project:	RR 25 & BRITANNIA
Project No.	6374-70
Date:	January 19, 2024
Revised:	--

Scale 1:500 (0 5 10 15 20m)

Drawing No. VMD-03



Design Vehicle - CUBEVAN (Ford E350)

Overall Length	7.70m
Overall Width	2.45m
Overall Body Height	3.66m
Outside Turning Radius	9.49m
Inside Turning Radius	5.68m

BA Group

REGIONAL ROAD 25 & BRITANNIA ROAD

VEHICLE MANOEUVRING DIAGRAM

CUBE VAN

BUILDING 3 AND BUILDING 4

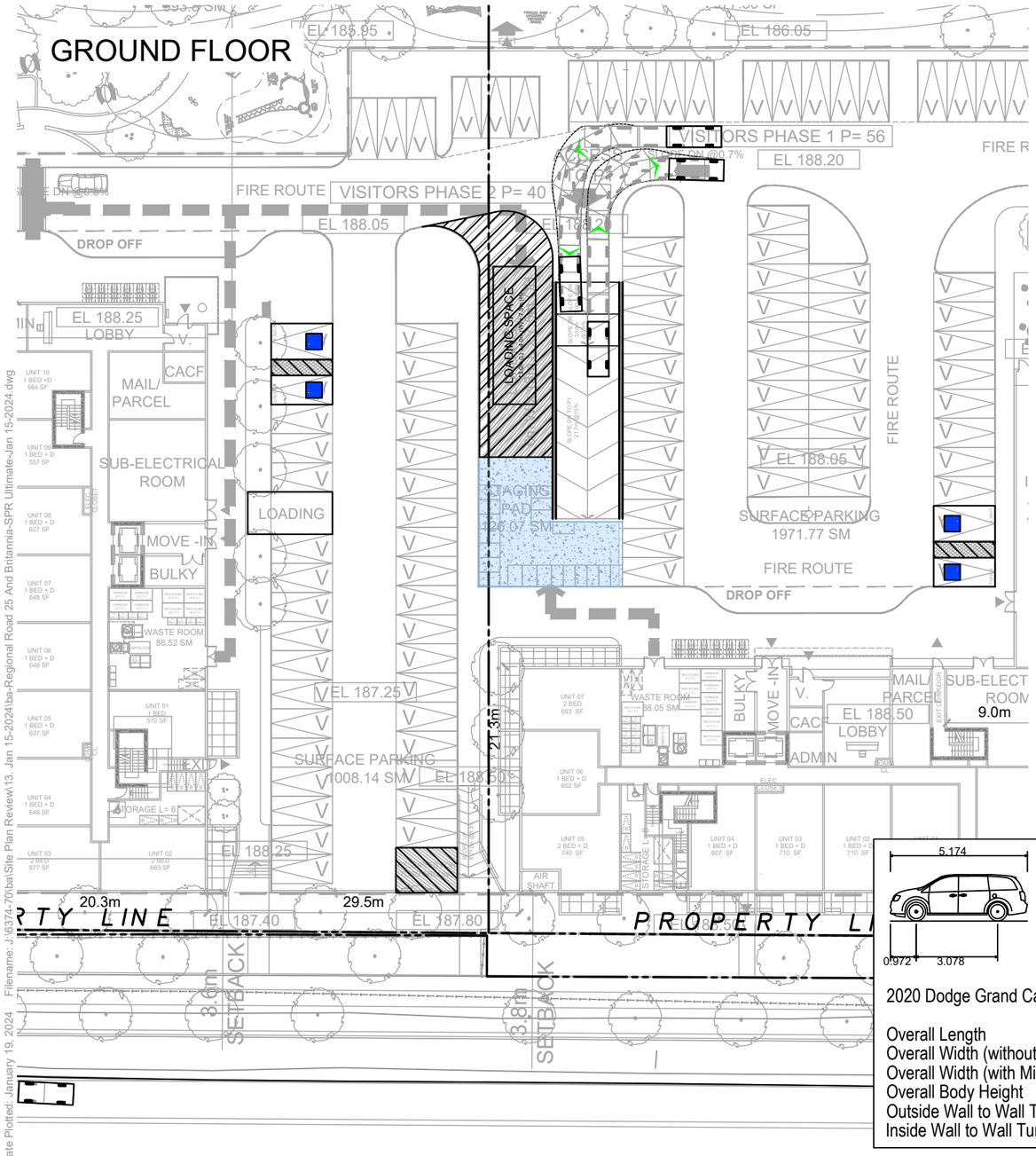
Project:	RR 25 & BRITANNIA
Project No.	6374-70
Date:	January 19, 2024
Revised:	--

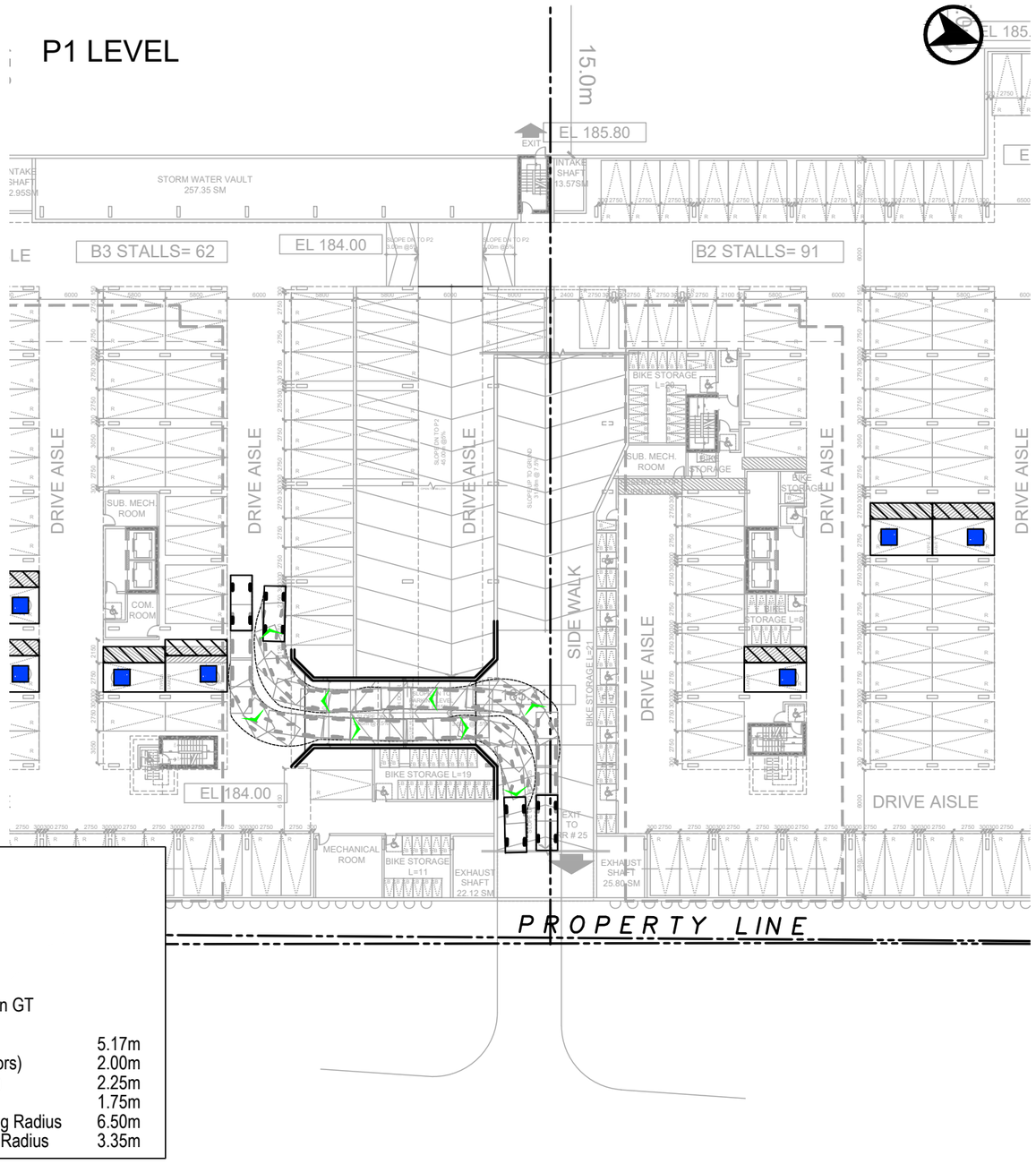
Scale 1:500 (0 5 10 15 20m)

Drawing No. VMD-04

Filename: J:\6374-70\ba\Site Plan Review\13. Jan 15-2024\ba-Regional Road 25 And Britannia-SPR Ultimate-Jan 15-2024.dwg

Date Plotted: January 19, 2024





2020 Dodge Grand Caravan GT

Overall Length	5.17m
Overall Width (without Mirrors)	2.00m
Overall Width (with Mirrors)	2.25m
Overall Body Height	1.75m
Outside Wall to Wall Turning Radius	6.50m
Inside Wall to Wall Turning Radius	3.35m

BA Group

REGIONAL ROAD 25 & BRITANNIA ROAD

VEHICLE MANOEUVRING DIAGRAM

DODGE GRAND CARAVAN

Project:	RR 25 & BRITANNIA
Project No.	6374-70
Date:	January 19, 2024
Revised:	--

Scale 1:500 (0, 5, 10, 15, 20m)

Drawing No. VMD-05

APPENDIX E: TRAFFIC COUNTS

Spectrum

Turning Movement Count
Location Name: BRITANNIA RD & FARMSTEAD DR
Date: Tue, Nov 29, 2022 Deployment Lead: Peter Ilias

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

Turning Movement Count (5 . BRITANNIA RD & FARMSTEAD DR)

Start Time	N Approach FARMSTEAD DR					E Approach BRITANNIA RD					W Approach BRITANNIA RD					Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	UTurn E:E	Peds E:	Approach Total	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
07:00:00	4	14	0	0	18	0	24	0	0	24	50	0	0	0	50	92	
07:15:00	4	30	0	0	34	6	18	0	0	24	86	3	0	0	89	147	
07:30:00	3	31	0	0	34	2	40	1	0	43	114	6	0	0	120	197	
07:45:00	5	27	0	0	32	1	64	0	0	65	110	4	0	0	114	211	647
08:00:00	9	29	0	0	38	6	67	0	0	73	100	6	0	0	106	217	772
08:15:00	3	25	0	0	28	1	70	0	0	71	99	6	0	0	105	204	829
08:30:00	2	14	0	0	16	7	89	0	0	96	93	7	0	0	100	212	844
08:45:00	8	21	0	0	29	10	72	0	2	82	97	3	0	0	100	211	844
BREAK																	
16:00:00	6	12	0	0	18	15	102	0	0	117	64	0	0	2	64	199	
16:15:00	3	13	0	0	16	23	137	0	0	160	65	3	0	0	68	244	
16:30:00	5	17	0	0	22	18	117	0	0	135	44	4	1	0	49	206	
16:45:00	3	11	0	1	14	22	117	0	0	139	74	3	0	0	77	230	879
17:00:00	5	12	0	0	17	18	106	0	0	124	79	3	0	0	82	223	903
17:15:00	3	9	0	0	12	16	112	0	0	128	68	7	0	0	75	215	874
17:30:00	5	10	0	0	15	21	94	0	0	115	64	5	0	0	69	199	867
17:45:00	4	5	0	0	9	20	105	1	0	126	66	4	0	0	70	205	842
Grand Total	72	280	0	1	352	186	1334	2	2	1522	1273	64	1	2	1338	**3212**	-
Approach%	20.5%	79.5%	0%		-	12.2%	87.6%	0.1%		-	95.1%	4.8%	0.1%		-	**-**	-
Totals %	2.2%	8.7%	0%		11%	5.8%	41.5%	0.1%		47.4%	39.6%	2%	0%		41.7%	**-**	-
Heavy	1	12	0		-	3	53	0		-	18	2	0		-	**-**	-
Heavy %	1.4%	4.3%	0%		-	1.6%	4%	0%		-	1.4%	3.1%	0%		-	**-**	-
Bicycles	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-
Bicycle %	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-

Peak Hour: 08:00 AM - 09:00 AM Weather: Overcast Clouds (1.73 °C)

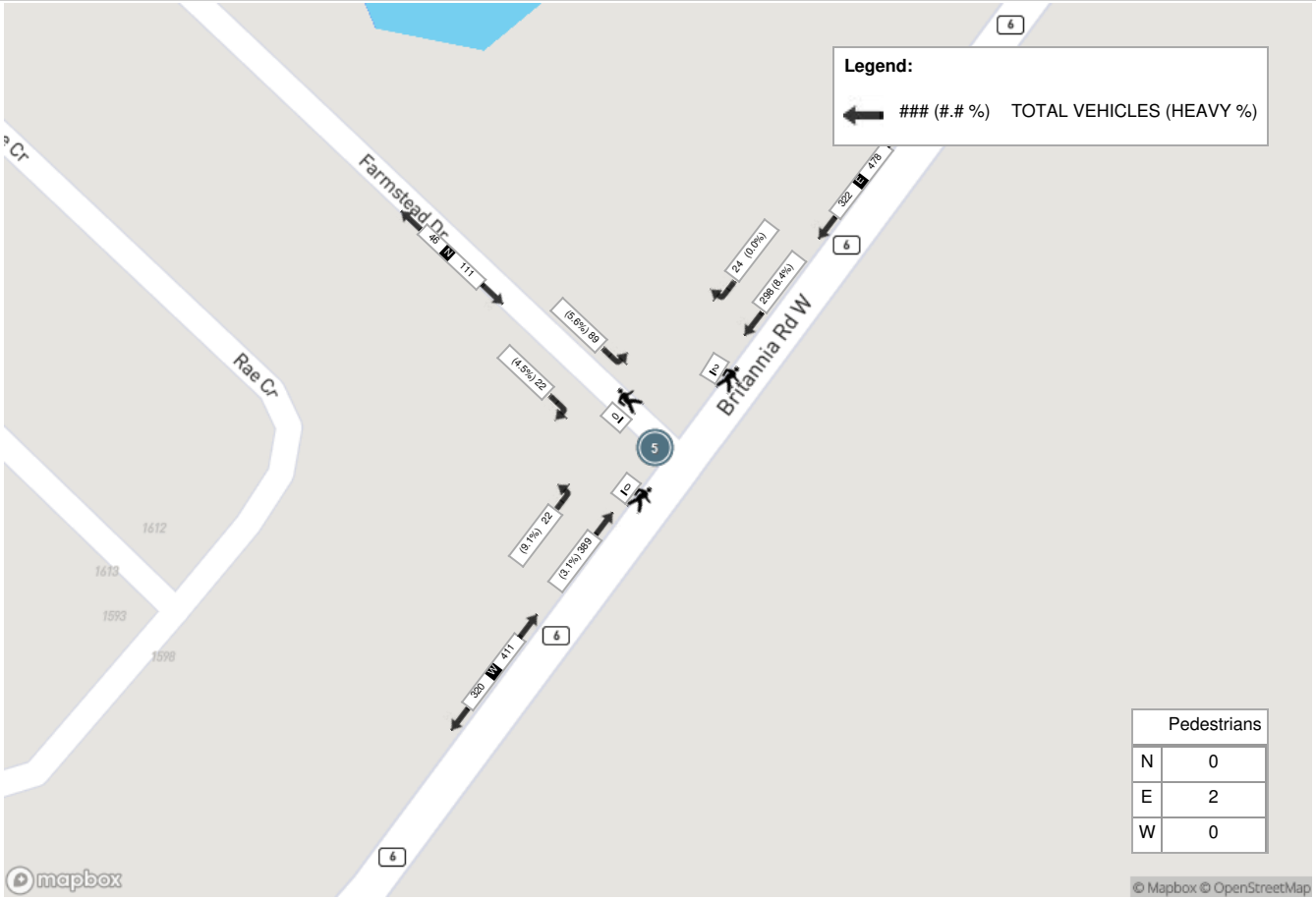
Start Time	N Approach FARMSTEAD DR					E Approach BRITANNIA RD					W Approach BRITANNIA RD					Int. Total (15 min)
	Right	Left	UTurn	Peds	Approach Total	Right	Thru	UTurn	Peds	Approach Total	Thru	Left	UTurn	Peds	Approach Total	
08:00:00	9	29	0	0	38	6	67	0	0	73	100	6	0	0	106	217
08:15:00	3	25	0	0	28	1	70	0	0	71	99	6	0	0	105	204
08:30:00	2	14	0	0	16	7	89	0	0	96	93	7	0	0	100	212
08:45:00	8	21	0	0	29	10	72	0	2	82	97	3	0	0	100	211
Grand Total	22	89	0	0	111	24	298	0	2	322	389	22	0	0	411	**844**
Approach%	19.8%	80.2%	0%		-	7.5%	92.5%	0%		-	94.6%	5.4%	0%		-	**-**
Totals %	2.6%	10.5%	0%		13.2%	2.8%	35.3%	0%		38.2%	46.1%	2.6%	0%		48.7%	**-**
PHF	0.61	0.77	0		0.73	0.6	0.84	0		0.84	0.97	0.79	0		0.97	**-**
Heavy	1	5	0		6	0	25	0		25	12	2	0		14	**-**
Heavy %	4.5%	5.6%	0%		5.4%	0%	8.4%	0%		7.8%	3.1%	9.1%	0%		3.4%	**-**
Lights	21	84	0		105	24	273	0		297	377	20	0		397	**-**
Lights %	95.5%	94.4%	0%		94.6%	100%	91.6%	0%		92.2%	96.9%	90.9%	0%		96.6%	**-**
Single-Unit Trucks	1	1	0		2	0	11	0		11	2	0	0		2	**-**
Single-Unit Trucks %	4.5%	1.1%	0%		1.8%	0%	3.7%	0%		3.4%	0.5%	0%	0%		0.5%	**-**
Buses	0	4	0		4	0	9	0		9	4	2	0		6	**-**
Buses %	0%	4.5%	0%		3.6%	0%	3%	0%		2.8%	1%	9.1%	0%		1.5%	**-**
Articulated Trucks	0	0	0		0	0	5	0		5	6	0	0		6	**-**
Articulated Trucks %	0%	0%	0%		0%	0%	1.7%	0%		1.6%	1.5%	0%	0%		1.5%	**-**
Pedestrians	-	-	-	0	-	-	-	-	2	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	0%		-	-	-	100%		-	-	-	0%		**-**

Peak Hour: 04:15 PM - 05:15 PM Weather: Overcast Clouds (6.01 °C)

Start Time	N Approach FARMSTEAD DR					E Approach BRITANNIA RD					W Approach BRITANNIA RD					Int. Total (15 min)
	Right	Left	UTurn	Peds	Approach Total	Right	Thru	UTurn	Peds	Approach Total	Thru	Left	UTurn	Peds	Approach Total	
16:15:00	3	13	0	0	16	23	137	0	0	160	65	3	0	0	68	244
16:30:00	5	17	0	0	22	18	117	0	0	135	44	4	1	0	49	206
16:45:00	3	11	0	1	14	22	117	0	0	139	74	3	0	0	77	230
17:00:00	5	12	0	0	17	18	106	0	0	124	79	3	0	0	82	223
Grand Total	16	53	0	1	69	81	477	0	0	558	262	13	1	0	276	**903**
Approach%	23.2%	76.8%	0%		-	14.5%	85.5%	0%		-	94.9%	4.7%	0.4%		-	**-**
Totals %	1.8%	5.9%	0%		7.6%	9%	52.8%	0%		61.8%	29%	1.4%	0.1%		30.6%	**-**
PHF	0.8	0.78	0		0.78	0.88	0.87	0		0.87	0.83	0.81	0.25		0.84	**-**
Heavy	0	2	0		2	0	6	0		6	1	0	0		1	**-**
Heavy %	0%	3.8%	0%		2.9%	0%	1.3%	0%		1.1%	0.4%	0%	0%		0.4%	**-**
Lights	16	51	0		67	81	471	0		552	261	13	1		275	**-**
Lights %	100%	96.2%	0%		97.1%	100%	98.7%	0%		98.9%	99.6%	100%	100%		99.6%	**-**
Single-Unit Trucks	0	0	0		0	0	4	0		4	0	0	0		0	**-**
Single-Unit Trucks %	0%	0%	0%		0%	0%	0.8%	0%		0.7%	0%	0%	0%		0%	**-**
Buses	0	2	0		2	0	2	0		2	1	0	0		1	**-**
Buses %	0%	3.8%	0%		2.9%	0%	0.4%	0%		0.4%	0.4%	0%	0%		0.4%	**-**
Articulated Trucks	0	0	0		0	0	0	0		0	0	0	0		0	**-**
Articulated Trucks %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	1	-	-	-	-	0	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	100%		-	-	-	0%		-	-	-	0%		**-**

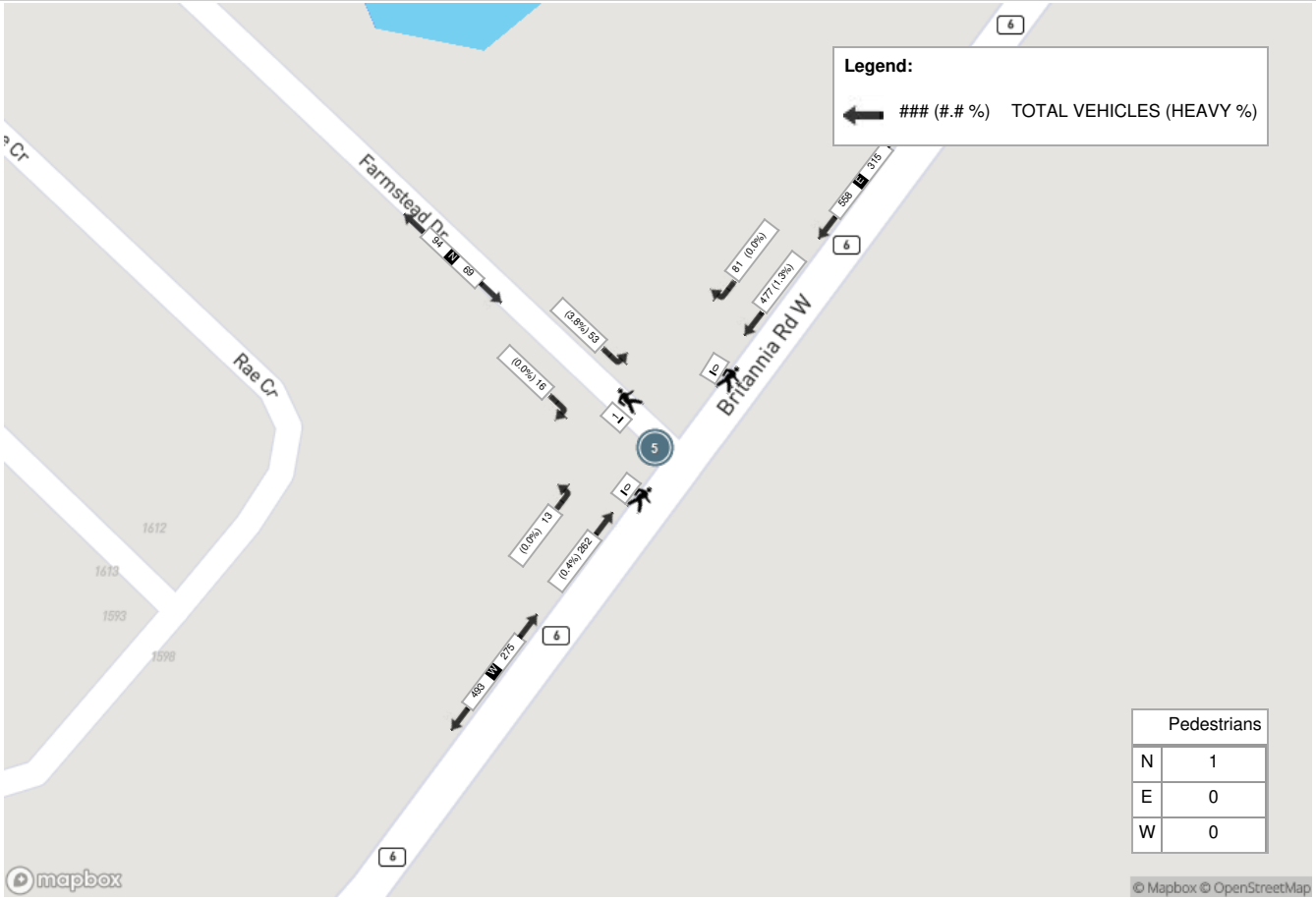
BA Group
300 45 ST. CLAIR AVE W
TORONTO ONTARIO, M4V 1K9
CANADA

Peak Hour: 08:00 AM - 09:00 AM Weather: Overcast Clouds (1.73 °C)



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

Peak Hour: 04:15 PM - 05:15 PM Weather: Overcast Clouds (6.01 °C)



	Pedestrians
N	1
E	0
W	0

Spectrum

Turning Movement Count
Location Name: REGIONAL RD 25 & BRITANNIA RD
Date: Tue, Nov 29, 2022 Deployment Lead: Peter Ilias

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

Turning Movement Count (1 . REGIONAL RD 25 & BRITANNIA RD)

Start Time	N Approach REGIONAL RD 25						E Approach BRITANNIA RD						S Approach REGIONAL RD 25						W Approach BRITANNIA RD						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
07:00:00	4	211	20	0	0	235	7	14	29	0	0	50	26	102	4	0	0	132	19	44	2	0	0	65	482	
07:15:00	6	247	32	0	0	285	10	21	34	0	0	65	37	130	5	0	0	172	24	78	6	1	0	109	631	
07:30:00	11	293	25	0	0	329	14	17	53	0	0	84	36	159	10	0	0	205	41	86	12	0	0	139	757	
07:45:00	10	274	30	0	0	314	14	39	40	0	0	93	28	168	13	0	0	209	43	71	20	0	0	134	750	2620
08:00:00	7	245	18	0	0	270	12	53	57	0	1	122	24	140	12	0	0	176	35	75	19	0	0	129	697	2835
08:15:00	16	282	11	0	0	309	17	43	57	0	0	117	19	193	12	0	0	224	32	69	18	0	0	119	769	2973
08:30:00	20	235	29	0	1	284	9	64	63	0	0	136	25	155	13	0	0	193	31	70	12	0	0	113	726	2942
08:45:00	7	210	19	0	0	236	14	67	38	0	0	119	25	134	9	0	0	168	32	65	14	0	0	111	634	2826
BREAK																										
16:00:00	21	158	13	0	0	192	31	80	27	0	0	138	47	220	19	0	0	286	15	56	11	0	0	82	698	
16:15:00	19	167	13	0	0	199	42	118	35	0	0	195	51	228	30	0	0	309	18	51	13	0	0	82	785	
16:30:00	13	173	10	0	0	196	22	104	30	0	0	156	71	276	12	0	0	359	6	40	12	0	0	58	769	
16:45:00	12	157	12	0	1	181	27	97	40	0	0	164	67	239	31	0	0	337	12	65	10	0	0	87	769	3021
17:00:00	10	138	17	0	0	165	26	96	39	0	0	161	84	239	21	0	0	344	10	70	10	0	0	90	760	3083
17:15:00	17	164	9	0	0	190	37	91	42	0	0	170	70	259	20	0	0	349	14	50	10	0	0	74	783	3081
17:30:00	9	164	16	0	0	189	33	84	37	0	0	154	57	283	28	0	0	368	17	39	9	0	0	65	776	3088
17:45:00	12	138	14	0	0	164	32	85	33	0	0	150	35	219	28	0	0	282	15	51	4	0	0	70	666	2985
Grand Total	194	3256	288	0	2	3738	347	1073	654	0	1	2074	702	3144	267	0	0	4113	364	980	182	1	0	1527	**11452**	-
Approach%	5.2%	87.1%	7.7%	0%		-	16.7%	51.7%	31.5%	0%		-	17.1%	76.4%	6.5%	0%		-	23.8%	64.2%	11.9%	0.1%		-	-	-
Totals %	1.7%	28.4%	2.5%	0%		32.6%	3%	9.4%	5.7%	0%		18.1%	6.1%	27.5%	2.3%	0%		35.9%	3.2%	8.6%	1.6%	0%		13.3%	-	-
Heavy	10	151	9	0		-	11	37	47	0		-	50	173	9	0		-	9	13	10	0		-	-	-
Heavy %	5.2%	4.6%	3.1%	0%		-	3.2%	3.4%	7.2%	0%		-	7.1%	5.5%	3.4%	0%		-	2.5%	1.3%	5.5%	0%		-	-	-
Bicycles	0	1	0	0		-	0	0	0	0		-	0	0	0	0		-	0	0	0	0		-	-	-
Bicycle %	0%	0%	0%	0%		-	0%	0%	0%	0%		-	0%	0%	0%	0%		-	0%	0%	0%	0%		-	-	-

Peak Hour: 07:30 AM - 08:30 AM **Weather: Overcast Clouds (1.73 °C)**

Start Time	N Approach REGIONAL RD 25						E Approach BRITANNIA RD						S Approach REGIONAL RD 25						W Approach BRITANNIA RD						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
07:30:00	11	293	25	0	0	329	14	17	53	0	0	84	36	159	10	0	0	205	41	86	12	0	0	139	757
07:45:00	10	274	30	0	0	314	14	39	40	0	0	93	28	168	13	0	0	209	43	71	20	0	0	134	750
08:00:00	7	245	18	0	0	270	12	53	57	0	1	122	24	140	12	0	0	176	35	75	19	0	0	129	697
08:15:00	16	282	11	0	0	309	17	43	57	0	0	117	19	193	12	0	0	224	32	69	18	0	0	119	769
Grand Total	44	1094	84	0	0	1222	57	152	207	0	1	416	107	660	47	0	0	814	151	301	69	0	0	521	**2973**
Approach%	3.6%	89.5%	6.9%	0%		-	13.7%	36.5%	49.8%	0%		-	13.1%	81.1%	5.8%	0%		-	29%	57.8%	13.2%	0%		-	**-**
Totals %	1.5%	36.8%	2.8%	0%		41.1%	1.9%	5.1%	7%	0%		14%	3.6%	22.2%	1.6%	0%		27.4%	5.1%	10.1%	2.3%	0%		17.5%	**-**
PHF	0.69	0.93	0.7	0		0.93	0.84	0.72	0.91	0		0.85	0.74	0.85	0.9	0		0.91	0.88	0.88	0.86	0		0.94	**-**
Heavy	5	49	3	0		57	4	12	20	0		36	9	38	1	0		48	5	7	4	0		16	**-**
Heavy %	11.4%	4.5%	3.6%	0%		4.7%	7%	7.9%	9.7%	0%		8.7%	8.4%	5.8%	2.1%	0%		5.9%	3.3%	2.3%	5.8%	0%		3.1%	**-**
Lights	39	1045	81	0		1165	53	140	187	0		380	98	622	46	0		766	146	294	65	0		505	**-**
Lights %	88.6%	95.5%	96.4%	0%		95.3%	93%	92.1%	90.3%	0%		91.3%	91.6%	94.2%	97.9%	0%		94.1%	96.7%	97.7%	94.2%	0%		96.9%	**-**
Single-Unit Trucks	1	15	0	0		16	1	9	6	0		16	3	14	0	0		17	2	0	1	0		3	**-**
Single-Unit Trucks %	2.3%	1.4%	0%	0%		1.3%	1.8%	5.9%	2.9%	0%		3.8%	2.8%	2.1%	0%	0%		2.1%	1.3%	0%	1.4%	0%		0.6%	**-**
Buses	4	6	1	0		11	3	0	4	0		7	0	4	0	0		4	3	3	3	0		9	**-**
Buses %	9.1%	0.5%	1.2%	0%		0.9%	5.3%	0%	1.9%	0%		1.7%	0%	0.6%	0%	0%		0.5%	2%	1%	4.3%	0%		1.7%	**-**
Articulated Trucks	0	28	2	0		30	0	3	10	0		13	6	20	1	0		27	0	4	0	0		4	**-**
Articulated Trucks %	0%	2.6%	2.4%	0%		2.5%	0%	2%	4.8%	0%		3.1%	5.6%	3%	2.1%	0%		3.3%	0%	1.3%	0%	0%		0.8%	**-**
Pedestrians	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	-	0%		-	-	-	-	100%		-	-	-	-	0%		-	-	-	-	0%		**-**
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**
Bicycles on Road	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	**-**
Bicycles on Road%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

Spectrum

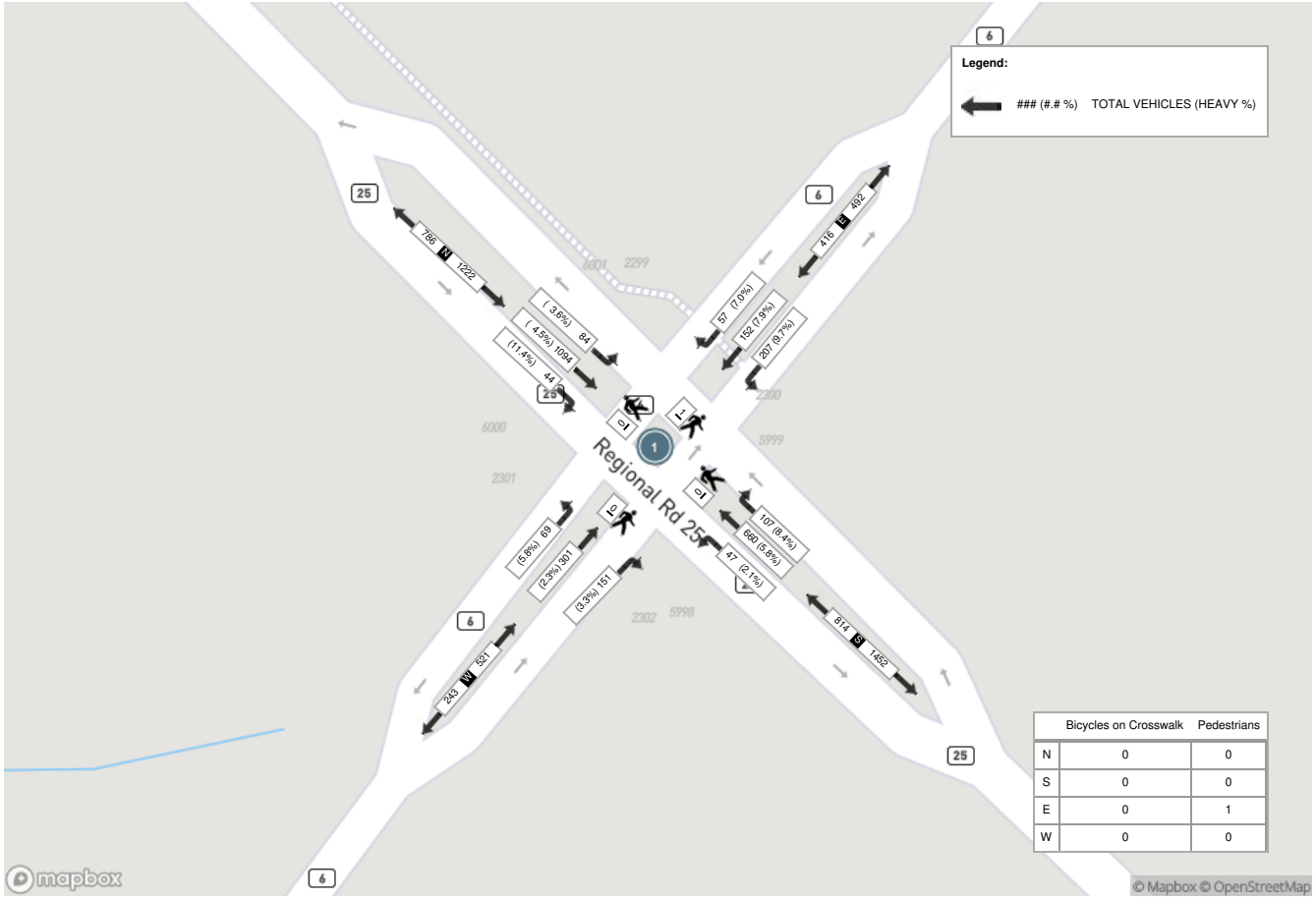
Turning Movement Count
Location Name: REGIONAL RD 25 & BRITANNIA RD
Date: Tue, Nov 29, 2022 Deployment Lead: Peter Ilias

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

Peak Hour: 04:45 PM - 05:45 PM Weather: Overcast Clouds (6.01 °C)

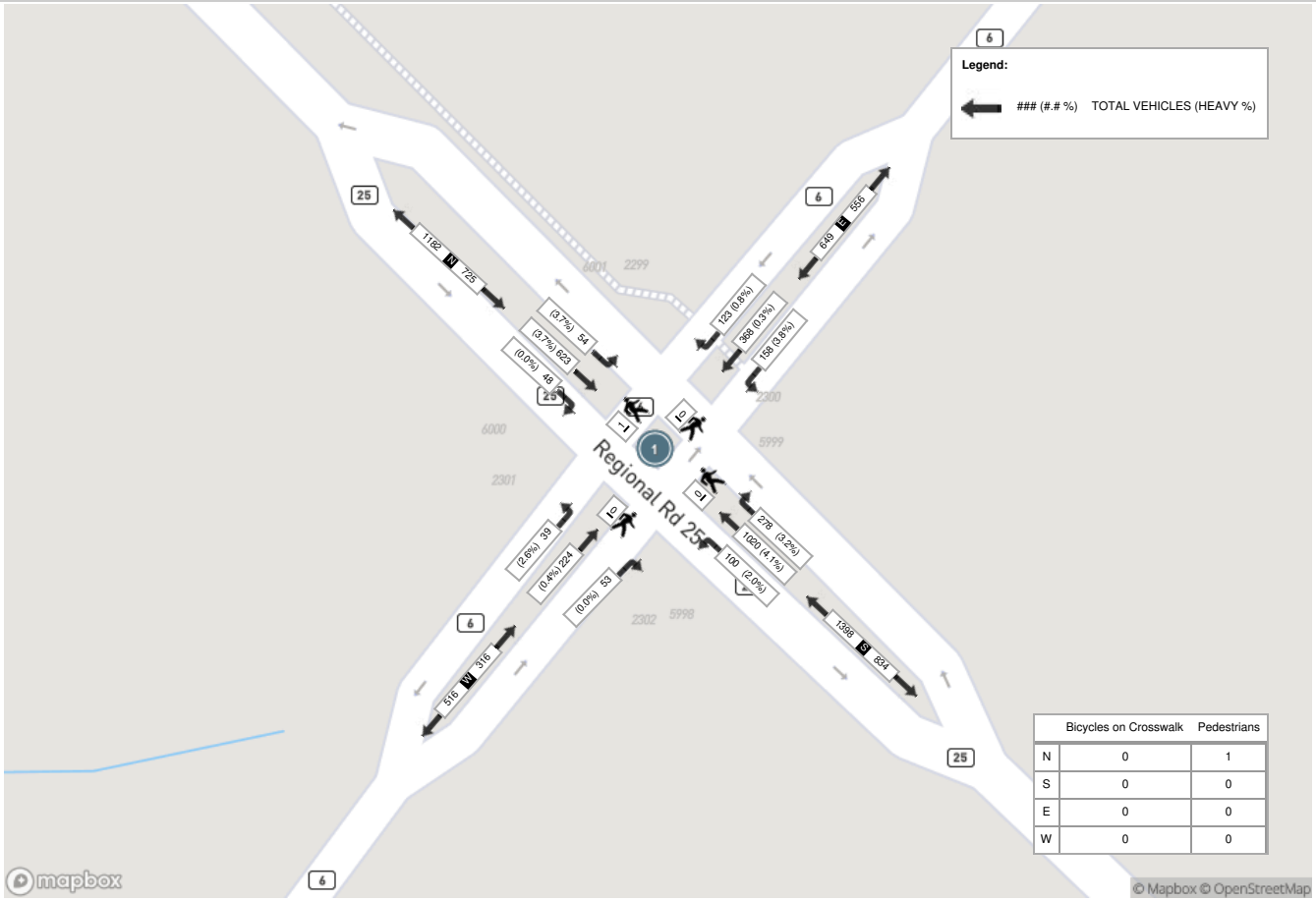
Start Time	N Approach REGIONAL RD 25						E Approach BRITANNIA RD						S Approach REGIONAL RD 25						W Approach BRITANNIA RD						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
16:45:00	12	157	12	0	1	181	27	97	40	0	0	164	67	239	31	0	0	337	12	65	10	0	0	87	769
17:00:00	10	138	17	0	0	165	26	96	39	0	0	161	84	239	21	0	0	344	10	70	10	0	0	90	760
17:15:00	17	164	9	0	0	190	37	91	42	0	0	170	70	259	20	0	0	349	14	50	10	0	0	74	783
17:30:00	9	164	16	0	0	189	33	84	37	0	0	154	57	283	28	0	0	368	17	39	9	0	0	65	776
Grand Total	48	623	54	0	1	725	123	368	158	0	0	649	278	1020	100	0	0	1398	53	224	39	0	0	316	**3088**
Approach%	6.6%	85.9%	7.4%	0%		-	19%	56.7%	24.3%	0%		-	19.9%	73%	7.2%	0%		-	16.8%	70.9%	12.3%	0%		-	**-**
Totals %	1.6%	20.2%	1.7%	0%		23.5%	4%	11.9%	5.1%	0%		21%	9%	33%	3.2%	0%		45.3%	1.7%	7.3%	1.3%	0%		10.2%	**-**
PHF	0.71	0.95	0.79	0		0.95	0.83	0.95	0.94	0		0.95	0.83	0.9	0.81	0		0.95	0.78	0.8	0.98	0		0.88	**-**
Heavy	0	23	2	0		25	1	1	6	0		8	9	42	2	0		53	0	1	1	0		2	**-**
Heavy %	0%	3.7%	3.7%	0%		3.4%	0.8%	0.3%	3.8%	0%		1.2%	3.2%	4.1%	2%	0%		3.8%	0%	0.4%	2.6%	0%		0.6%	**-**
Lights	48	600	52	0		700	122	367	152	0		641	269	978	98	0		1345	53	223	38	0		314	**-**
Lights %	100%	96.3%	96.3%	0%		96.6%	99.2%	99.7%	96.2%	0%		98.8%	96.8%	95.9%	98%	0%		96.2%	100%	99.6%	97.4%	0%		99.4%	**-**
Single-Unit Trucks	0	9	1	0		10	1	1	1	0		3	3	14	1	0		18	0	0	0	0		0	**-**
Single-Unit Trucks %	0%	1.4%	1.9%	0%		1.4%	0.8%	0.3%	0.6%	0%		0.5%	1.1%	1.4%	1%	0%		1.3%	0%	0%	0%	0%		0%	**-**
Buses	0	0	0	0		0	0	0	0	0		0	0	3	0	0		3	0	1	1	0		2	**-**
Buses %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0.3%	0%	0%		0.2%	0%	0.4%	2.6%	0%		0.6%	**-**
Articulated Trucks	0	14	1	0		15	0	0	5	0		5	6	25	1	0		32	0	0	0	0		0	**-**
Articulated Trucks %	0%	2.2%	1.9%	0%		2.1%	0%	0%	3.2%	0%		0.8%	2.2%	2.5%	1%	0%		2.3%	0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	-	100%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**
Bicycles on Road	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	**-**
Bicycles on Road%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

Peak Hour: 07:30 AM - 08:30 AM **Weather: Overcast Clouds (1.73 °C)**



	Bicycles on Crosswalk	Pedestrians
N	0	0
S	0	0
E	0	1
W	0	0

Peak Hour: 04:45 PM - 05:45 PM **Weather: Overcast Clouds (6.01 °C)**



	Bicycles on Crosswalk	Pedestrians
N	0	1
S	0	0
E	0	0
W	0	0

Spectrum

Turning Movement Count
Location Name: REGIONAL RD 25 & ETHERIDGE AVE
Date: Tue, Nov 29, 2022 Deployment Lead: Peter Ilias

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

Turning Movement Count (2 . REGIONAL RD 25 & ETHERIDGE AVE)

Start Time	N Approach REGIONAL RD 25						E Approach ETHERIDGE AVE						S Approach REGIONAL RD 25						W Approach ETHERIDGE AVE						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
07:00:00	10	223	0	0	0	233	0	0	0	0	0	0	0	102	8	0	1	110	14	0	16	0	0	30	373	
07:15:00	4	268	0	0	0	272	0	0	0	0	0	0	0	139	5	0	0	144	17	0	23	0	0	40	456	
07:30:00	12	325	0	0	0	337	0	0	0	0	0	0	0	184	8	0	0	192	15	0	17	0	0	32	561	
07:45:00	13	284	0	0	0	297	0	0	0	0	0	0	0	191	9	0	0	200	17	0	22	0	0	39	536	1926
08:00:00	12	261	0	0	0	273	0	0	0	0	1	0	0	169	8	0	0	177	17	0	32	0	0	49	499	2052
08:15:00	16	288	0	1	0	305	0	0	0	0	0	0	0	215	6	0	0	221	16	0	30	0	0	46	572	2168
08:30:00	21	259	0	1	0	281	0	1	0	0	1	1	1	178	5	0	0	184	19	0	22	0	0	41	507	2114
08:45:00	15	217	0	0	0	232	0	0	0	0	1	0	0	157	6	0	0	163	18	0	21	0	0	39	434	2012
BREAK																										
16:00:00	28	175	0	0	0	203	0	0	0	0	0	0	0	235	21	0	1	256	7	0	14	0	0	21	480	
16:15:00	29	206	0	0	0	235	0	0	0	0	0	0	0	273	15	0	0	288	10	0	14	0	0	24	547	
16:30:00	22	181	0	0	0	203	0	0	0	0	0	0	0	294	16	0	0	310	5	0	19	0	0	24	537	
16:45:00	29	177	0	0	0	206	0	0	0	0	1	0	0	275	10	0	0	285	4	0	23	0	0	27	518	2082
17:00:00	33	150	0	0	0	183	0	0	0	0	0	0	0	264	13	0	0	277	7	0	22	0	0	29	489	2091
17:15:00	24	178	0	1	0	203	0	0	0	0	0	0	0	289	15	0	0	304	6	0	12	0	0	18	525	2069
17:30:00	29	186	0	0	0	215	0	0	0	0	0	0	0	299	23	0	0	322	7	0	20	0	0	27	564	2096
17:45:00	28	156	0	0	0	184	0	0	0	0	0	0	0	240	18	0	0	258	6	0	22	0	0	28	470	2048
Grand Total	325	3534	0	3	0	3862	0	1	0	0	4	1	1	3504	186	0	2	3691	185	0	329	0	0	514	**8068**	-
Approach%	8.4%	91.5%	0%	0.1%		-	0%	100%	0%	0%		-	0%	94.9%	5%	0%		-	36%	0%	64%	0%		-	-	-
Totals %	4%	43.8%	0%	0%		47.9%	0%	0%	0%	0%		0%	0%	43.4%	2.3%	0%		45.7%	2.3%	0%	4.1%	0%		6.4%	-	-
Heavy	11	169	0	0		-	0	0	0	0		-	0	188	4	0		-	0	0	7	0		-	-	-
Heavy %	3.4%	4.8%	0%	0%		-	0%	0%	0%	0%		-	0%	5.4%	2.2%	0%		-	0%	0%	2.1%	0%		-	-	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-

Spectrum

Turning Movement Count
Location Name: REGIONAL RD 25 & ETHERIDGE AVE
Date: Tue, Nov 29, 2022 Deployment Lead: Peter Ilias

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

Peak Hour: 07:30 AM - 08:30 AM Weather: Overcast Clouds (1.73 °C)

Start Time	N Approach REGIONAL RD 25						E Approach ETHERIDGE AVE						S Approach REGIONAL RD 25						W Approach ETHERIDGE AVE						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
07:30:00	12	325	0	0	0	337	0	0	0	0	0	0	0	184	8	0	0	192	15	0	17	0	0	32	561
07:45:00	13	284	0	0	0	297	0	0	0	0	0	0	0	191	9	0	0	200	17	0	22	0	0	39	536
08:00:00	12	261	0	0	0	273	0	0	0	0	1	0	0	169	8	0	0	177	17	0	32	0	0	49	499
08:15:00	16	288	0	1	0	305	0	0	0	0	0	0	0	215	6	0	0	221	16	0	30	0	0	46	572
Grand Total	53	1158	0	1	0	1212	0	0	0	0	1	0	0	759	31	0	0	790	65	0	101	0	0	166	**2168**
Approach%	4.4%	95.5%	0%	0.1%		-	0%	0%	0%	0%		-	0%	96.1%	3.9%	0%		-	39.2%	0%	60.8%	0%		-	**-**
Totals %	2.4%	53.4%	0%	0%		55.9%	0%	0%	0%	0%		0%	0%	35%	1.4%	0%		36.4%	3%	0%	4.7%	0%		7.7%	**-**
PHF	0.83	0.89	0	0.25		0.9	0	0	0	0		0	0	0.88	0.86	0		0.89	0.96	0	0.79	0		0.85	**-**
Heavy	3	54	0	0		57	0	0	0	0		0	0	46	1	0		47	0	0	1	0		1	**-**
Heavy %	5.7%	4.7%	0%	0%		4.7%	0%	0%	0%	0%		0%	0%	6.1%	3.2%	0%		5.9%	0%	0%	1%	0%		0.6%	**-**
Lights	50	1104	0	1		1155	0	0	0	0		0	0	713	30	0		743	65	0	100	0		165	**-**
Lights %	94.3%	95.3%	0%	100%		95.3%	0%	0%	0%	0%		0%	0%	93.9%	96.8%	0%		94.1%	100%	0%	99%	0%		99.4%	**-**
Single-Unit Trucks	0	14	0	0		14	0	0	0	0		0	0	17	0	0		17	0	0	0	0		0	**-**
Single-Unit Trucks %	0%	1.2%	0%	0%		1.2%	0%	0%	0%	0%		0%	0%	2.2%	0%	0%		2.2%	0%	0%	0%	0%		0%	**-**
Buses	3	11	0	0		14	0	0	0	0		0	0	9	1	0		10	0	0	1	0		1	**-**
Buses %	5.7%	0.9%	0%	0%		1.2%	0%	0%	0%	0%		0%	0%	1.2%	3.2%	0%		1.3%	0%	0%	1%	0%		0.6%	**-**
Articulated Trucks	0	29	0	0		29	0	0	0	0		0	0	20	0	0		20	0	0	0	0		0	**-**
Articulated Trucks %	0%	2.5%	0%	0%		2.4%	0%	0%	0%	0%		0%	0%	2.6%	0%	0%		2.5%	0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	-	0%		-	-	-	-	100%		-	-	-	-	0%		-	-	-	-	0%		**-**

Spectrum

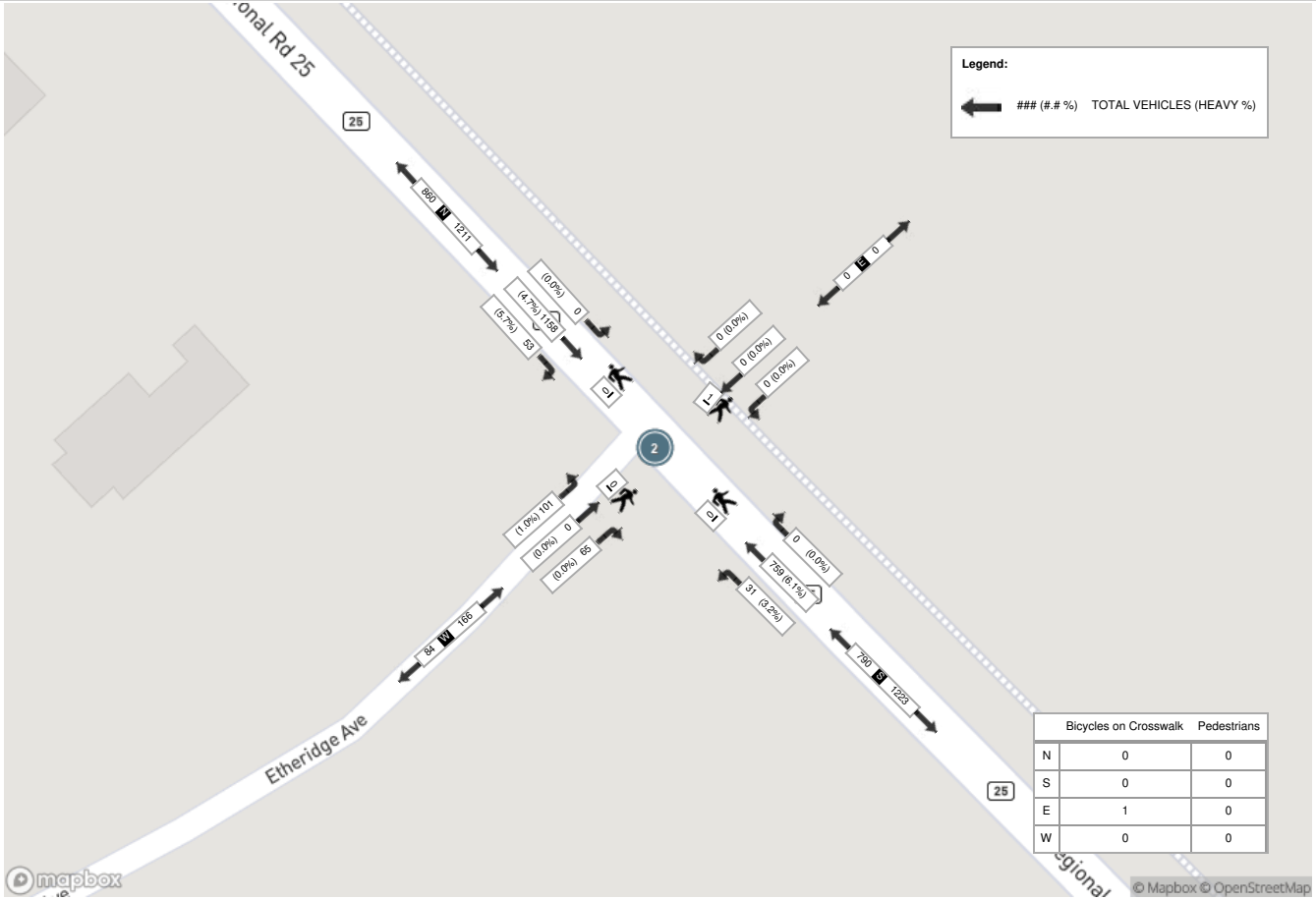
Turning Movement Count
Location Name: REGIONAL RD 25 & ETHERIDGE AVE
Date: Tue, Nov 29, 2022 Deployment Lead: Peter Ilias

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

Peak Hour: 04:45 PM - 05:45 PM Weather: Overcast Clouds (6.01 °C)

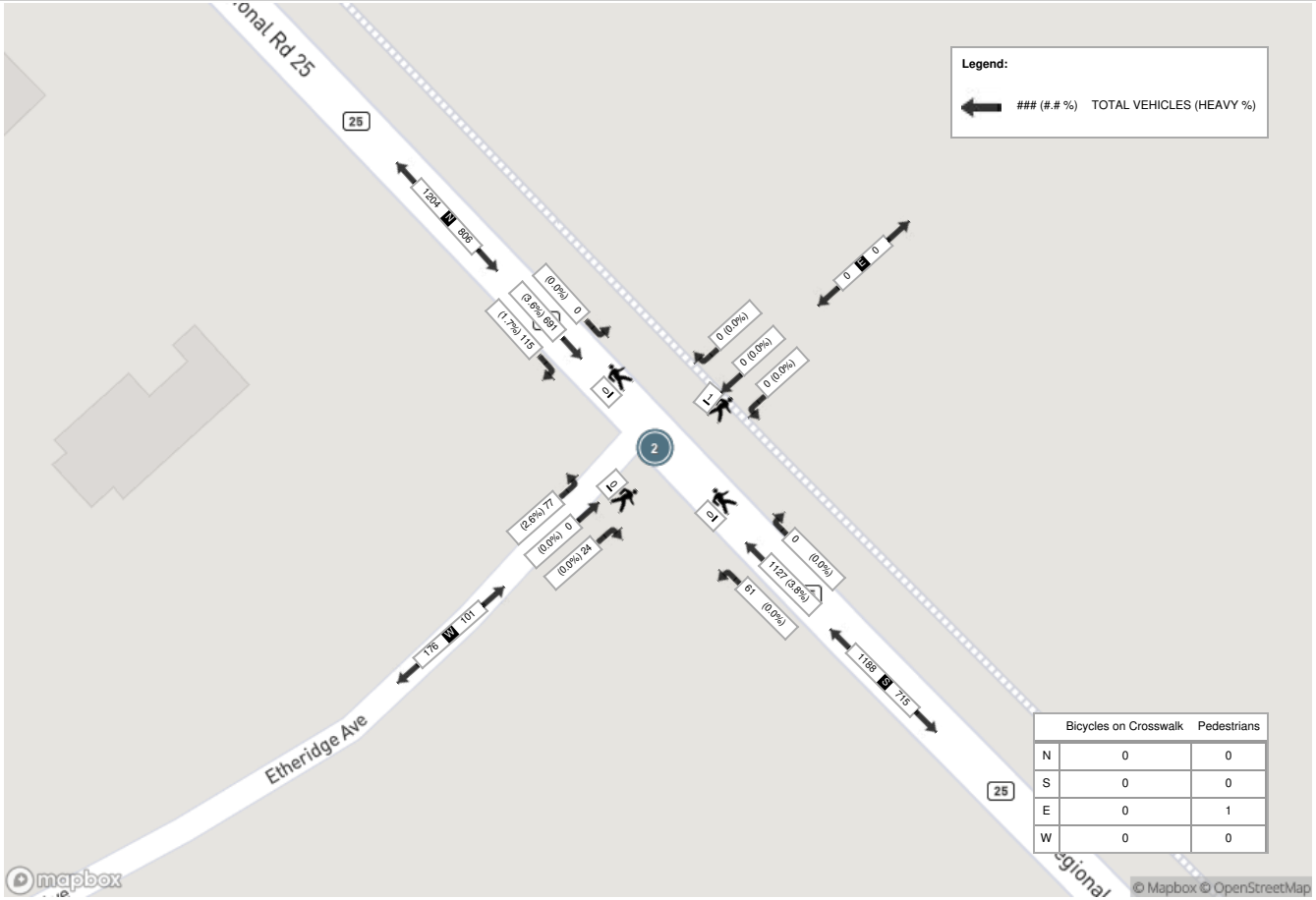
Start Time	N Approach REGIONAL RD 25						E Approach ETHERIDGE AVE						S Approach REGIONAL RD 25						W Approach ETHERIDGE AVE						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
16:45:00	29	177	0	0	0	206	0	0	0	0	1	0	0	275	10	0	0	285	4	0	23	0	0	27	518
17:00:00	33	150	0	0	0	183	0	0	0	0	0	0	0	264	13	0	0	277	7	0	22	0	0	29	489
17:15:00	24	178	0	1	0	203	0	0	0	0	0	0	0	289	15	0	0	304	6	0	12	0	0	18	525
17:30:00	29	186	0	0	0	215	0	0	0	0	0	0	0	299	23	0	0	322	7	0	20	0	0	27	564
Grand Total	115	691	0	1	0	807	0	0	0	0	1	0	0	1127	61	0	0	1188	24	0	77	0	0	101	**2096**
Approach%	14.3%	85.6%	0%	0.1%		-	0%	0%	0%	0%		-	0%	94.9%	5.1%	0%		-	23.8%	0%	76.2%	0%		-	**-**
Totals %	5.5%	33%	0%	0%		38.5%	0%	0%	0%	0%		0%	0%	53.8%	2.9%	0%		56.7%	1.1%	0%	3.7%	0%		4.8%	**-**
PHF	0.87	0.93	0	0.25		0.94	0	0	0	0		0	0	0.94	0.66	0		0.92	0.86	0	0.84	0		0.87	**-**
Heavy	2	25	0	0		27	0	0	0	0		0	0	43	0	0		43	0	0	2	0		2	**-**
Heavy %	1.7%	3.6%	0%	0%		3.3%	0%	0%	0%	0%		0%	0%	3.8%	0%	0%		3.6%	0%	0%	2.6%	0%		2%	**-**
Lights	113	666	0	1		780	0	0	0	0		0	0	1084	61	0		1145	24	0	75	0		99	**-**
Lights %	98.3%	96.4%	0%	100%		96.7%	0%	0%	0%	0%		0%	0%	96.2%	100%	0%		96.4%	100%	0%	97.4%	0%		98%	**-**
Single-Unit Trucks	1	10	0	0		11	0	0	0	0		0	0	13	0	0		13	0	0	1	0		1	**-**
Single-Unit Trucks %	0.9%	1.4%	0%	0%		1.4%	0%	0%	0%	0%		0%	0%	1.2%	0%	0%		1.1%	0%	0%	1.3%	0%		1%	**-**
Buses	1	0	0	0		1	0	0	0	0		0	0	4	0	0		4	0	0	1	0		1	**-**
Buses %	0.9%	0%	0%	0%		0.1%	0%	0%	0%	0%		0%	0%	0.4%	0%	0%		0.3%	0%	0%	1.3%	0%		1%	**-**
Articulated Trucks	0	15	0	0		15	0	0	0	0		0	0	26	0	0		26	0	0	0	0		0	**-**
Articulated Trucks %	0%	2.2%	0%	0%		1.9%	0%	0%	0%	0%		0%	0%	2.3%	0%	0%		2.2%	0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	-	0%		-	-	-	-	100%		-	-	-	-	0%		-	-	-	-	0%		**-**
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

Peak Hour: 07:30 AM - 08:30 AM **Weather: Overcast Clouds (1.73 °C)**



	Bicycles on Crosswalk	Pedestrians
N	0	0
S	0	0
E	1	0
W	0	0

Peak Hour: 04:45 PM - 05:45 PM **Weather: Overcast Clouds (6.01 °C)**



	Bicycles on Crosswalk	Pedestrians
N	0	0
S	0	0
E	0	1
W	0	0

Spectrum

Turning Movement Count
Location Name: REGIONAL RD 25 & LOUIS ST LAURENT AVE
Date: Tue, Nov 29, 2022 Deployment Lead: Peter Ilias

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

Turning Movement Count (4 . REGIONAL RD 25 & LOUIS ST LAURENT AVE)

Start Time	N Approach REGIONAL RD 25						E Approach LOUIS ST LAURENT AVE						S Approach REGIONAL RD 25						W Approach LOUIS ST LAURENT AVE						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
07:00:00	19	136	7	0	0	162	6	22	55	0	0	83	25	110	6	0	0	141	31	61	47	0	0	139	525	
07:15:00	18	173	11	0	0	202	13	32	69	0	0	114	39	118	14	0	0	171	32	60	39	0	0	131	618	
07:30:00	16	186	12	0	3	214	11	56	79	0	0	146	50	137	18	0	1	205	30	104	59	1	0	194	759	
07:45:00	18	167	23	0	2	208	22	97	85	0	0	204	60	161	25	0	0	246	41	155	60	0	0	256	914	2816
08:00:00	30	155	12	0	1	197	32	211	87	0	0	330	66	149	18	0	1	233	38	137	69	0	2	244	1004	3295
08:15:00	14	167	15	0	2	196	28	131	107	0	0	266	65	191	18	0	1	274	48	142	70	0	0	260	996	3673
08:30:00	32	153	12	1	1	198	15	105	91	0	0	211	56	167	25	0	0	248	31	103	66	0	0	200	857	3771
08:45:00	13	136	12	0	0	161	23	82	74	0	0	179	55	148	19	0	0	222	25	132	65	1	0	223	785	3642
BREAK																										
16:00:00	36	147	19	0	0	202	19	121	75	0	0	215	74	161	40	0	0	275	15	93	36	0	0	144	836	
16:15:00	40	159	17	0	6	216	20	121	76	0	0	217	67	179	59	0	0	305	22	72	32	0	0	126	864	
16:30:00	36	161	22	1	0	220	18	119	65	0	0	202	79	196	46	0	0	321	17	85	46	0	1	148	891	
16:45:00	32	141	15	0	0	188	20	140	75	0	1	235	81	158	44	0	1	283	17	79	50	1	0	147	853	3444
17:00:00	52	148	16	0	1	216	15	127	71	0	0	213	90	162	37	0	3	289	23	83	44	0	3	150	868	3476
17:15:00	52	167	24	0	2	243	19	117	68	0	4	204	82	191	38	0	2	311	27	94	55	0	0	176	934	3546
17:30:00	55	188	15	0	2	258	18	138	50	0	0	206	89	195	46	0	0	330	24	95	39	0	0	158	952	3607
17:45:00	34	145	20	0	1	199	11	151	63	0	0	225	92	140	50	0	0	282	20	101	58	1	1	180	886	3640
Grand Total	497	2529	252	2	21	3280	290	1770	1190	0	5	3250	1070	2563	503	0	9	4136	441	1596	835	4	7	2876	**13542**	-
Approach%	15.2%	77.1%	7.7%	0.1%		-	8.9%	54.5%	36.6%	0%		-	25.9%	62%	12.2%	0%		-	15.3%	55.5%	29%	0.1%		-	**-**	-
Totals %	3.7%	18.7%	1.9%	0%		24.2%	2.1%	13.1%	8.8%	0%		24%	7.9%	18.9%	3.7%	0%		30.5%	3.3%	11.8%	6.2%	0%		21.2%	**-**	-
Heavy	3	156	11	0		-	19	31	22	0		-	27	173	10	0		-	3	39	16	0		-	**-**	-
Heavy %	0.6%	6.2%	4.4%	0%		-	6.6%	1.8%	1.8%	0%		-	2.5%	6.7%	2%	0%		-	0.7%	2.4%	1.9%	0%		-	**-**	-
Bicycles	0	0	0	0		-	0	0	0	0		-	0	0	0	0		-	0	1	0	0		-	**-**	-
Bicycle %	0%	0%	0%	0%		-	0%	0%	0%	0%		-	0%	0%	0%	0%		-	0%	0.1%	0%	0%		-	**-**	-

Spectrum

Turning Movement Count
Location Name: REGIONAL RD 25 & LOUIS ST LAURENT AVE
Date: Tue, Nov 29, 2022 Deployment Lead: Peter Ilias

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

Peak Hour: 07:45 AM - 08:45 AM Weather: Overcast Clouds (1.73 °C)

Start Time	N Approach REGIONAL RD 25						E Approach LOUIS ST LAURENT AVE						S Approach REGIONAL RD 25						W Approach LOUIS ST LAURENT AVE						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
07:45:00	18	167	23	0	2	208	22	97	85	0	0	204	60	161	25	0	0	246	41	155	60	0	0	256	914
08:00:00	30	155	12	0	1	197	32	211	87	0	0	330	66	149	18	0	1	233	38	137	69	0	2	244	1004
08:15:00	14	167	15	0	2	196	28	131	107	0	0	266	65	191	18	0	1	274	48	142	70	0	0	260	996
08:30:00	32	153	12	1	1	198	15	105	91	0	0	211	56	167	25	0	0	248	31	103	66	0	0	200	857
Grand Total	94	642	62	1	6	799	97	544	370	0	0	1011	247	668	86	0	2	1001	158	537	265	0	2	960	**3771**
Approach%	11.8%	80.4%	7.8%	0.1%		-	9.6%	53.8%	36.6%	0%		-	24.7%	66.7%	8.6%	0%		-	16.5%	55.9%	27.6%	0%		-	**-**
Totals %	2.5%	17%	1.6%	0%		21.2%	2.6%	14.4%	9.8%	0%		26.8%	6.5%	17.7%	2.3%	0%		26.5%	4.2%	14.2%	7%	0%		25.5%	**-**
PHF	0.73	0.96	0.67	0.25		0.96	0.76	0.64	0.86	0		0.77	0.94	0.87	0.86	0		0.91	0.82	0.87	0.95	0		0.92	**-**
Heavy	2	43	3	0		48	7	11	8	0		26	8	49	5	0		62	2	11	4	0		17	**-**
Heavy %	2.1%	6.7%	4.8%	0%		6%	7.2%	2%	2.2%	0%		2.6%	3.2%	7.3%	5.8%	0%		6.2%	1.3%	2%	1.5%	0%		1.8%	**-**
Lights	92	599	59	1		751	90	533	362	0		985	239	619	81	0		939	156	526	261	0		943	**-**
Lights %	97.9%	93.3%	95.2%	100%		94%	92.8%	98%	97.8%	0%		97.4%	96.8%	92.7%	94.2%	0%		93.8%	98.7%	98%	98.5%	0%		98.2%	**-**
Single-Unit Trucks	1	13	1	0		15	5	1	2	0		8	3	17	2	0		22	0	6	0	0		6	**-**
Single-Unit Trucks %	1.1%	2%	1.6%	0%		1.9%	5.2%	0.2%	0.5%	0%		0.8%	1.2%	2.5%	2.3%	0%		2.2%	0%	1.1%	0%	0%		0.6%	**-**
Buses	1	7	1	0		9	1	9	6	0		16	5	9	3	0		17	2	5	4	0		11	**-**
Buses %	1.1%	1.1%	1.6%	0%		1.1%	1%	1.7%	1.6%	0%		1.6%	2%	1.3%	3.5%	0%		1.7%	1.3%	0.9%	1.5%	0%		1.1%	**-**
Articulated Trucks	0	23	1	0		24	1	1	0	0		2	0	23	0	0		23	0	0	0	0		0	**-**
Articulated Trucks %	0%	3.6%	1.6%	0%		3%	1%	0.2%	0%	0%		0.2%	0%	3.4%	0%	0%		2.3%	0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	-	3	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	1	-	**-**
Pedestrians%	-	-	-	-	30%		-	-	-	-	0%		-	-	-	-	10%		-	-	-	-	10%		**-**
Bicycles on Crosswalk	-	-	-	-	3	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	1	-	**-**
Bicycles on Crosswalk%	-	-	-	-	30%		-	-	-	-	0%		-	-	-	-	10%		-	-	-	-	10%		**-**
Bicycles on Road	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	1	0	0	0	-	**-**
Bicycles on Road%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

Spectrum

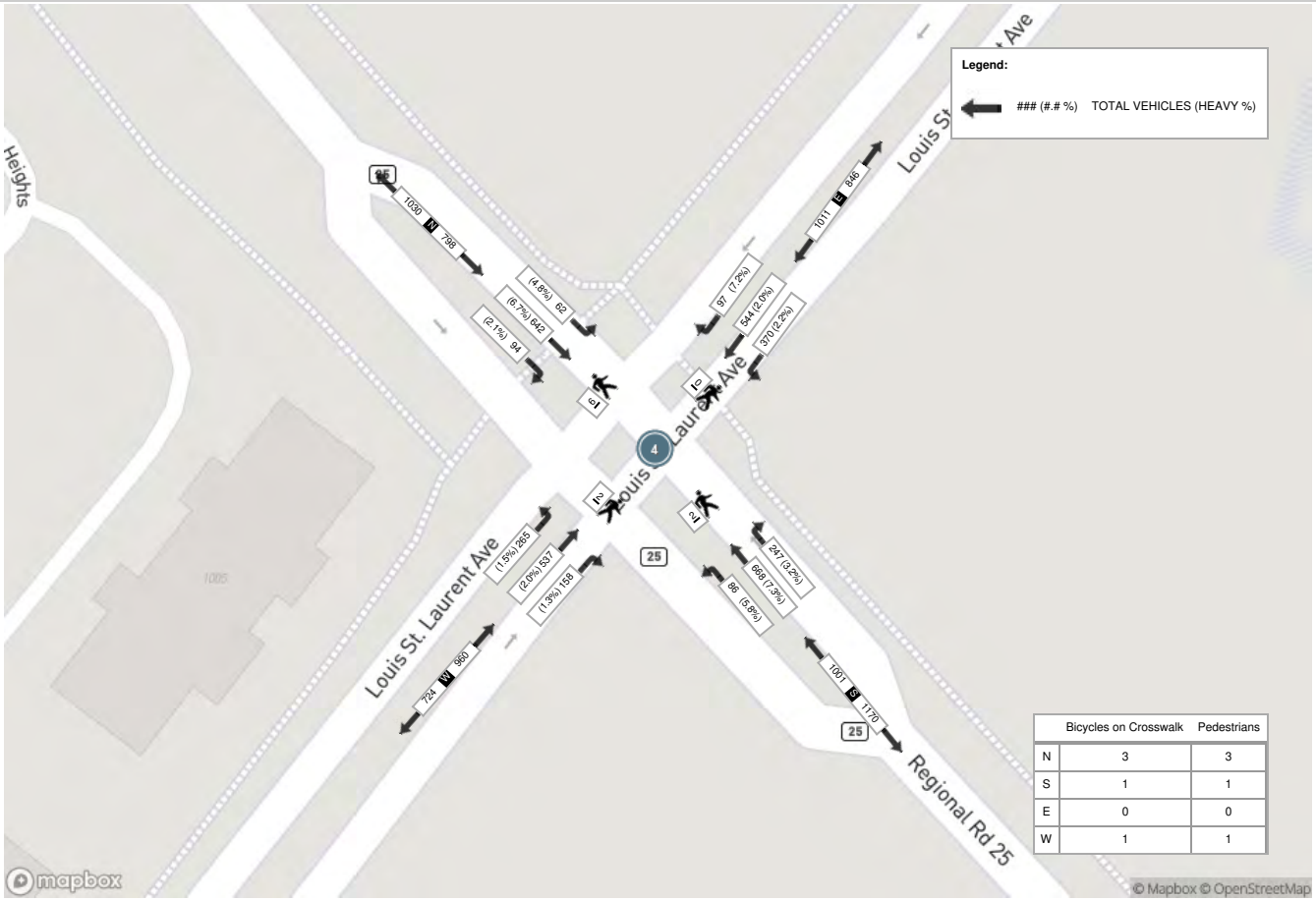
Turning Movement Count
Location Name: REGIONAL RD 25 & LOUIS ST LAURENT AVE
Date: Tue, Nov 29, 2022 Deployment Lead: Peter Ilias

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

Peak Hour: 05:00 PM - 06:00 PM Weather: Overcast Clouds (6.01 °C)

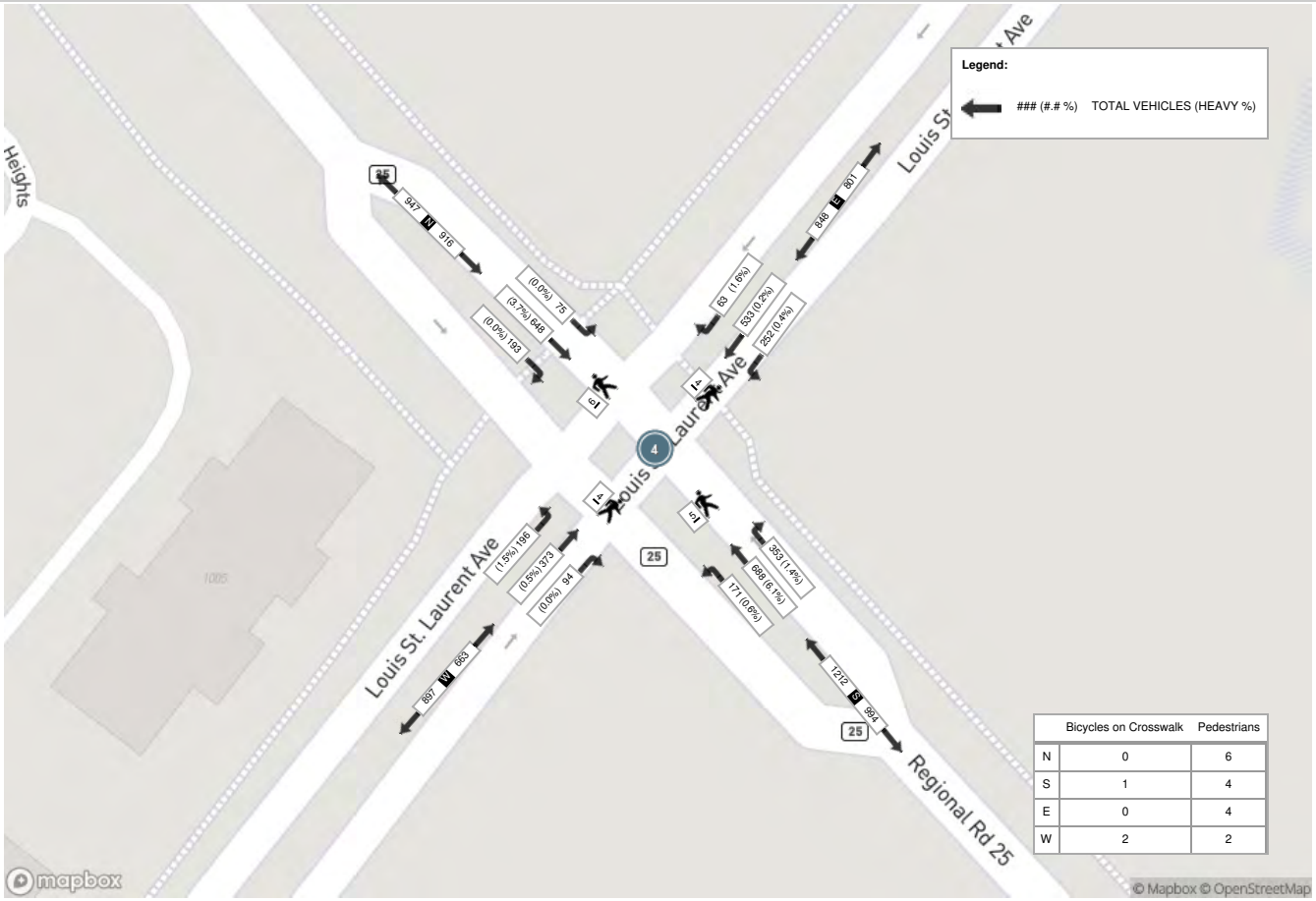
Start Time	N Approach REGIONAL RD 25						E Approach LOUIS ST LAURENT AVE						S Approach REGIONAL RD 25						W Approach LOUIS ST LAURENT AVE						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
17:00:00	52	148	16	0	1	216	15	127	71	0	0	213	90	162	37	0	3	289	23	83	44	0	3	150	868
17:15:00	52	167	24	0	2	243	19	117	68	0	4	204	82	191	38	0	2	311	27	94	55	0	0	176	934
17:30:00	55	188	15	0	2	258	18	138	50	0	0	206	89	195	46	0	0	330	24	95	39	0	0	158	952
17:45:00	34	145	20	0	1	199	11	151	63	0	0	225	92	140	50	0	0	282	20	101	58	1	1	180	886
Grand Total	193	648	75	0	6	916	63	533	252	0	4	848	353	688	171	0	5	1212	94	373	196	1	4	664	**3640**
Approach%	21.1%	70.7%	8.2%	0%		-	7.4%	62.9%	29.7%	0%		-	29.1%	56.8%	14.1%	0%		-	14.2%	56.2%	29.5%	0.2%		-	**-**
Totals %	5.3%	17.8%	2.1%	0%		25.2%	1.7%	14.6%	6.9%	0%		23.3%	9.7%	18.9%	4.7%	0%		33.3%	2.6%	10.2%	5.4%	0%		18.2%	**-**
PHF	0.88	0.86	0.78	0		0.89	0.83	0.88	0.89	0		0.94	0.96	0.88	0.86	0		0.92	0.87	0.92	0.84	0.25		0.92	**-**
Heavy	0	24	0	0		24	1	1	1	0		3	5	42	1	0		48	0	2	3	0		5	**-**
Heavy %	0%	3.7%	0%	0%		2.6%	1.6%	0.2%	0.4%	0%		0.4%	1.4%	6.1%	0.6%	0%		4%	0%	0.5%	1.5%	0%		0.8%	**-**
Lights	193	624	75	0		892	62	532	251	0		845	348	646	170	0		1164	94	371	193	1		659	**-**
Lights %	100%	96.3%	100%	0%		97.4%	98.4%	99.8%	99.6%	0%		99.6%	98.6%	93.9%	99.4%	0%		96%	100%	99.5%	98.5%	100%		99.2%	**-**
Single-Unit Trucks	0	8	0	0		8	1	0	1	0		2	5	13	1	0		19	0	2	2	0		4	**-**
Single-Unit Trucks %	0%	1.2%	0%	0%		0.9%	1.6%	0%	0.4%	0%		0.2%	1.4%	1.9%	0.6%	0%		1.6%	0%	0.5%	1%	0%		0.6%	**-**
Buses	0	2	0	0		2	0	1	0	0		1	0	4	0	0		4	0	0	0	0		0	**-**
Buses %	0%	0.3%	0%	0%		0.2%	0%	0.2%	0%	0%		0.1%	0%	0.6%	0%	0%		0.3%	0%	0%	0%	0%		0%	**-**
Articulated Trucks	0	14	0	0		14	0	0	0	0		0	0	25	0	0		25	0	0	1	0		1	**-**
Articulated Trucks %	0%	2.2%	0%	0%		1.5%	0%	0%	0%	0%		0%	0%	3.6%	0%	0%		2.1%	0%	0%	0.5%	0%		0.2%	**-**
Pedestrians	-	-	-	-	6	-	-	-	-	-	4	-	-	-	-	-	4	-	-	-	-	-	2	-	**-**
Pedestrians%	-	-	-	-	31.6%		-	-	-	-	21.1%		-	-	-	-	21.1%		-	-	-	-	10.5%		**-**
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	2	-	**-**
Bicycles on Crosswalk%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	5.3%		-	-	-	-	10.5%		**-**
Bicycles on Road	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	**-**
Bicycles on Road%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

Peak Hour: 07:45 AM - 08:45 AM **Weather: Overcast Clouds (1.73 °C)**



	Bicycles on Crosswalk	Pedestrians
N	3	3
S	1	1
E	0	0
W	1	1

Peak Hour: 05:00 PM - 06:00 PM Weather: Overcast Clouds (6.01 °C)



	Bicycles on Crosswalk	Pedestrians
N	0	6
S	1	4
E	0	4
W	2	2

Spectrum

Turning Movement Count
Location Name: REGIONAL RD 25 & WHITLOCK AVE
Date: Tue, Nov 29, 2022 Deployment Lead: Peter Ilias

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

Turning Movement Count (3 . REGIONAL RD 25 & WHITLOCK AVE)

Start Time	N Approach REGIONAL RD 25						E Approach WHITLOCK AVE						S Approach REGIONAL RD 25						W Approach WHITLOCK AVE						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
07:00:00	6	213	2	0	0	221	11	1	8	0	0	20	1	118	1	0	1	120	17	0	8	0	0	25	386	
07:15:00	7	253	6	0	1	266	14	0	6	0	0	20	2	161	4	0	0	167	19	0	15	0	0	34	487	
07:30:00	6	302	3	0	2	311	18	0	9	0	0	27	1	177	7	0	2	185	25	3	15	0	0	43	566	
07:45:00	13	261	7	0	1	281	26	1	11	0	0	38	1	216	9	0	0	226	18	2	14	0	0	34	579	2018
08:00:00	26	233	8	0	1	267	23	9	9	0	1	41	2	168	11	0	0	181	24	3	32	0	0	59	548	2180
08:15:00	24	272	17	0	2	313	20	8	8	0	0	36	6	221	9	0	3	236	19	7	33	0	0	59	644	2337
08:30:00	21	240	16	0	1	277	24	8	21	1	0	54	3	207	11	0	0	221	21	7	26	0	0	54	606	2377
08:45:00	25	208	12	0	0	245	17	4	9	0	1	30	8	163	4	0	3	175	21	4	40	0	1	65	515	2313
BREAK																										
16:00:00	16	191	18	0	0	225	14	2	2	0	2	18	11	236	17	0	1	264	7	3	21	0	0	31	538	
16:15:00	23	221	13	0	1	257	20	3	2	0	2	25	8	265	23	0	2	296	9	4	21	0	0	34	612	
16:30:00	18	192	14	0	1	224	21	3	5	0	1	29	12	286	18	0	1	316	6	6	20	0	0	32	601	
16:45:00	26	191	20	0	2	237	16	1	11	0	0	28	11	276	15	0	2	302	12	5	20	0	0	37	604	2355
17:00:00	29	176	11	0	1	216	18	1	5	1	0	25	7	262	21	0	0	290	5	6	21	0	0	32	563	2380
17:15:00	20	199	23	0	1	242	12	1	3	0	0	16	9	267	18	0	1	294	13	3	18	0	0	34	586	2354
17:30:00	30	185	20	0	1	235	20	3	7	2	1	32	9	287	23	0	0	319	12	6	20	0	0	38	624	2377
17:45:00	25	184	18	0	1	227	16	2	3	0	0	21	6	243	19	0	0	268	15	3	26	0	0	44	560	2333
Grand Total	315	3521	208	0	16	4044	290	47	119	4	8	460	97	3553	210	0	16	3860	243	62	350	0	1	655	**9019**	-
Approach%	7.8%	87.1%	5.1%	0%		-	63%	10.2%	25.9%	0.9%		-	2.5%	92%	5.4%	0%		-	37.1%	9.5%	53.4%	0%		-	**-**	-
Totals %	3.5%	39%	2.3%	0%		44.8%	3.2%	0.5%	1.3%	0%		5.1%	1.1%	39.4%	2.3%	0%		42.8%	2.7%	0.7%	3.9%	0%		7.3%	**-**	-
Heavy	6	174	5	0		-	14	3	4	0		-	5	189	5	0		-	3	9	8	0		-	**-**	-
Heavy %	1.9%	4.9%	2.4%	0%		-	4.8%	6.4%	3.4%	0%		-	5.2%	5.3%	2.4%	0%		-	1.2%	14.5%	2.3%	0%		-	**-**	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-

Spectrum

Turning Movement Count
Location Name: REGIONAL RD 25 & WHITLOCK AVE
Date: Tue, Nov 29, 2022 Deployment Lead: Peter Ilias

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

Peak Hour: 07:45 AM - 08:45 AM Weather: Overcast Clouds (1.73 °C)

Start Time	N Approach REGIONAL RD 25						E Approach WHITLOCK AVE						S Approach REGIONAL RD 25						W Approach WHITLOCK AVE						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
07:45:00	13	261	7	0	1	281	26	1	11	0	0	38	1	216	9	0	0	226	18	2	14	0	0	34	579
08:00:00	26	233	8	0	1	267	23	9	9	0	1	41	2	168	11	0	0	181	24	3	32	0	0	59	548
08:15:00	24	272	17	0	2	313	20	8	8	0	0	36	6	221	9	0	3	236	19	7	33	0	0	59	644
08:30:00	21	240	16	0	1	277	24	8	21	1	0	54	3	207	11	0	0	221	21	7	26	0	0	54	606
Grand Total	84	1006	48	0	5	1138	93	26	49	1	1	169	12	812	40	0	3	864	82	19	105	0	0	206	**2377**
Approach%	7.4%	88.4%	4.2%	0%		-	55%	15.4%	29%	0.6%		-	1.4%	94%	4.6%	0%		-	39.8%	9.2%	51%	0%		-	**-**
Totals %	3.5%	42.3%	2%	0%		47.9%	3.9%	1.1%	2.1%	0%		7.1%	0.5%	34.2%	1.7%	0%		36.3%	3.4%	0.8%	4.4%	0%		8.7%	**-**
PHF	0.81	0.92	0.71	0		0.91	0.89	0.72	0.58	0.25		0.78	0.5	0.92	0.91	0		0.92	0.85	0.68	0.8	0		0.87	**-**
Heavy	6	46	0	0		52	8	2	2	0		12	3	51	3	0		57	1	6	4	0		11	**-**
Heavy %	7.1%	4.6%	0%	0%		4.6%	8.6%	7.7%	4.1%	0%		7.1%	25%	6.3%	7.5%	0%		6.6%	1.2%	31.6%	3.8%	0%		5.3%	**-**
Lights	78	960	48	0		1086	85	24	47	1		157	9	761	37	0		807	81	13	101	0		195	**-**
Lights %	92.9%	95.4%	100%	0%		95.4%	91.4%	92.3%	95.9%	100%		92.9%	75%	93.7%	92.5%	0%		93.4%	98.8%	68.4%	96.2%	0%		94.7%	**-**
Single-Unit Trucks	2	12	0	0		14	2	0	0	0		2	0	17	2	0		19	1	0	3	0		4	**-**
Single-Unit Trucks %	2.4%	1.2%	0%	0%		1.2%	2.2%	0%	0%	0%		1.2%	0%	2.1%	5%	0%		2.2%	1.2%	0%	2.9%	0%		1.9%	**-**
Buses	4	11	0	0		15	6	2	2	0		10	3	11	1	0		15	0	6	1	0		7	**-**
Buses %	4.8%	1.1%	0%	0%		1.3%	6.5%	7.7%	4.1%	0%		5.9%	25%	1.4%	2.5%	0%		1.7%	0%	31.6%	1%	0%		3.4%	**-**
Articulated Trucks	0	23	0	0		23	0	0	0	0		0	0	23	0	0		23	0	0	0	0		0	**-**
Articulated Trucks %	0%	2.3%	0%	0%		2%	0%	0%	0%	0%		0%	0%	2.8%	0%	0%		2.7%	0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	-	5	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	-	55.6%		-	-	-	-	0%		-	-	-	-	11.1%		-	-	-	-	0%		**-**
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	2	-	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	-	0%		-	-	-	-	11.1%		-	-	-	-	22.2%		-	-	-	-	0%		**-**

Spectrum

Turning Movement Count
Location Name: REGIONAL RD 25 & WHITLOCK AVE
Date: Tue, Nov 29, 2022 Deployment Lead: Peter Ilias

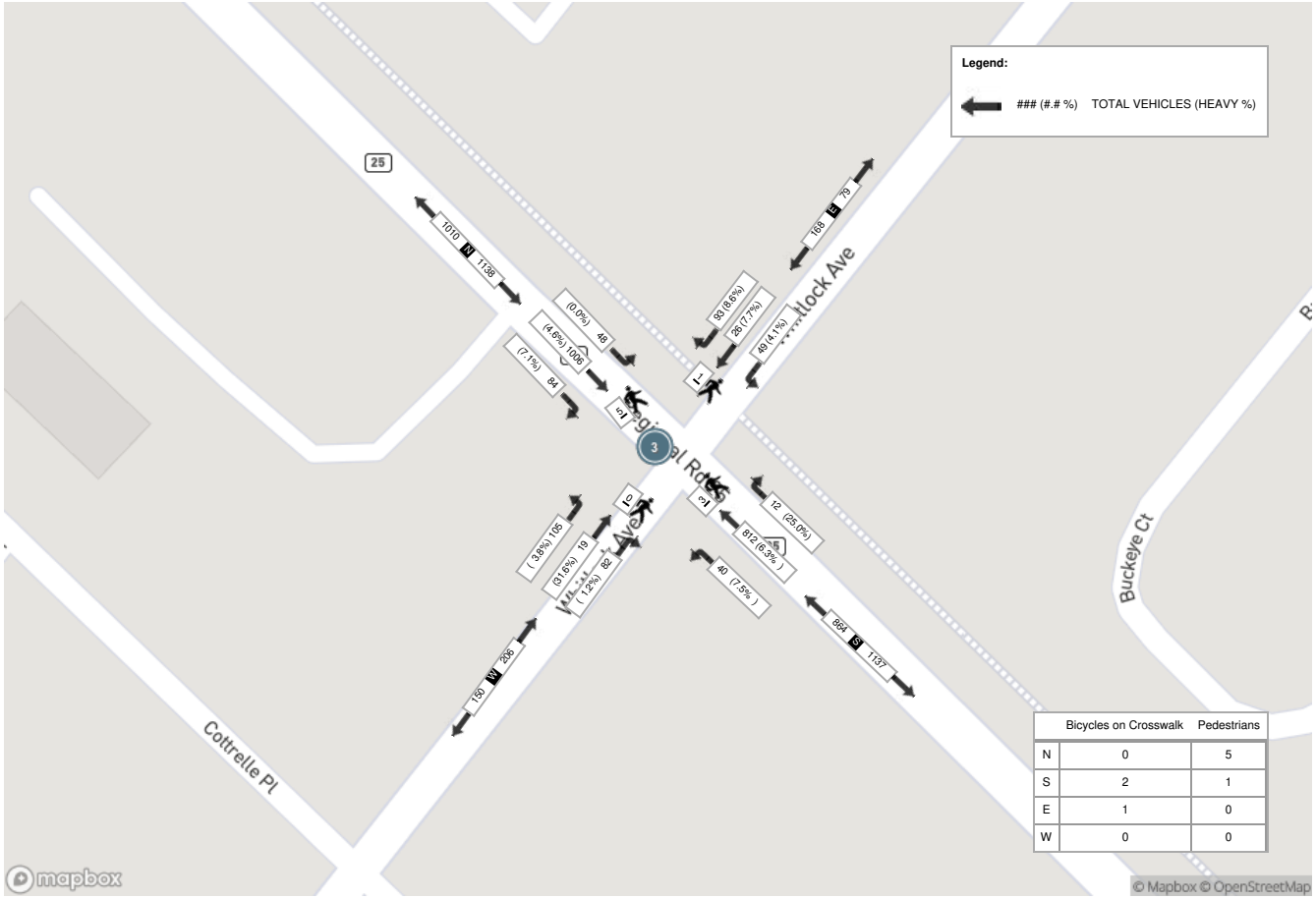
BA Group
300 45 ST. CLAIR AVE W
TORONTO ONTARIO, M4V 1K9
CANADA

Peak Hour: 04:15 PM - 05:15 PM Weather: Overcast Clouds (6.01 °C)

Start Time	N Approach REGIONAL RD 25						E Approach WHITLOCK AVE						S Approach REGIONAL RD 25						W Approach WHITLOCK AVE						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
16:15:00	23	221	13	0	1	257	20	3	2	0	2	25	8	265	23	0	2	296	9	4	21	0	0	34	612
16:30:00	18	192	14	0	1	224	21	3	5	0	1	29	12	286	18	0	1	316	6	6	20	0	0	32	601
16:45:00	26	191	20	0	2	237	16	1	11	0	0	28	11	276	15	0	2	302	12	5	20	0	0	37	604
17:00:00	29	176	11	0	1	216	18	1	5	1	0	25	7	262	21	0	0	290	5	6	21	0	0	32	563
Grand Total	96	780	58	0	5	934	75	8	23	1	3	107	38	1089	77	0	5	1204	32	21	82	0	0	135	**2380**
Approach%	10.3%	83.5%	6.2%	0%		-	70.1%	7.5%	21.5%	0.9%		-	3.2%	90.4%	6.4%	0%		-	23.7%	15.6%	60.7%	0%		-	**-**
Totals %	4%	32.8%	2.4%	0%		39.2%	3.2%	0.3%	1%	0%		4.5%	1.6%	45.8%	3.2%	0%		50.6%	1.3%	0.9%	3.4%	0%		5.7%	**-**
PHF	0.83	0.88	0.73	0		0.91	0.89	0.67	0.52	0.25		0.92	0.79	0.95	0.84	0		0.95	0.67	0.88	0.98	0		0.91	**-**
Heavy	0	43	1	0		44	2	0	0	0		2	0	51	1	0		52	0	1	1	0		2	**-**
Heavy %	0%	5.5%	1.7%	0%		4.7%	2.7%	0%	0%	0%		1.9%	0%	4.7%	1.3%	0%		4.3%	0%	4.8%	1.2%	0%		1.5%	**-**
Lights	96	737	57	0		890	73	8	23	1		105	38	1038	76	0		1152	32	20	81	0		133	**-**
Lights %	100%	94.5%	98.3%	0%		95.3%	97.3%	100%	100%	100%		98.1%	100%	95.3%	98.7%	0%		95.7%	100%	95.2%	98.8%	0%		98.5%	**-**
Single-Unit Trucks	0	19	0	0		19	1	0	0	0		1	0	19	0	0		19	0	1	0	0		1	**-**
Single-Unit Trucks %	0%	2.4%	0%	0%		2%	1.3%	0%	0%	0%		0.9%	0%	1.7%	0%	0%		1.6%	0%	4.8%	0%	0%		0.7%	**-**
Buses	0	5	1	0		6	1	0	0	0		1	0	7	1	0		8	0	0	1	0		1	**-**
Buses %	0%	0.6%	1.7%	0%		0.6%	1.3%	0%	0%	0%		0.9%	0%	0.6%	1.3%	0%		0.7%	0%	0%	1.2%	0%		0.7%	**-**
Articulated Trucks	0	19	0	0		19	0	0	0	0		0	0	25	0	0		25	0	0	0	0		0	**-**
Articulated Trucks %	0%	2.4%	0%	0%		2%	0%	0%	0%	0%		0%	0%	2.3%	0%	0%		2.1%	0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	-	5	-	-	-	-	-	3	-	-	-	-	-	5	-	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	-	38.5%		-	-	-	-	23.1%		-	-	-	-	38.5%		-	-	-	-	0%		**-**
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

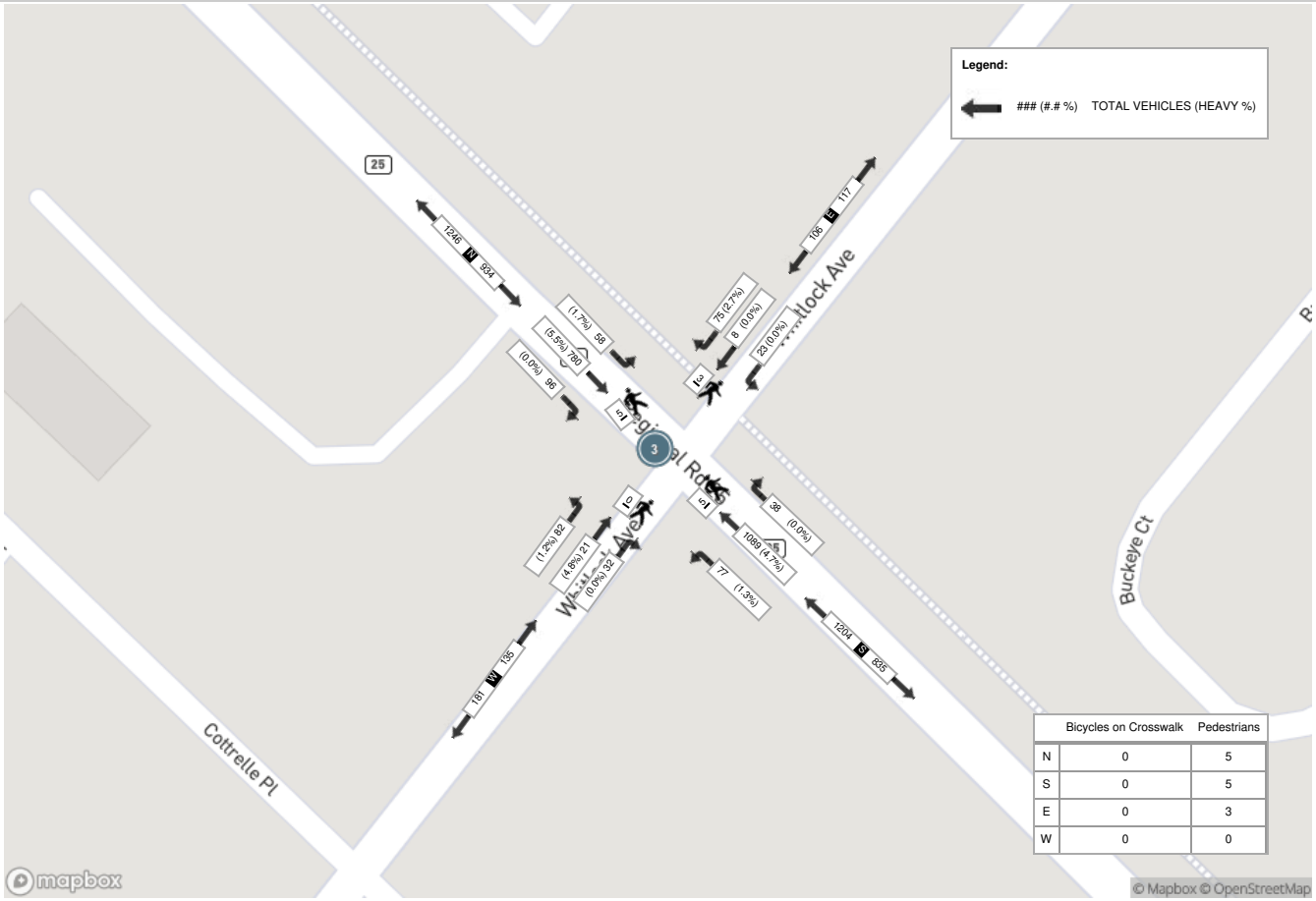
BA Group
300 45 ST. CLAIR AVE W
TORONTO ONTARIO, M4V 1K9
CANADA

Peak Hour: 07:45 AM - 08:45 AM Weather: Overcast Clouds (1.73 °C)



	Bicycles on Crosswalk	Pedestrians
N	0	5
S	2	1
E	1	0
W	0	0

Peak Hour: 04:15 PM - 05:15 PM **Weather: Overcast Clouds (6.01 °C)**



	Bicycles on Crosswalk	Pedestrians
N	0	5
S	0	5
E	0	3
W	0	0

Britannia Rd @ Regional Rd 25

Morning Peak Diagram

Specified Period
From: 7:00:00
To: 9:00:00

One Hour Peak
From: 7:30:00
To: 8:30:00

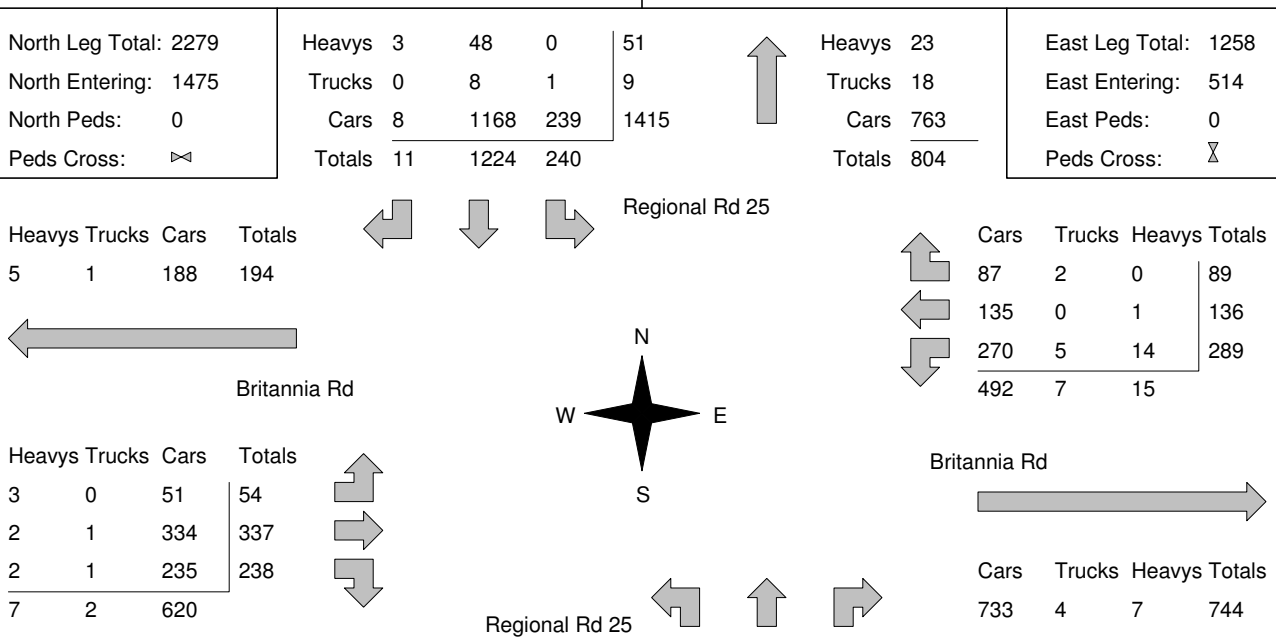
Municipality: Halton Region
Site #: 0000003408
Intersection: Regional Rd 25 & Britannia Rd
TFR File #: 17
Count date: 9-Dec-2019

Weather conditions:
Overcast/Wet

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Regional Rd 25 runs N/S



Comments

Britannia Rd @ Regional Rd 25

Mid-day Peak Diagram

Specified Period
From: 11:00:00
To: 14:00:00

One Hour Peak
From: 11:45:00
To: 12:45:00

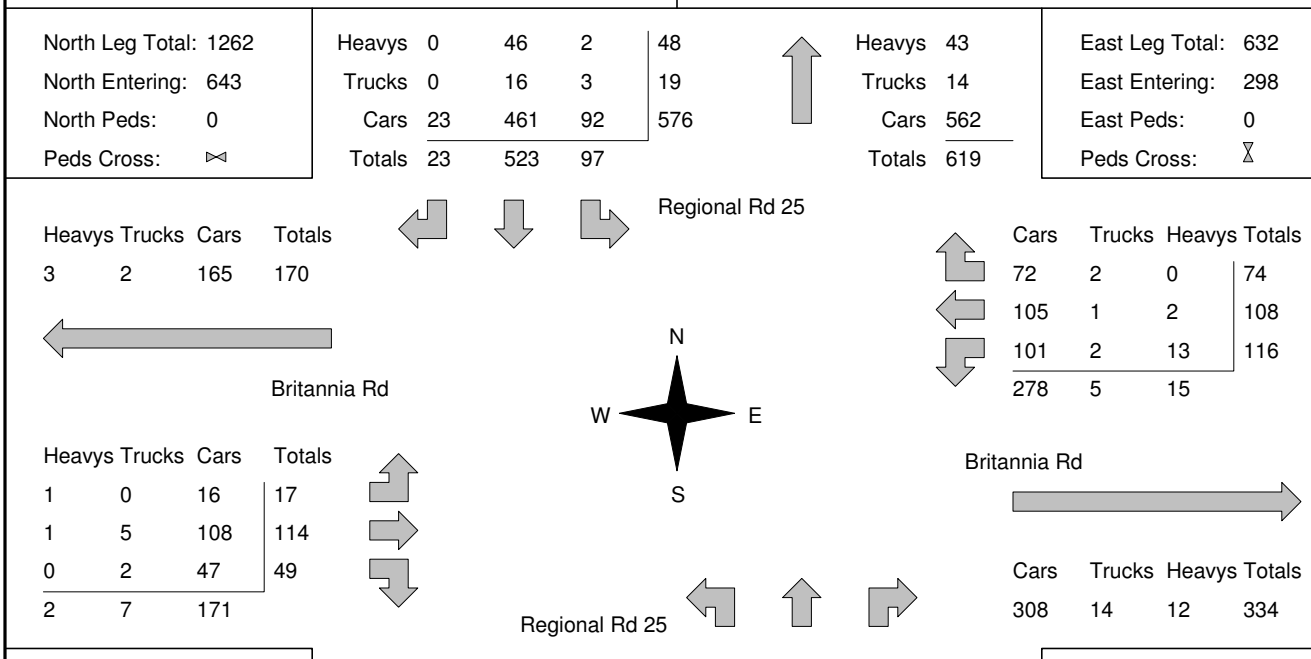
Municipality: Halton Region
Site #: 0000003408
Intersection: Regional Rd 25 & Britannia Rd
TFR File #: 17
Count date: 9-Dec-2019

Weather conditions:
Overcast/Wet

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Regional Rd 25 runs N/S



Comments

Britannia Rd @ Regional Rd 25

Afternoon Peak Diagram

Specified Period
From: 15:00:00
To: 18:00:00

One Hour Peak
From: 16:45:00
To: 17:45:00

Municipality: Halton Region
Site #: 0000003408
Intersection: Regional Rd 25 & Britannia Rd
TFR File #: 17
Count date: 9-Dec-2019

Weather conditions:
Overcast/Wet

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Regional Rd 25 runs N/S

North Leg Total:	2040			
North Entering:	698			
North Peds:	0			
Peds Cross:	⋈			
Heavys	0	12	0	12
Trucks	0	8	1	9
Cars	42	542	93	677
Totals	42	562	94	
Heavys	27			
Trucks	5			
Cars	1310			
Totals	1342			
East Leg Total:	1403			
East Entering:	857			
East Peds:	0			
Peds Cross:	⧖			

Regional Rd 25

Heavys	Trucks	Cars	Totals
2	1	643	646

	Cars	Trucks	Heavys	Totals
	249	1	1	251
	394	1	1	396
	206	2	2	210
	849	4	4	

Britannia Rd

N
W E
S

Heavys	Trucks	Cars	Totals
2	0	30	32
0	0	138	138
0	0	35	35
2	0	203	

Britannia Rd

Cars	Trucks	Heavys	Totals
538	3	5	546

Regional Rd 25

Peds Cross:	⧖			
West Peds:	0			
West Entering:	205			
West Leg Total:	851			
Cars	783			
Trucks	10			
Heavys	14			
Totals	807			
Cars	207	1031	307	1545
Trucks	0	4	2	6
Heavys	1	24	5	30
Totals	208	1059	314	
Peds Cross:	⋈			
South Peds:	0			
South Entering:	1581			
South Leg Total:	2388			

Comments

Britannia Rd @ Regional Rd 25

Total Count Diagram

Municipality: Halton Region
Site #: 0000003408
Intersection: Regional Rd 25 & Britannia Rd
TFR File #: 17
Count date: 9-Dec-2019

Weather conditions:
Overcast/Wet

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Regional Rd 25 runs N/S

North Leg Total:	13423			
North Entering:	6673			
North Peds:	0			
Peds Cross:	⋈			
Heavys	3	299	11	313
Trucks	3	90	11	104
Cars	164	5092	1000	6256
Totals	170	5481	1022	
Heavys	285			
Trucks	94			
Cars	6371			
Totals	6750			
East Leg Total:	8171			
East Entering:	4231			
East Peds:	0			
Peds Cross:	⧖			

Regional Rd 25

Heavys	Trucks	Cars	Totals
31	21	2406	2458

Cars	Trucks	Heavys	Totals
1059	13	9	1081
1600	11	17	1628
1435	19	68	1522
4094	43	94	

Britannia Rd

N
W E
S

Heavys	Trucks	Cars	Totals
18	2	216	236
9	13	1423	1445
9	9	677	695
36	24	2316	

Britannia Rd

Cars	Trucks	Heavys	Totals
3813	46	81	3940

Regional Rd 25

Peds Cross:	⧖			
West Peds:	0			
West Entering:	2376			
West Leg Total:	4834			
Cars	7204			
Trucks	118			
Heavys	376			
Totals	7698			
Cars	642	5096	1390	7128
Trucks	7	79	22	108
Heavys	11	258	61	330
Totals	660	5433	1473	
Peds Cross:	⋈			
South Peds:	0			
South Entering:	7566			
South Leg Total:	15264			

Comments

Regional Rd 25 @ Louis St Laurent Ave

Morning Peak Diagram

Specified Period
From: 7:00:00
To: 9:00:00

One Hour Peak
From: 7:30:00
To: 8:30:00

Municipality: Halton Region
Site #: 0000002977
Intersection: Regional Rd 25 & Louis St Laurent A
TFR File #: 1
Count date: 6-Dec-2016

Weather conditions:
Cloudy/Dry

Person(s) who counted:
Matt
Linda

**** Signalized Intersection ****

Major Road: Regional Rd 25 runs N/S

North Leg Total:	1649			
North Entering:	829			
North Peds:	6			
Peds Cross:	⋈			
Heavys	10	48	0	58
Trucks	1	7	2	10
Cars	89	624	48	761
Totals	100	679	50	
Heavys	46			
Trucks	15			
Cars	759			
Totals	820			
East Leg Total:	1207			
East Entering:	567			
East Peds:	2			
Peds Cross:	⧖			

Regional Rd 25

Heavys	Trucks	Cars	Totals
26	10	553	589

Louis St Laurent Ave

Cars	Trucks	Heavys	Totals
80	1	2	83
323	4	7	334
141	3	6	150
544	8	15	

N
W E
S

Heavys	Trucks	Cars	Totals
11	2	117	130
4	4	444	452
15	4	464	483
30	10	1025	

Louis St Laurent Ave

Cars	Trucks	Heavys	Totals
622	11	7	640

Regional Rd 25

Peds Cross:	⧖			
West Peds:	0			
West Entering:	1065			
West Leg Total:	1654			
Cars	1229			
Trucks	14			
Heavys	69			
Totals	1312			
Cars	141	562	130	833
Trucks	5	12	5	22
Heavys	9	33	3	45
Totals	155	607	138	
Peds Cross:	⋈			
South Peds:	0			
South Entering:	900			
South Leg Total:	2212			

Comments

Regional Rd 25 @ Louis St Laurent Ave

Mid-day Peak Diagram

Specified Period
From: 11:00:00
To: 14:00:00

One Hour Peak
From: 13:00:00
To: 14:00:00

Municipality: Halton Region
Site #: 0000002977
Intersection: Regional Rd 25 & Louis St Laurent A
TFR File #: 1
Count date: 6-Dec-2016

Weather conditions:
Cloudy/Dry

Person(s) who counted:
Matt
Linda

**** Signalized Intersection ****

Major Road: Regional Rd 25 runs N/S

North Leg Total:	1124			
North Entering:	558			
North Peds:	4			
Peds Cross:	⋈			
Heavys	8	42	0	50
Trucks	2	13	1	16
Cars	77	372	43	492
Totals	87	427	44	
Heavys	56			
Trucks	24			
Cars	486			
Totals	566			
East Leg Total:	499			
East Entering:	236			
East Peds:	0			
Peds Cross:	⧖			

Regional Rd 25

Heavys	Trucks	Cars	Totals
14	10	345	369

Louis St Laurent Ave

Heavys	Trucks	Cars	Totals
9	2	47	58
1	6	136	143
6	5	140	151
16	13	323	

Cars	Trucks	Heavys	Totals
29	0	0	29
144	4	2	150
57	0	0	57
230	4	2	

N
W E
S

Louis St Laurent Ave

Cars	Trucks	Heavys	Totals
252	9	2	263

Regional Rd 25

Peds Cross:	⧖			
West Peds:	1			
West Entering:	352			
West Leg Total:	721			
Cars	569			
Trucks	18			
Heavys	48			
Totals	635			
Cars	124	410	73	607
Trucks	4	22	2	28
Heavys	4	47	1	52
Totals	132	479	76	
Peds Cross:	⋈			
South Peds:	0			
South Entering:	687			
South Leg Total:	1322			

Comments

Regional Rd 25 @ Louis St Laurent Ave

Afternoon Peak Diagram

Specified Period
From: 15:00:00
To: 18:00:00

One Hour Peak
From: 16:30:00
To: 17:30:00

Municipality: Halton Region
Site #: 0000002977
Intersection: Regional Rd 25 & Louis St Laurent A
TFR File #: 1
Count date: 6-Dec-2016

Weather conditions:
Cloudy/Dry

Person(s) who counted:
Matt
Linda

**** Signalized Intersection ****

Major Road: Regional Rd 25 runs N/S

North Leg Total: 1690
North Entering: 769
North Peds: 1
Peds Cross: ⋈

Heavys	0	19	0	19
Trucks	0	7	0	7
Cars	139	537	67	743
Totals	139	563	67	

Heavys	24
Trucks	15
Cars	882
Totals	921

East Leg Total: 1178
East Entering: 607
East Peds: 1
Peds Cross: ⧖

Regional Rd 25

Heavys	Trucks	Cars	Totals
4	6	879	889

Louis St Laurent Ave

Heavys	Trucks	Cars	Totals
3	0	86	89
2	0	306	308
2	2	193	197
7	2	585	

Cars	Trucks	Heavys	Totals
61	0	0	61
448	1	2	451
92	2	1	95
601	3	3	

N
W E
S

Louis St Laurent Ave

Cars	Trucks	Heavys	Totals
562	6	3	571

Regional Rd 25

Peds Cross: ⧖
West Peds: 0
West Entering: 594
West Leg Total: 1483

Cars	822			
Trucks	11			
Heavys	22			
Totals	855			

Cars	292	735	189	1216
Trucks	5	15	6	26
Heavys	2	21	1	24
Totals	299	771	196	

Peds Cross: ⋈
South Peds: 0
South Entering: 1266
South Leg Total: 2121

Comments

Regional Rd 25 @ Louis St Laurent Ave

Total Count Diagram

Municipality: Halton Region
Site #: 0000002977
Intersection: Regional Rd 25 & Louis St Laurent A
TFR File #: 1
Count date: 6-Dec-2016

Weather conditions:
Cloudy/Dry

Person(s) who counted:
Matt
Linda

**** Signalized Intersection ****

Major Road: Regional Rd 25 runs N/S

North Leg Total:	11061
North Entering:	5413
North Peds:	25
Peds Cross:	⋈

Heavys	52	308	1	361
Trucks	13	111	5	129
Cars	743	3783	397	4923
Totals	808	4202	403	

Heavys	371
Trucks	125
Cars	5152
Totals	5648

East Leg Total:	6742
East Entering:	3372
East Peds:	8
Peds Cross:	⧖

Regional Rd 25

Heavys	Trucks	Cars	Totals
115	78	4239	4432

Louis St Laurent Ave

Cars	Trucks	Heavys	Totals
398	3	4	405
2071	34	17	2122
816	16	13	845
3285	53	34	

N
W E
S

Heavys	Trucks	Cars	Totals
57	10	591	658
18	27	1982	2027
71	28	1909	2008
146	65	4482	

Louis St Laurent Ave

Cars	Trucks	Heavys	Totals
3284	58	28	3370

Regional Rd 25

Peds Cross:	⧖
West Peds:	5
West Entering:	4693
West Leg Total:	9125

Cars	6508
Trucks	155
Heavys	392
Totals	7055

Cars	1425	4163	905	6493
Trucks	31	112	26	169
Heavys	46	310	9	365
Totals	1502	4585	940	

Peds Cross:	⋈
South Peds:	4
South Entering:	7027
South Leg Total:	14082

Comments

APPENDIX F: ITE EXCERPTS

Land Use: 222
Multifamily Housing (High-Rise)

Description

High-rise multifamily housing includes apartments, townhouses, and condominiums. Each building has more than 10 floors of living space. Access to individual dwelling units is through an outside building entrance, a lobby, elevators, and a set of hallways.

Multifamily housing (low-rise) (Land Use 220), multifamily housing (mid-rise) (Land Use 221), off-campus student apartment (high-rise) (Land Use 227), and high-rise residential with ground-floor commercial (Land Use 232) are related land uses.

Land Use Subcategory

Data are presented for two subcategories for this land use: (1) not close to rail transit and (2) close to rail transit. A site is considered close to rail transit if the walking distance between the residential site entrance and the closest rail transit station entrance is ½ mile or less.

Additional Data

For the 12 sites for which both the number of residents and the number of occupied dwelling units were available, there were an average of 1.6 residents per occupied dwelling unit.

For the 26 sites for which the numbers of both total dwelling units and occupied dwelling units were available, an average of 98 percent of the total dwelling units were occupied.

The technical appendices provide supporting information on time-of-day distributions for this land use. The appendices can be accessed through either the ITETripGen web app or the trip generation resource page on the ITE website (https://www.ite.org/technical-resources/topics/trip-and-parking-generation/).

For the 12 sites for which data were provided for both occupied dwelling units and residents, there was an average of 1.6 residents per occupied dwelling unit.

For the 26 sites for which data were provided for both occupied dwelling units and total dwelling units, an average of 98 percent of the units were occupied.

It is expected that the number of bedrooms and number of residents are likely correlated to the trips generated by a residential site. To assist in future analysis, trip generation studies of all multifamily housing should attempt to obtain information on occupancy rate and on the mix of residential unit sizes (i.e., number of units by number of bedrooms at the site complex).

The sites were surveyed in the 1980s, the 2000s, and the 2010s in California, District of Columbia, Maryland, New Jersey, New York, Ontario (CAN), Oregon, Pennsylvania, and Virginia.

Source Numbers

105, 168, 169, 237, 321, 356, 818, 862, 901, 910, 949, 963, 964, 966, 967, 1056, 1057, 1076, 1077

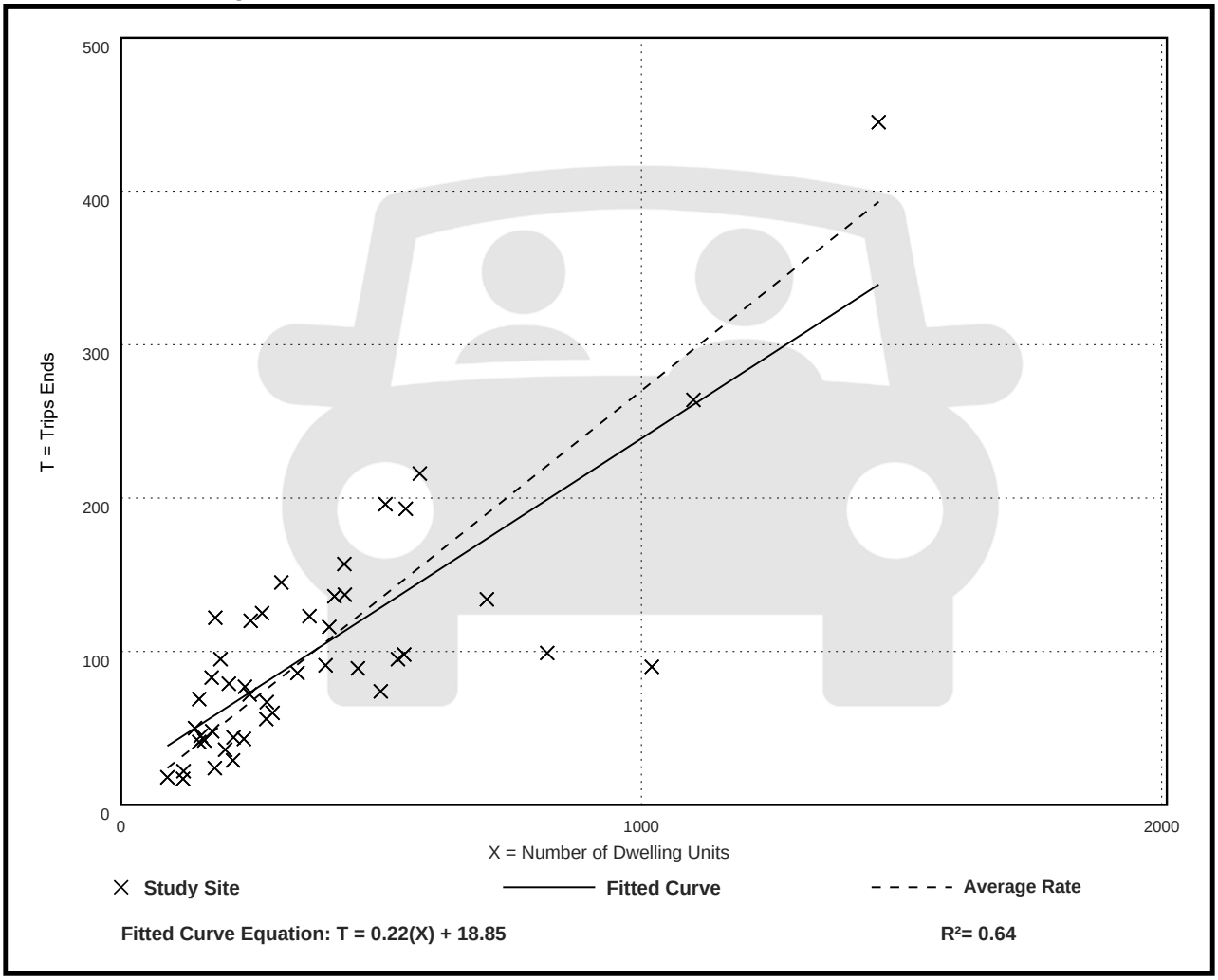
Multifamily Housing (High-Rise)
Not Close to Rail Transit (222)

Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: General Urban/Suburban
Number of Studies: 45
Avg. Num. of Dwelling Units: 372
Directional Distribution: 34% entering, 66% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.27	0.09 - 0.67	0.11

Data Plot and Equation



Fitted Curve Equation: T = 0.22(X) + 18.85

R^2= 0.64

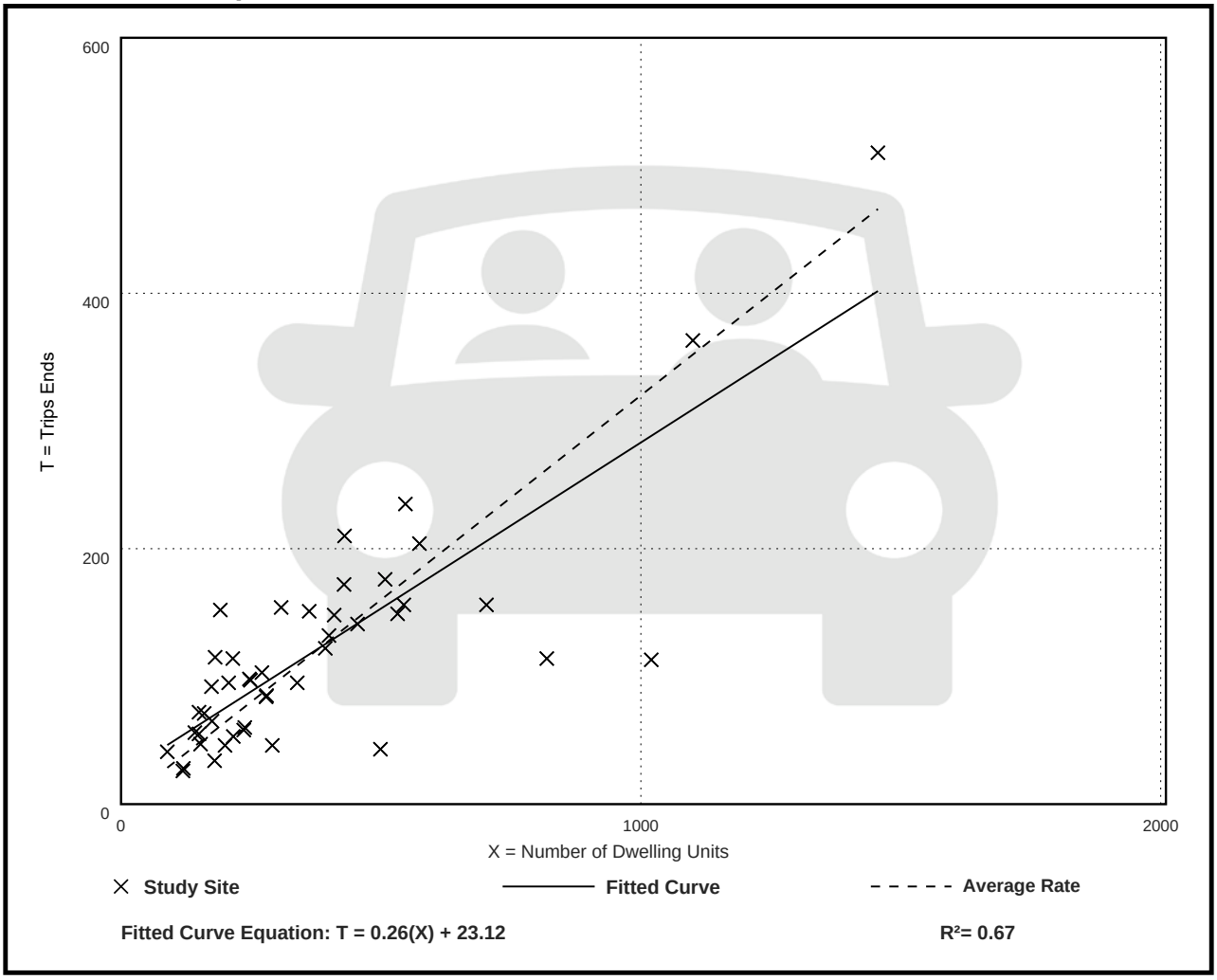
Multifamily Housing (High-Rise)
Not Close to Rail Transit (222)

Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: General Urban/Suburban
Number of Studies: 45
Avg. Num. of Dwelling Units: 372
Directional Distribution: 56% entering, 44% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.32	0.09 - 0.80	0.13

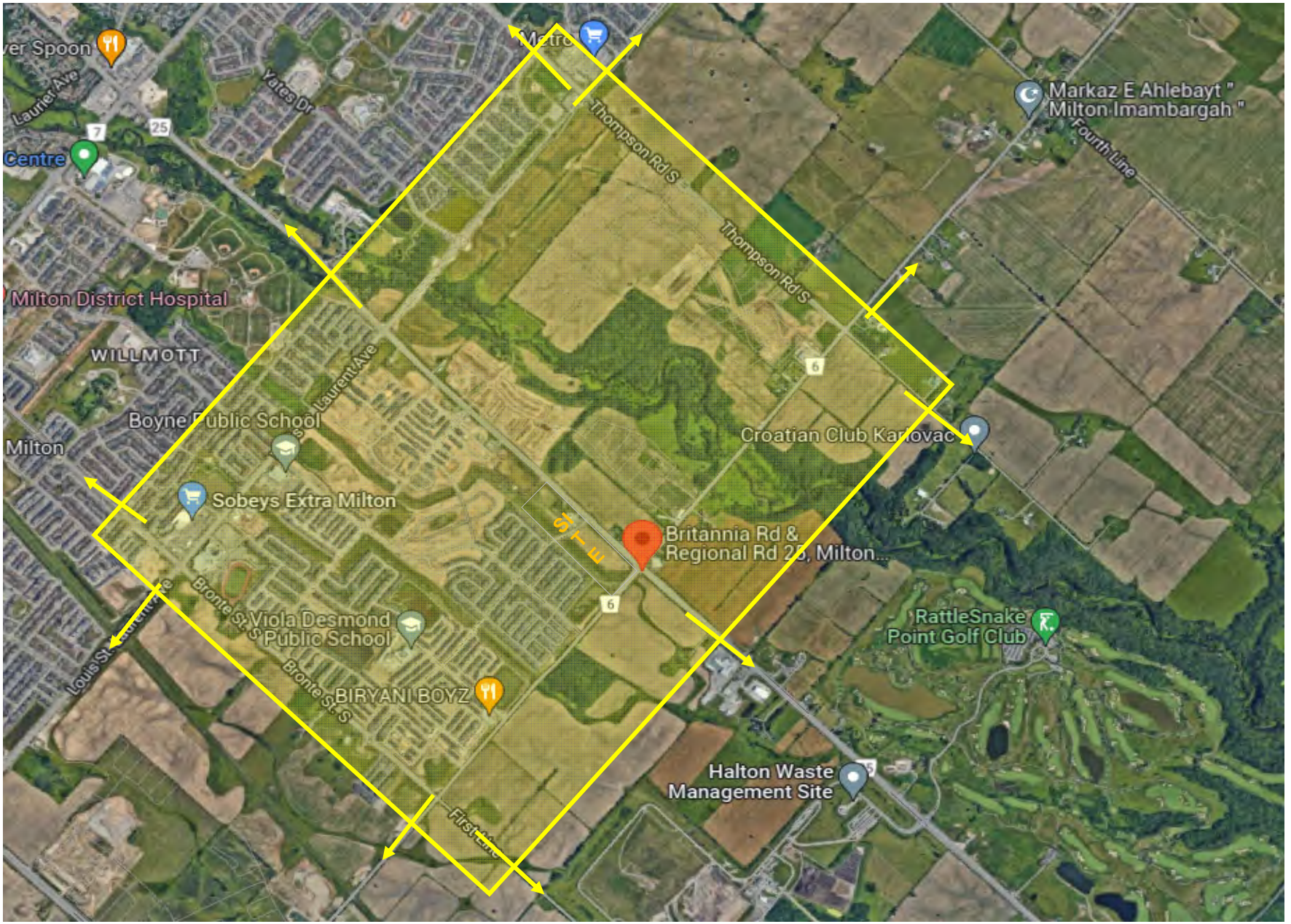
Data Plot and Equation



Fitted Curve Equation: T = 0.26(X) + 23.12

R^2= 0.67

APPENDIX G: TTS DATA


Laurier Ave
Yates Dr
Centre
Milton District Hospital
WILLMOTT
Laurent Ave
Boyne Public School
Milton
Sobeys Extra Milton
Bronte St S
Viola Desmond Public School
BIRYANI BOYZ
Thompson Rd S
Thompson Rd S
Markaz E Ahlebayt " Milton Imambargah "
Fourth Line
Croatian Club Karlovac
Britannia Rd &
Regional Rd 25, Milton...
RattleSnake Point Golf Club
Halton Waste Management Site

Wed Dec 21 2022 14:51:49 GMT-0500 (Eastern Standard Time) - Run Time: 2577ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: Planning district of destination - pd_dest
Column: 2006 GTA zone of origin - gta06_orig

Filters:
(Start time of trip - start_time In 600-859
and
Trip purpose of origin - purp_orig In H
and
Primary travel mode of trip - mode_prime In D
and
2006 GTA zone of origin - gta06_orig In 4104

M P T U

4105 4108)

Trip 2016
Table:

	4104	4105	4108	**TOTAL**
PD 1 of Toronto	0	15	72	**87**
PD 2 of Toronto	0	16	0	**16**
PD 3 of Toronto	0	0	45	**45**
PD 5 of Toronto	0	0	11	**11**
PD 7 of Toronto	0	0	18	**18**
PD 8 of Toronto	0	87	0	**87**
PD 9 of Toronto	0	99	9	**108**
PD 10 of Toronto	0	17	0	**17**
PD 11 of Toronto	0	40	46	**86**
PD 13 of Toronto	0	20	0	**20**
PD 16 of Toronto	0	13	0	**13**
Ajax	0	0	15	**15**
Whitby	0	14	0	**14**
Richmond Hill	0	29	0	**29**
Markham	0	80	31	**111**
Vaughan	0	131	34	**165**
Brampton	45	232	277	**554**
Mississauga	34	1147	755	**1936**
Halton Hills	0	93	0	**93**
Oakville	83	206	295	**584**
Burlington	79	116	126	**321**
Hamilton	0	73	91	**164**
Waterloo	0	20	60	**80**
Kitchener	0	14	22	**36**
Woolwich	0	0	16	**16**
City of Guelph	0	30	34	**64**
Puslinch	0	0	15	**15**
Barrie	0	22	0	**22**
Milton	72	1645	789	**2506**

Wed Dec 21 2022 15:33:37 GMT-0500 (Eastern Standard Time) - Run Time: 2376ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of destination - gta06_dest
Column: 2006 GTA zone of origin - gta06_orig

Filters:
(Start time of trip - start_time In 600-859
and
Trip purpose of origin - purp_orig In H
and
Primary travel mode of trip - mode_prime In D
and
2006 GTA zone of origin - gta06_orig In 4104

M P T U

4105 4108
and
Planning district of destination - pd_dest In 38)

Trip 2016
Table:

	4104	4105	4108	**TOTAL**
4101	0	47	0	**47**
4103	0	62	0	**62**
4104	0	104	14	**118**
4105	0	331	10	**341**
4108	0	55	377	**432**
4109	0	89	62	**151**
4110	0	20	87	**107**
4117	0	34	0	**34**
4119	0	81	18	**99**
4122	0	35	0	**35**
4123	0	12	0	**12**
4124	19	56	46	**121**
4125	52	448	159	**659**
4126	0	63	0	**63**
4127	0	67	0	**67**
4144	0	12	0	**12**
4145	0	14	15	**29**
4147	0	60	0	**60**
4148	0	31	0	**31**
4192	0	25	0	**25**

Wed Dec 21 2022 15:38:39 GMT-0500 (Eastern Standard Time) - Run Time: 2664ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: Planning district of origin - pd_orig
Column: 2006 GTA zone of destination - gta06_dest

Filters:
(Start time of trip - start_time In 1500-1759
and
Trip purpose of destination - purp_dest In H
and
Primary travel mode of trip - mode_prime In D
and
2006 GTA zone of destination - gta06_dest In 4104

M P T U

4105 4108)

Trip 2016
Table:

	4104	4105	4108	TOTAL
PD 1 of Toronto	0	124	59	**183**
PD 2 of Toronto	0	46	0	**46**
PD 3 of Toronto	0	0	45	**45**
PD 5 of Toronto	0	14	11	**25**
PD 7 of Toronto	0	42	0	**42**
PD 8 of Toronto	0	91	0	**91**
PD 9 of Toronto	0	49	27	**76**
PD 10 of Toronto	0	17	0	**17**
PD 11 of Toronto	0	40	17	**57**
PD 12 of Toronto	0	17	0	**17**
Ajax	0	0	15	**15**
Whitby	0	14	37	**51**
Oshawa	0	0	18	**18**
Georgina	0	27	0	**27**
Richmond Hill	0	29	26	**55**
Vaughan	0	178	78	**256**
Brampton	11	186	175	**372**
Mississauga	34	1049	586	**1669**
Halton Hills	0	64	48	**112**
Oakville	99	281	308	**688**
Burlington	46	160	104	**310**
Hamilton	0	59	59	**118**
Waterloo	0	0	60	**60**
Kitchener	0	14	0	**14**
Woolwich	0	0	16	**16**
City of Guelph	0	30	34	**64**
Puslinch	0	0	15	**15**
Barrie	0	17	0	**17**
New Tecumseth	0	0	30	**30**
External	0	0	7	**7**
Milton	26	1290	675	**1991**

Wed Dec 21 2022 15:34:52 GMT-0500 (Eastern Standard Time) - Run Time: 2696ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of origin - gta06_orig
Column: 2006 GTA zone of destination - gta06_dest

Filters:
(Start time of trip - start_time In 1500-1759
and
Trip purpose of destination - purp_dest In H
and
Primary travel mode of trip - mode_prime In D
and
2006 GTA zone of destination - gta06_dest In 4104
and
Planning district of origin - pd_orig In 38

M P T U

4105 4108

)

Trip 2016
Table:

	4104	4105	4108	TOTAL
4103	0	82	0	**82**
4104	0	84	0	**84**
4105	0	314	10	**324**
4108	0	63	200	**263**
4109	0	0	26	**26**
4110	0	62	72	**134**
4119	0	87	0	**87**
4120	0	0	32	**32**
4122	0	24	0	**24**
4123	0	27	27	**54**
4124	0	35	37	**72**
4125	26	235	257	**518**
4126	0	55	0	**55**
4127	0	67	0	**67**
4144	0	12	0	**12**
4145	0	14	15	**29**
4148	0	103	0	**103**
4192	0	25	0	**25**

AM
Outbound
2023-07-25

RESIDENTIAL VEHICLE TRIP DISTRIBUTION

Traffic Volume Allocation

Zone	Trips	%	NORTH Bronte St S	NORTH RR25	NORTH Thompson Rd S	SOUTH First Line	SOUTH RR25	SOUTH Thompson Rd S	EAST Britannia Rd	EAST Louis St. Laurent Ave	WEST Britannia Rd	WEST Louis St. Laurent Ave	TOTAL
PD 1 of Toronto	87	1%		10%			50%		20%	20%			100.00%
PD 2 of Toronto	16	0%		10%			50%		20%	20%			100.00%
PD 3 of Toronto	45	1%		10%			50%		20%	20%			100.00%
PD 5 of Toronto	11	0%		20%			40%		20%	20%			100.00%
PD 7 of Toronto	18	0%					50%		50%				100.00%
PD 8 of Toronto	87	1%		20%			40%		20%	20%			100.00%
PD 9 of Toronto	108	1%		40%			20%		20%	20%			100.00%
PD 10 of Toronto	17	0%		40%					30%	30%			100.00%
PD 11 of Toronto	86	1%		40%					30%	30%			100.00%
PD 13 of Toronto	20	0%		20%			40%		20%	20%			100.00%
PD 16 of Toronto	13	0%		40%					30%	30%			100.00%
Ajax	15	0%		40%					30%	30%			100.00%
Whitby	14	0%		40%					30%	30%			100.00%
Richmond Hill	29	0%		40%					30%	30%			100.00%
Markham	111	2%		40%					30%	30%			100.00%
Vaughan	165	2%		40%					30%	30%			100.00%
Brampton	554	8%		40%					30%	30%			100.00%
Mississauga	1936	27%					40%		30%	30%			100.00%
Halton Hills	93	1%		70%					15%	15%			100.00%
Oakville	584	8%					50%		50%				100.00%
Burlington	321	4%				20%	40%				40%		100.00%
Hamilton	164	2%				20%	40%				40%		100.00%
Waterloo	80	1%	10%	50%							20%	20%	100.00%
Kitchener	36	0%	10%	50%							20%	20%	100.00%
Woolwich	16	0%	10%	50%							20%	20%	100.00%
City of Guelph	64	1%	10%	50%							20%	20%	100.00%
Puslinch	15	0%	10%	50%							20%	20%	100.00%
Barrie	22	0%		40%					30%	30%			100.00%
4101	47	1%		40%							30%	30%	100.00%
4103	62	1%		40%							30%	30%	100.00%
4104	118	2%		40%							30%	30%	100.00%
4105	341	5%		40%							30%	30%	100.00%
4108	432	6%		40%	40%					20%			100.00%
4109	151	2%							50%	50%			100.00%
4110	107	1%		30%	30%				20%	20%			100.00%
4117	34	0%		30%	30%				20%	20%			100.00%
4119	99	1%		40%	40%				10%	10%			100.00%
4122	35	0%	20%	40%							20%	20%	100.00%
4123	12	0%		50%	50%								100.00%
4124	121	2%		50%	50%								100.00%
4125	659	9%	50%	50%									100.00%
4126	63	1%	50%	50%									100.00%
4127	67	1%	30%	30%							20%	20%	100.00%
4144	12	0%	30%	30%							20%	20%	100.00%
4145	29	0%	30%	30%							20%	20%	100.00%
4147	60	1%	30%	30%							20%	20%	100.00%
4148	31	0%	30%		30%				20%	20%			100.00%
4192	25	0%		50%	50%								100.00%
	7232	100%											

Route Split Totals

NORTH Bronte St S	NORTH RR25	NORTH Thompson Rd S	SOUTH First Line	SOUTH RR25	SOUTH Thompson Rd S	EAST Britannia Rd	EAST Louis St. Laurent Ave	WEST Britannia Rd	WEST Louis St. Laurent Ave	TOTAL
0.00%	0.12%	0.00%	0.00%	0.60%	0.00%	0.24%	0.24%	0.00%	0.00%	1.2%
0.00%	0.02%	0.00%	0.00%	0.11%	0.00%	0.04%	0.04%	0.00%	0.00%	0.2%
0.00%	0.06%	0.00%	0.00%	0.31%	0.00%	0.12%	0.12%	0.00%	0.00%	0.6%
0.00%	0.03%	0.00%	0.00%	0.06%	0.00%	0.03%	0.03%	0.00%	0.00%	0.2%
0.00%	0.00%	0.00%	0.00%	0.12%	0.00%	0.12%	0.00%	0.00%	0.00%	0.2%
0.00%	0.24%	0.00%	0.00%	0.48%	0.00%	0.24%	0.24%	0.00%	0.00%	1.2%
0.00%	0.60%	0.00%	0.00%	0.30%	0.00%	0.30%	0.30%	0.00%	0.00%	1.5%
0.00%	0.09%	0.00%	0.00%	0.00%	0.00%	0.07%	0.07%	0.00%	0.00%	0.2%
0.00%	0.48%	0.00%	0.00%	0.00%	0.00%	0.36%	0.36%	0.00%	0.00%	1.2%
0.00%	0.06%	0.00%	0.00%	0.11%	0.00%	0.06%	0.06%	0.00%	0.00%	0.3%
0.00%	0.07%	0.00%	0.00%	0.00%	0.00%	0.05%	0.05%	0.00%	0.00%	0.2%
0.00%	0.08%	0.00%	0.00%	0.00%	0.00%	0.06%	0.06%	0.00%	0.00%	0.2%
0.00%	0.08%	0.00%	0.00%	0.00%	0.00%	0.06%	0.06%	0.00%	0.00%	0.2%
0.00%	0.16%	0.00%	0.00%	0.00%	0.00%	0.12%	0.12%	0.00%	0.00%	0.4%
0.00%	0.61%	0.00%	0.00%	0.00%	0.00%	0.46%	0.46%	0.00%	0.00%	1.5%
0.00%	0.91%	0.00%	0.00%	0.00%	0.00%	0.68%	0.68%	0.00%	0.00%	2.3%
0.00%	3.06%	0.00%	0.00%	0.00%	0.00%	2.30%	2.30%	0.00%	0.00%	7.7%
0.00%	0.00%	0.00%	0.00%	10.71%	0.00%	8.03%	8.03%	0.00%	0.00%	26.8%
0.00%	0.90%	0.00%	0.00%	0.00%	0.00%	0.19%	0.19%	0.00%	0.00%	1.3%
0.00%	0.00%	0.00%	0.00%	4.04%	0.00%	4.04%	0.00%	0.00%	0.00%	8.1%
0.00%	0.00%	0.00%	0.00%	0.89%	1.78%	0.00%	0.00%	1.78%	0.00%	4.4%
0.00%	0.00%	0.00%	0.00%	0.45%	0.91%	0.00%	0.00%	0.91%	0.00%	2.3%
0.11%	0.55%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.22%	0.22%	1.1%
0.05%	0.25%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.10%	0.10%	0.5%
0.02%	0.11%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.04%	0.04%	0.2%
0.09%	0.44%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.18%	0.18%	0.9%
0.02%	0.10%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.04%	0.04%	0.2%
0.00%	0.12%	0.00%	0.00%	0.00%	0.00%	0.09%	0.09%	0.00%	0.00%	0.3%
0.00%	0.26%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.19%	0.19%	0.6%
0.00%	0.34%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.26%	0.26%	0.9%
0.00%	0.65%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.49%	0.49%	1.6%
0.00%	1.89%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.41%	1.41%	4.7%
0.00%	2.39%	2.39%	0.00%	0.00%	0.00%	0.00%	1.19%	0.00%	0.00%	6.0%
0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.04%	1.04%	0.00%	0.00%	2.1%
0.00%	0.44%	0.44%	0.00%	0.00%	0.00%	0.30%	0.30%	0.00%	0.00%	1.5%
0.00%	0.14%	0.14%	0.00%	0.00%	0.00%	0.09%	0.09%	0.00%	0.00%	0.5%
0.00%	0.55%	0.55%	0.00%	0.00%	0.00%	0.14%	0.14%	0.00%	0.00%	1.4%
0.10%	0.19%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.10%	0.10%	0.5%
0.00%	0.08%	0.08%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.2%
0.00%	0.84%	0.84%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.7%
4.56%	4.56%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	9.1%
0.44%	0.44%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.9%
0.28%	0.28%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.19%	0.19%	0.9%
0.05%	0.05%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.03%	0.03%	0.2%
0.12%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.08%	0.08%	0.4%
0.25%	0.25%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.17%	0.17%	0.8%
0.13%	0.00%	0.13%	0.00%	0.00%	0.00%	0.09%	0.09%	0.00%	0.00%	0.4%
0.00%	0.17%	0.17%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.3%
6.2%	**22.8%**	**4.7%**	**1.3%**	**19.5%**	**0.0%**	**19.3%**	**16.4%**	**6.2%**	**3.5%**	**100.0%**
5.00%	**25.00%**	**5.00%**	**0.00%**	**20.00%**	**0.00%**	**20.00%**	**15.00%**	**5.00%**	**5.00%**	100%

PM
Inbound
2023-07-25

RESIDENTIAL VEHICLE TRIP DISTRIBUTION

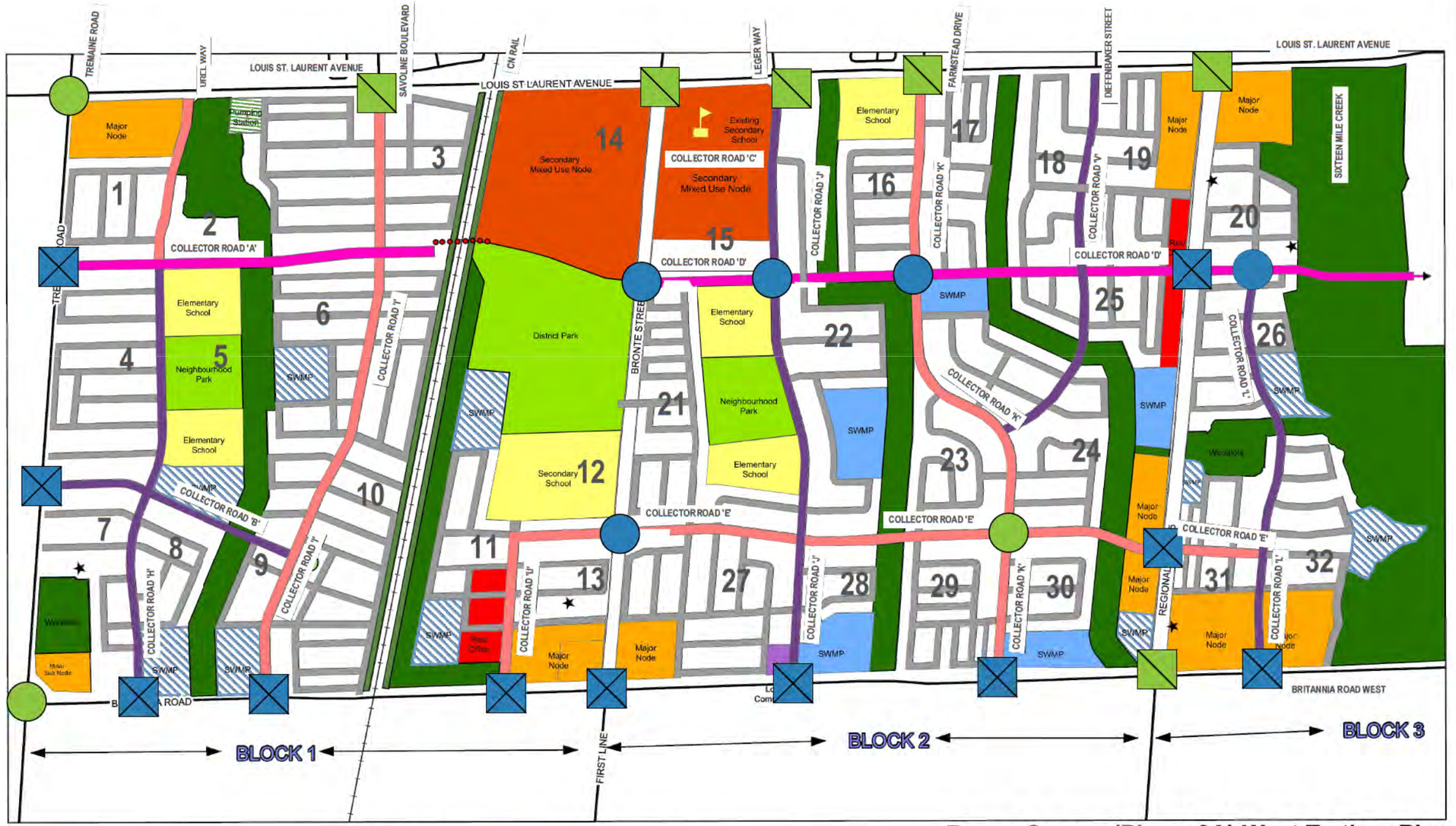
Traffic Volume Allocation

Zone	Trips	%	NORTH Bronte St S	NORTH RR25	NORTH Thompson Rd S	SOUTH First Line	SOUTH RR25	SOUTH Thompson Rd S	EAST Britannia Rd	EAST Louis St. Laurent Ave	WEST Britannia Rd	WEST Louis St. Laurent Ave	TOTAL
PD 1 of Toronto	183	3%		10%			50%		20%	20%			100.00%
PD 2 of Toronto	46	1%		10%			50%		20%	20%			100.00%
PD 3 of Toronto	45	1%		10%			50%		20%	20%			100.00%
PD 5 of Toronto	25	0%		20%			40%		20%	20%			100.00%
PD 7 of Toronto	42	1%					50%		50%				100.00%
PD 8 of Toronto	91	1%		20%			40%		20%	20%			100.00%
PD 9 of Toronto	76	1%		40%			20%		20%	20%			100.00%
PD 10 of Toronto	17	0%		40%					30%	30%			100.00%
PD 11 of Toronto	57	1%		40%					30%	30%			100.00%
PD 12 of Toronto	17	0%		40%					30%	30%			100.00%
Ajax	15	0%		40%					30%	30%			100.00%
Whitby	51	1%		40%					30%	30%			100.00%
Oshawa	18	0%		40%					30%	30%			100.00%
Georgina	27	0%		40%					30%	30%			100.00%
Richmond Hill	55	1%		40%					30%	30%			100.00%
Vaughan	256	4%		40%					30%	30%			100.00%
Brampton	372	6%		40%					30%	30%			100.00%
Mississauga	1669	26%					40%		30%	30%			100.00%
Halton Hills	112	2%		70%					15%	15%			100.00%
Oakville	688	11%					50%		50%				100.00%
Burlington	310	5%				20%	40%				40%		100.00%
Hamilton	118	2%				20%	40%				40%		100.00%
Waterloo	60	1%	10%	50%							20%	20%	100.00%
Kitchener	14	0%	10%	50%							20%	20%	100.00%
Woolwich	16	0%	10%	50%							20%	20%	100.00%
City of Guelph	64	1%	10%	50%							20%	20%	100.00%
Puslinch	15	0%	10%	50%							20%	20%	100.00%
Barrie	17	0%		40%					30%	30%			100.00%
New Tecumseth	30	0%		40%					30%	30%			100.00%
External													
4103	82	1%		40%							30%	30%	100.00%
4104	84	1%		40%							30%	30%	100.00%
4105	324	5%		40%							30%	30%	100.00%
4108	263	4%		40%	40%					20%			100.00%
4109	26	0%							50%	50%			100.00%
4110	134	2%		30%	30%				20%	20%			100.00%
4119	87	1%		40%	40%				10%	10%			100.00%
4120	32	0%		40%	40%				10%	10%			100.00%
4122	24	0%	20%	40%							20%	20%	100.00%
4123	54	1%		50%	50%								100.00%
4124	72	1%		50%	50%								100.00%
4125	518	8%	50%	50%									100.00%
4126	55	1%	50%	50%									100.00%
4127	67	1%	30%	30%							20%	20%	100.00%
4144	12	0%	30%	30%							20%	20%	100.00%
4145	29	0%	30%	30%							20%	20%	100.00%
4148	103	2%	30%		30%				20%	20%			100.00%
4192	25	0%		50%	50%								100.00%
	6497	100%											

Route Split Totals

NORTH Bronte St S	NORTH RR25	NORTH Thompson Rd S	SOUTH First Line	SOUTH RR25	SOUTH Thompson Rd S	EAST Britannia Rd	EAST Louis St. Laurent Ave	WEST Britannia Rd	WEST Louis St. Laurent Ave	TOTAL
0.00%	0.28%	0.00%	0.00%	1.41%	0.00%	0.56%	0.56%	0.00%	0.00%	2.8%
0.00%	0.07%	0.00%	0.00%	0.35%	0.00%	0.14%	0.14%	0.00%	0.00%	0.7%
0.00%	0.07%	0.00%	0.00%	0.35%	0.00%	0.14%	0.14%	0.00%	0.00%	0.7%
0.00%	0.08%	0.00%	0.00%	0.15%	0.00%	0.08%	0.08%	0.00%	0.00%	0.4%
0.00%	0.00%	0.00%	0.00%	0.32%	0.00%	0.32%	0.00%	0.00%	0.00%	0.6%
0.00%	0.28%	0.00%	0.00%	0.56%	0.00%	0.28%	0.28%	0.00%	0.00%	1.4%
0.00%	0.47%	0.00%	0.00%	0.23%	0.00%	0.23%	0.23%	0.00%	0.00%	1.2%
0.00%	0.10%	0.00%	0.00%	0.00%	0.00%	0.08%	0.08%	0.00%	0.00%	0.3%
0.00%	0.35%	0.00%	0.00%	0.00%	0.00%	0.26%	0.26%	0.00%	0.00%	0.9%
0.00%	0.10%	0.00%	0.00%	0.00%	0.00%	0.08%	0.08%	0.00%	0.00%	0.3%
0.00%	0.09%	0.00%	0.00%	0.00%	0.00%	0.07%	0.07%	0.00%	0.00%	0.2%
0.00%	0.31%	0.00%	0.00%	0.00%	0.00%	0.24%	0.24%	0.00%	0.00%	0.8%
0.00%	0.11%	0.00%	0.00%	0.00%	0.00%	0.08%	0.08%	0.00%	0.00%	0.3%
0.00%	0.17%	0.00%	0.00%	0.00%	0.00%	0.12%	0.12%	0.00%	0.00%	0.4%
0.00%	0.34%	0.00%	0.00%	0.00%	0.00%	0.25%	0.25%	0.00%	0.00%	0.8%
0.00%	1.58%	0.00%	0.00%	0.00%	0.00%	1.18%	1.18%	0.00%	0.00%	3.9%
0.00%	2.29%	0.00%	0.00%	0.00%	0.00%	1.72%	1.72%	0.00%	0.00%	5.7%
0.00%	0.00%	0.00%	0.00%	10.28%	0.00%	7.71%	7.71%	0.00%	0.00%	25.7%
0.00%	1.21%	0.00%	0.00%	0.00%	0.00%	0.26%	0.26%	0.00%	0.00%	1.7%
0.00%	0.00%	0.00%	0.00%	5.29%	0.00%	5.29%	0.00%	0.00%	0.00%	10.6%
0.00%	0.00%	0.00%	0.00%	0.95%	1.91%	0.00%	0.00%	1.91%	0.00%	4.8%
0.00%	0.00%	0.00%	0.00%	0.36%	0.73%	0.00%	0.00%	0.73%	0.00%	1.8%
0.09%	0.46%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.18%	0.18%	0.9%
0.02%	0.11%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.04%	0.04%	0.2%
0.02%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.05%	0.05%	0.2%
0.10%	0.49%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.20%	0.20%	1.0%
0.02%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.05%	0.05%	0.2%
0.00%	0.10%	0.00%	0.00%	0.00%	0.00%	0.08%	0.08%	0.00%	0.00%	0.3%
0.00%	0.18%	0.00%	0.00%	0.00%	0.00%	0.14%	0.14%	0.00%	0.00%	0.5%
0.00%	0.50%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.38%	0.38%	1.3%
0.00%	0.52%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.39%	0.39%	1.3%
0.00%	1.99%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.50%	1.50%	5.0%
0.00%	1.62%	1.62%	0.00%	0.00%	0.00%	0.00%	0.81%	0.00%	0.00%	4.0%
0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.20%	0.20%	0.00%	0.00%	0.4%
0.00%	0.62%	0.62%	0.00%	0.00%	0.00%	0.41%	0.41%	0.00%	0.00%	2.1%
0.00%	0.54%	0.54%	0.00%	0.00%	0.00%	0.13%	0.13%	0.00%	0.00%	1.3%
0.00%	0.20%	0.20%	0.00%	0.00%	0.00%	0.05%	0.05%	0.00%	0.00%	0.5%
0.07%	0.15%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.07%	0.07%	0.4%
0.00%	0.42%	0.42%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.8%
0.00%	0.55%	0.55%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.1%
3.99%	3.99%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	8.0%
0.42%	0.42%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.8%
0.31%	0.31%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.21%	0.21%	1.0%
0.06%	0.06%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.04%	0.04%	0.2%
0.13%	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.09%	0.09%	0.4%
0.48%	0.00%	0.48%	0.00%	0.00%	0.00%	0.32%	0.32%	0.00%	0.00%	1.6%
0.00%	0.19%	0.19%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.4%
5.7%	**21.7%**	**4.6%**	**1.3%**	**21.6%**	**0.0%**	**20.4%**	**15.6%**	**5.8%**	**3.2%**	**100.0%**
5.00%	**25.00%**	**5.00%**	**0.00%**	**20.00%**	**0.00%**	**20.00%**	**15.00%**	**5.00%**	**5.00%**	100%

APPENDIX H: BOYNE ROAD NETWORK ASSESSMENT



INTERNAL ROAD
26m ROAD
24m ROAD
20m ROAD
ACTIVE TRANSPORTATION LINK

★ HERITAGE FEATURE

SWMP - CONCEPTUAL SUBJECT TO FINAL APPROVAL BY CONSERVATION HALTON & THE TOWN OF MILTON

SWMP - SUBJECT TO FURTHER REVIEW

Boyne Survey (Phase 3A) West Tertiary Plan
Appendix C.10.D

August 7th 2015

* NOT TO SCALE
*VILLAGE SQUARE LOCATIONS CONCEPTUAL
*CHANNEL WIDTHS & STORM WATER MANAGEMENT POND CONFIGURATION SUBJECT TO FINAL APPROVAL OF SUBWATERSHED IMPACT STUDIES

Legend

- Existing Traffic Signal
- Proposed Traffic Signal
- 2015 Roundabout
- Proposed Roundabout

Future draft plans will confirm a final recommended design criteria.

Milton Phase 3 Landowners Group
Boyne Survey
Road Network Assessment
West Block
Boyne Survey Road Network

Job Number 28-21522
Revision C
Date Sept 2017

Figure 01

6705 Millcreek Drive, Unit 1, Mississauga Ontario L5N 5M4 T 1 416 213 7121 F 1 416 890 8499 E info@ghdcanada.com W www.ghd.com

Plot Date: 23 November 2016 - 2:34 PM Plotted by: Adam Mildenberger Cad File No: G:\Legacy\SenesTransTech\Projects\2013\13221 BOYNE RD NEEDS ASSESSMENT\OCTOBER 2015 UPDATE - USE!!!!!!!!!!\13221 Boyne Figures (July 2016).dwg

- DRAFT - Framework Plan Boyne East

WORKING COPY FOR DISCUSSION PURPOSES

ROADS
- Regional (47m)
- Minor Arterial (□□□m□)
- Community Connector (26m)
- Collector Road (24m)
- Collector Road (20m)

SCHOOLS
- PES Public Elementary School (3)
- CES Catholic Elementary School (2)
- FCS French Catholic Elementary School (1)
- PHS Public High School (1)
- CHS Catholic High School (1)

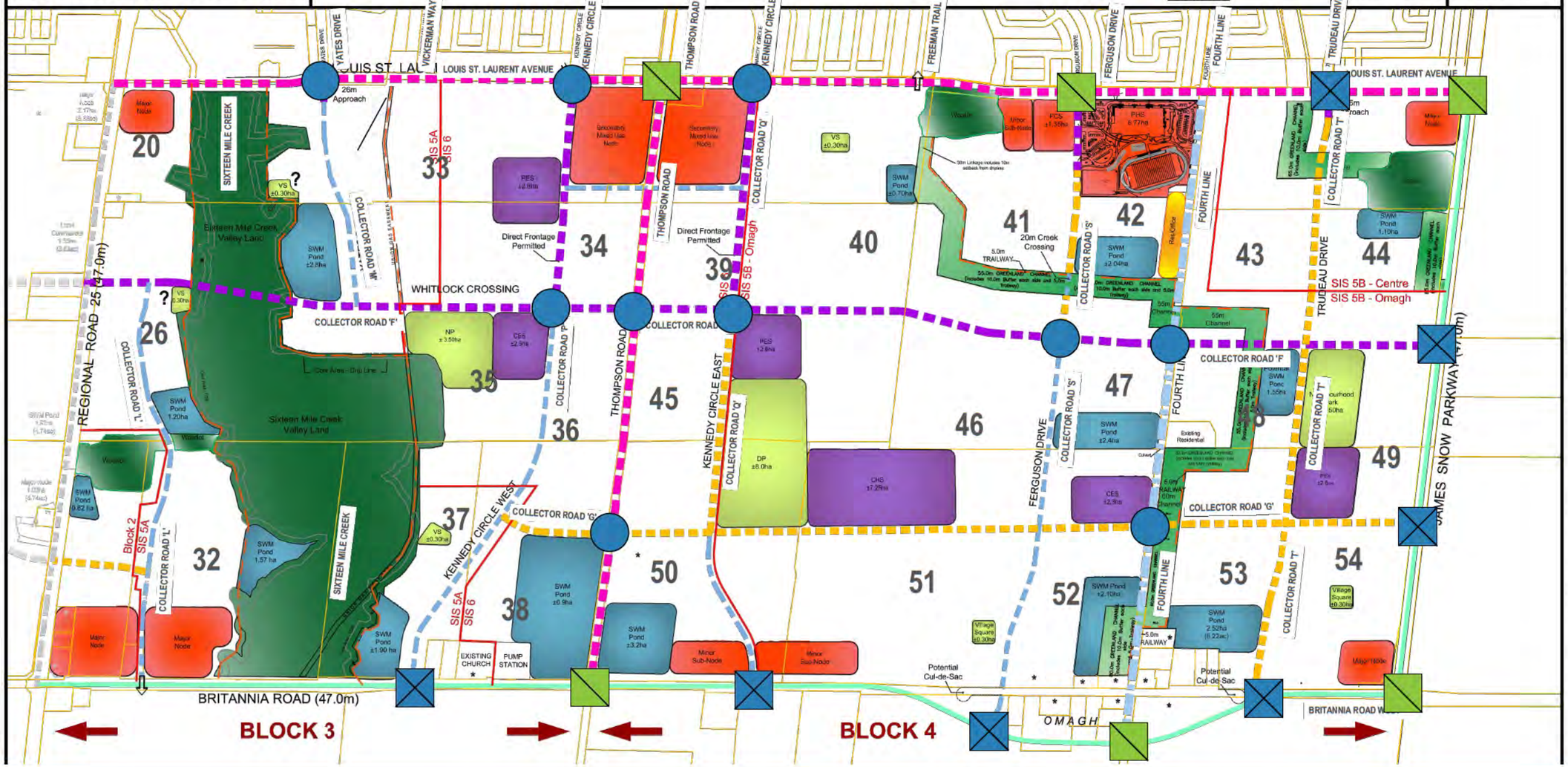
PARKS (16.5 ha)
- DP District Park (1 @ 8.0 ha)
- NP Neighbourhood Park (2 @ 3.5 ha)
- VS Village Square (5 @ 0.3 ha)

- SWM Pond
- Natural Heritage System
- Node
- Residential/Office
- Trails
- * Heritage Feature
- Approximate Drainage Boundary

KORSIAK Urban Planning
206-277 Lakeshore Road East
Oakville, Ontario L6J 1H9
T: 905-257-0227
info@korsiak.com

SCENARIO 6

Scale - NTS | April 28, 2016



Legend
- Existing Traffic Signal
- Proposed Traffic Signal
- 2015 Roundabout
- Proposed Roundabout

Future draft plans will confirm a final recommended design criteria.

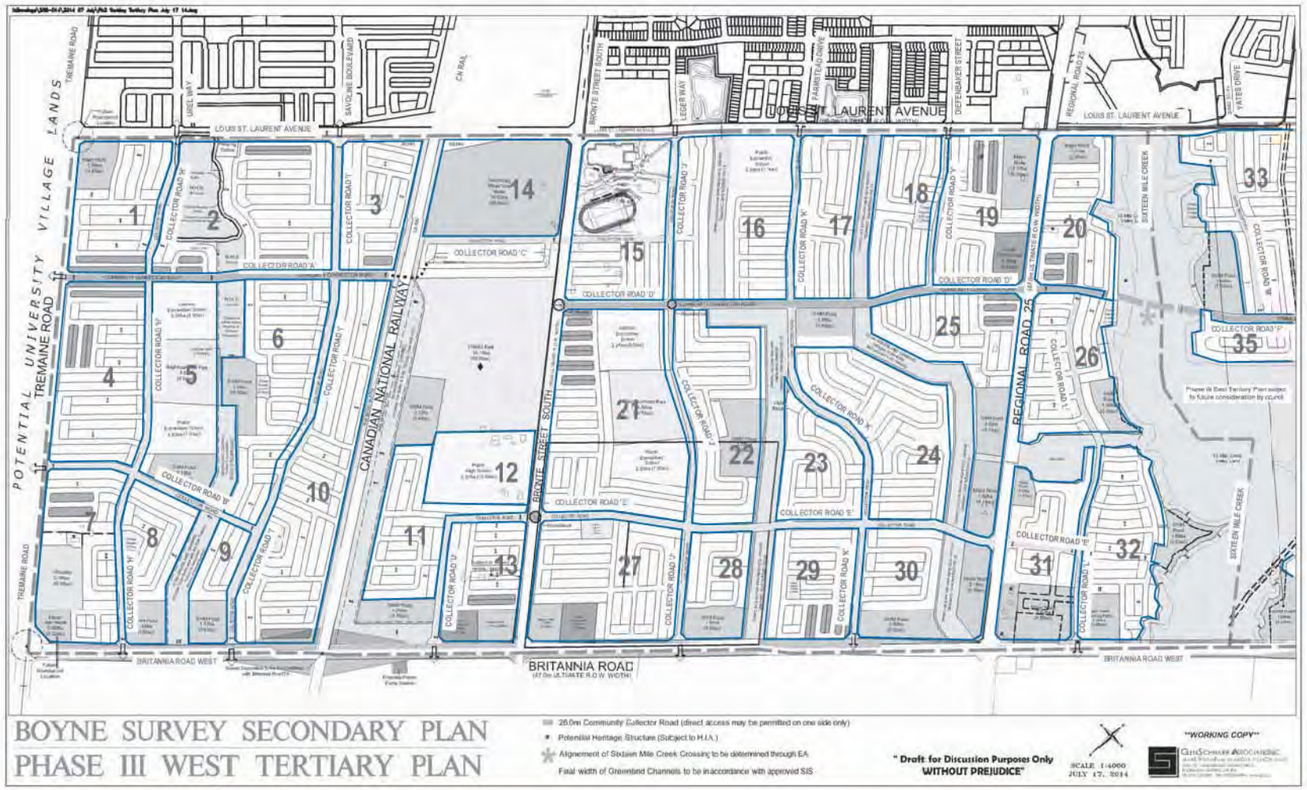
Milton Phase 3 Landowners Group
Boyne Survey
Road Network Assessment
East Block
Boyne Survey Road Network

Job Number 28-21522
Revision C
Date Sept 2017

Figure 02

6705 Millcreek Drive, Unit 1, Mississauga Ontario L5N 5M4 T 1 416 213 7121 F 1 416 890 8499 E info@ghdcanada.com W www.ghd.com

Plot Date: 23 November 2016 - 2:35 PM Plotted by: Adam Mildenberger
Cad File No: G:\Legacy\SernasTransTech\Projects\2013\13221 BOYNE RD NEEDS ASSESSMENT\OCTOBER 2015 UPDATE - USE!!!!!!!!\13221 Boyne Figures (July 2016).dwg



BOYNE SURVEY SECONDARY PLAN
PHASE III WEST TERTIARY PLAN

26.0m Community Collector Road (direct access may be permitted on one side only)

Potential Heritage Structure (Subject to H.I.A.)

Alignement of Sixteen Mile Creek Crossing to be determined through EA

Final width of Greenbelt Channels to be in accordance with approved SIS

" Draft for Discussion Purposes Only WITHOUT PREJUDICE"

SCALE 1:4000
JULY 17, 2014

"WORKING COPY"

GEIS&SCHAEFER ASSOCIATES LTD.

N.T.S.

GHD

Milton Phase 3 Landowners Group
Boyne Survey
Road Network Assessment
West Block
Boyne Survey Road Network

Job Number	28-21522
Revision	B
Date	Aug 2014

Figure 01

6705 Millcreek Drive, Unit 1, Mississauga Ontario L5N 5M4 T 1 416 213 7121 F 1 416 890 8499 E info@ghdcanada.com W www.ghd.com

Plot Date: 20 August 2014 - 11:05 AM Plotted by: Michael Dowdall Cad File No: X:\Brampton\Projects\28\21522\BOYNE ROAD NETWORK ASSESSMENT\AUGUST 2014 UPDATE\21522 Boyne Figures (Aug 2014) V 2.dwg

APPENDIX I: TRAFFIC SIGNAL TIMINGS

Date: 28-Sep-2021
Intersection: Britannia Rd @ Farmstead Dr.

8 Phase Basic Timing Sheet

	1	2	3	4	5	6	7	8	2 Ped	4 Ped	6 Ped	8 Ped
Phases in use	X	X	X	x	X	x	X	x	X	x	x	x
Direction	WBL	EB	SBL	NB	EBL	WB	NBL	SB				
Min Green		20			7	20		10				
Veh Ext.		3.0				3.0		3.0				
Yellow		4.2			3	4.2		3.3				
Red		2.2			1	2.2		2				
Walk		7				7		7				
Don't Walk		16				16		27				
Max 1		64			11	53		41				
Max 2												
Max 3												
Veh Recall												
Ped Recall												

Notes:
Pedestrian Re-service Active
Local Zero Over-ride Active
Rest in Don't Walk EB/WB
Set Sync Reference 3:15

Date: ########
Intersection: Regional Road 25 @ Britannia Road

8 Phase Basic Timing Sheet

	1	2	3	4	5	6	7	8	2 Ped	4 Ped	6 Ped	8 Ped
Phases in use	X	X	X	X	X	X	X	X				
Direction	SBLT	NB	WBLT	EB	NBLT	SB	EBLT	WB				
Min Green	7	20	7	10	7	20	7	10				
Veh Ext.	3.0	3.2	3.0	4.0	3.0	3.2	3.0	4.0				
Yellow	3	4.2	3	4.2	3	4.2	3	4.2				
Red	1	3.5	1	3.3	1	3.5	1	3.3				
Walk		7		7		7		7				
Don't Walk		35		31		35		31				
Max 1	11	50	11	50	11	50	11	50				
Max 2												
Max 3												
Veh Recall		x				x						
Ped Recall												

Notes: Use Max 1 (22:00-6:00)

Local Zero Overide Active
Set Sync Reference to 3:15
Ped Reservice On
Sync Reference 3:15

Pattern 1
Time: 6:00
Cycle Length: 130
Offset (%): 99%

Direction	SBL	NB	WBL	EB
Phase	1	2	3	4
%	12	40	12	36
Direction	NBL	SB	EBL	WB
Phase	5	6	7	8
%	12	40	12	36

Pattern 2
Time: 9:30
Cycle Length: 120
Offset (%): 12%

Direction	SBLT	NB	WBLT	EB
Phase	1	2	3	4
%	8	44	13	35
Direction	NBLT	SB	EBLT	WB
Phase	5	6	7	8
%	8	44	13	35

Pattern 3
Time: 15:00
Cycle Length: 130
Offset (%): 80%

Direction	SBLT	NB	WBLT	EB
Phase	1	2	3	4
%	9	44	12	35
Direction	NBLT	SB	EBLT	WB
Phase	5	6	7	8
%	12	40	8	39

Pattern 4
Time: 20:00
Cycle Length: 120
Offset (%): 12%

Direction	SBLT	NB	WBLT	EB
Phase	1	2	3	4
%	8	44	13	35
Direction	NBLT	SB	EBLT	WB
Phase	5	6	7	8
%	8	44	13	35

Pattern 5
Time: 22:00
Cycle Length: Local
Offset (%):

Direction	SBLT	NB	WBLT	EB
Phase	1	2	3	4
%				
Direction	NBLT	SB	EBLT	WB
Phase	5	6	7	8
%				

Pattern 6
Time:
Cycle Length:
Offset (%):

Direction				
Phase	1	2	3	4
%				
Direction				
Phase	5	6	7	8
%				

Date: 04-Oct-21
Intersection: Regional Road 25 @ Etheridge Avenue

8 Phase Basic Timing Sheet

	1	2	3	4	5	6	7	8	2 Ped	4 Ped	6 Ped	8 Ped
Phases in use		x		x	x	x		x				
Direction		NB		EB	NBLT	SB		WB				
Min Green		20		10	7	20		10				
Veh Ext.		5.0		3.0	3.0	5.0		3.0				
Yellow		4.2		3.3	3	4.2		3.3				
Red		2.2		2.9	1	2.2		2.9				
Walk		7		7		7		7				
Don't Walk		25		23		25		23				
Max 1		81		39	11	70		39				
Max 2												
Max 3												
Veh Recall		x				x						
Ped Recall												

Notes: Use Max 1 (22:00-6:00)

Local Zero Overide Active
Set Sync Reference to 3:15
Ped Reservice On

Pattern 1

Time:	6:00			
Cycle Length:	130			
Offset (%):	89%			
Direction		**NB**		**EB**
Phase	***1***	***2***	***3***	***4***
%	0	69	0	31
Direction	**NBLT**	**SB**		**WB**
Phase	***5***	***6***	***7***	***8***
%	10	59	0	31

Pattern 2

Time:	9:30			
Cycle Length:	120			
Offset (%):	99%			
Direction		**NB**		**EB**
Phase	***1***	***2***	***3***	***4***
%	0	68	0	32
Direction	**NBLT**	**SB**		**WB**
Phase	***5***	***6***	***7***	***8***
%	11	58	0	32

Pattern 3

Time:	15:00			
Cycle Length:	130			
Offset (%):	79%			
Direction		**NB**		**EB**
Phase	***1***	***2***	***3***	***4***
%	0	69	0	31
Direction	**NBLT**	**SB**		**WB**
Phase	***5***	***6***	***7***	***8***
%	10	59	0	31

Pattern 4

Time:	20:00			
Cycle Length:	120			
Offset (%):	99%			
Direction		**NB**		**EB**
Phase	***1***	***2***	***3***	***4***
%	0	68	0	32
Direction	**NBLT**	**SB**		**WB**
Phase	***5***	***6***	***7***	***8***
%	11	58	0	32

Pattern 5

Time:	22:00			
Cycle Length:	Local			
Offset (%):				
Direction		**NB**		**EB**
Phase	***1***	***2***	***3***	***4***
%				
Direction	**NBLT**	**SB**		**WB**
Phase	**5**	**6**	**7**	**8**
%				

Pattern 6

Time:				
Cycle Length:				
Offset (%):				
Direction				
Phase	***1***	***2***	***3***	***4***
%				
Direction				
Phase	**5**	**6**	**7**	**8**
%				

Date: 04-Oct-21
Intersection: Regional Road 25 @ Whitlock Avenue

8 Phase Basic Timing Sheet

	1	2	3	4	5	6	7	8	2 Ped	4 Ped	6 Ped	8 Ped
Phases in use	x	x		x	x	x		x				
Direction	SBLT	NB		EB	NBLT	SB		WB				
Min Green	7	20		10	7	20		10				
Veh Ext.	3.0	5.0		3.0	3.0	5.0		3.0				
Yellow	3	4.2		3.3	3	4.2		3.3				
Red	1	2.3		3.2	1	2.3		3.2				
Walk		7		7		7		7				
Don't Walk		22		24		22		24				
Max 1	12	70		38	12	70		38				
Max 2												
Max 3												
Veh Recall		x				x						
Ped Recall												

Notes: Use Max 1 (22:00-6:00)

Local Zero Overide Active
Set Sync Reference to 3:15
Ped Reservice On

Pattern 1
Time: 6:00
Cycle Length: 130
Offset (%): 49%

Direction	SBLT	NB		EB
Phase	1	2	3	4
%	9	62	0	29
Direction	NBLT	SB		WB
Phase	5	6	7	8
%	9	62	0	29

Pattern 2
Time: 9:30
Cycle Length: 120
Offset (%): 69%

Direction	SBLT	NB		EB
Phase	1	2	3	4
%	10	59	0	32
Direction	NBLT	SB		WB
Phase	5	6	7	8
%	10	59	0	32

Pattern 3
Time: 15:00
Cycle Length: 130
Offset (%): 31%

Direction	SBLT	NB		EB
Phase	1	2	3	4
%	9	62	0	29
Direction	NBLT	SB		WB
Phase	5	6	7	8
%	9	62	0	29

Pattern 4
Time: 20:00
Cycle Length: 120
Offset (%): 69%

Direction	SBLT	NB		EB
Phase	1	2	3	4
%	10	59	0	32
Direction	NBLT	SB		WB
Phase	5	6	7	8
%	10	59	0	32

Pattern 5
Time: 22:00
Cycle Length: Local
Offset (%):

Direction	SBLT	NB		EB
Phase	1	2	3	4
%				
Direction	NBLT	SB		WB
Phase	5	6	7	8
%				

Pattern 6
Time:
Cycle Length:
Offset (%):

Direction				
Phase	1	2	3	4
%				
Direction				
Phase	5	6	7	8
%				

Date: 25-Jan-21
Intersection: Regional Rd 25 @ Louis St Laurent

8 Phase Basic Timing Sheet

	1	2	3	4	5	6	7	8	2 Ped	4 Ped	6 Ped	8 Ped
Phases in use	X	X	X	X	X	X	X	X				
Direction	SBLT	NB	WBLT	EB	NBLT	SB	EBLT	WB				
Min Green	5	20	10	10	5	20	5	10				
Veh Ext.	3.0	3.2	5.0	3.0	3.0	3.2	3.0	3.0				
Yellow	3	4.2	3	4	3	4.2	3	4				
Red	1	3		3	1	3	1	3				
Walk		7		7		7		7				
Don't Walk		18		16		18		16				
Max 1	12	50	33	45	16	56	22	46				
Max 2	12	75	20	33	30	57	20	33				
Max 3												
Veh Recall		x				x						
Ped Recall												

Notes:

Local Zero Overide Active
Set Sync Reference to 3:15
Max 1 (6:00-15:00, 21:00-6:00)
Max 2 (15:00-21:00)

APPENDIX J: OTM BOOK 12 EXCERPTS – TRAFFIC SIGNAL WARRANTS

OTM BOOK 12 - JUSTIFICATION 7 - ETHERIDGE SITE ACCESS

STEP 1

Fill in yellow cells
Do not touch other cells

	All Approaches	Minor Streets	Major Street	Combined Vehicle and Pedestrian Crossing Artery from Minor Streets	
amPHV	595	255	340	135	Lefts + 20 peds
pmPHV	685	155	530	85	Lefts + 20 peds
AHV	**320**	**103**	**218**	**55**	AHV = (amPHV+pmPHV)/4
		Just. 1B		**Just. 2B**	

STEP 2

Need to highlight which column applies
Link formulas in "%" column to the highlighted column
(ex. Minimum Requirement 2 or more lanes, restricted flow)

JUSTIFICATION 7

Justification	Description	Minimum Requirement 1 Lane Highways		Minimum Requirement 2 or more lanes		Compliance		
						Sectional		ENTIRE
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%	%
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	320	44%	44%
	B. Vehicle volume, along minor streets (average hour)*	120	170	120	170	103	60%	
2. Delay to cross traffic	A. Vehicle volume, major street (average hour)	480	720	600	900	218	30%	30%
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	55	73%	
				100%				

** For "T" intersections, these values should be increased by 50%.* ***(Justification 1B ONLY)***

Result: 44%
Required: 150%
Not Warranted

Analysis Using Average Hour Volume
For traffic signals to be considered, Justification 7 as per Table 21 is used but with a 20% increase over the required volumes for an existing intersection and a **50% increase for a future intersection** or roadway.

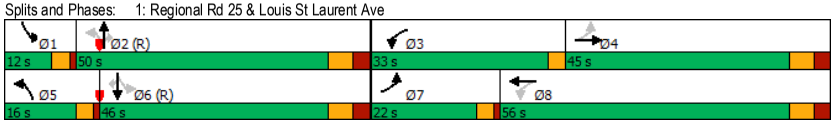
APPENDIX K: SYNCHRO WORKSHEETS

Existing Traffic Conditions

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	265	535	370	545	85	670	245	60	640	95
Future Volume (vph)	265	535	370	545	85	670	245	60	640	95
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4	3	8	5	2		1	6	
Permitted Phases	4		8		2		2	6		6
Detector Phase	7	4	3	8	5	2	2	1	6	6
Switch Phase										
Minimum Initial (s)	5.0	10.0	10.0	10.0	5.0	20.0	20.0	5.0	20.0	20.0
Minimum Split (s)	9.0	30.0	14.0	30.0	9.0	32.2	32.2	9.0	32.2	32.2
Total Split (s)	22.0	45.0	33.0	56.0	16.0	50.0	50.0	12.0	46.0	46.0
Total Split (%)	15.7%	32.1%	23.6%	40.0%	11.4%	35.7%	35.7%	8.6%	32.9%	32.9%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	4.2	4.2	3.0	4.2	4.2
All-Red Time (s)	1.0	3.0	0.0	3.0	1.0	3.0	3.0	1.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.0	2.0	6.0	3.0	6.2	6.2	3.0	6.2	6.2
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	56.1	35.0	69.7	44.6	64.6	52.5	52.5	60.3	48.5	48.5
Actuated g/C Ratio	0.40	0.25	0.50	0.32	0.46	0.38	0.38	0.43	0.35	0.35
v/c Ratio	0.74	0.84	0.92	0.62	0.30	0.56	0.35	0.22	0.58	0.16
Control Delay	34.6	57.4	64.2	41.6	25.9	39.0	7.2	25.1	41.7	4.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.6	57.4	64.2	41.6	25.9	39.0	7.2	25.1	41.7	4.9
LOS	C	E	E	D	C	D	A	C	D	A
Approach Delay		51.1		49.9		30.1			36.0	
Approach LOS		D		D		C			D	

Intersection Summary	
Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.92	
Intersection Signal Delay: 42.0	Intersection LOS: D
Intersection Capacity Utilization 79.9%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 1: Regional Rd 25 & Louis St Laurent Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	282	739	394	681	90	713	261	64	681	101
v/c Ratio	0.74	0.84	0.92	0.62	0.30	0.56	0.35	0.22	0.58	0.16
Control Delay	34.6	57.4	64.2	41.6	25.9	39.0	7.2	25.1	41.7	4.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.6	57.4	64.2	41.6	25.9	39.0	7.2	25.1	41.7	4.9
Queue Length 50th (m)	46.4	103.4	89.2	84.4	15.2	92.6	4.6	10.6	88.6	0.0
Queue Length 95th (m)	63.5	125.0	#142.2	101.8	27.8	118.3	26.5	21.1	117.2	10.8
Internal Link Dist (m)		126.1		117.1		481.0			113.5	
Turn Bay Length (m)	90.0		35.0		65.0		65.0	80.0		90.0
Base Capacity (vph)	392	973	454	1233	321	1265	736	293	1169	625
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	0.72	0.76	0.87	0.55	0.28	0.56	0.35	0.22	0.58	0.16

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	265	535	160	370	545	95	85	670	245	60	640	95
Future Volume (vph)	265	535	160	370	545	95	85	670	245	60	640	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0		2.0	6.0		3.0	6.2	6.2	3.0	6.2	6.2
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.97		1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1768	3425		1770	3425		1703	3374	1568	1719	3374	1583
Flt Permitted	0.30	1.00		0.12	1.00		0.24	1.00	1.00	0.27	1.00	1.00
Satd. Flow (perm)	561	3425		225	3425		437	3374	1568	492	3374	1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	282	569	170	394	580	101	90	713	261	64	681	101
RTOR Reduction (vph)	0	21	0	0	11	0	0	0	150	0	0	66
Lane Group Flow (vph)	282	718	0	394	670	0	90	713	111	64	681	35
Confl. Peds. (#/hr)	5					5						
Heavy Vehicles (%)	2%	2%	1%	2%	2%	7%	6%	7%	3%	5%	7%	2%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	51.1	34.0		64.7	43.6		60.3	50.7	50.7	53.9	47.5	47.5
Effective Green, g (s)	53.1	35.0		65.7	44.6		62.1	51.7	51.7	55.9	48.5	48.5
Actuated g/C Ratio	0.38	0.25		0.47	0.32		0.44	0.37	0.37	0.40	0.35	0.35
Clearance Time (s)	4.0	7.0		3.0	7.0		4.0	7.2	7.2	4.0	7.2	7.2
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	368	856		422	1091		289	1245	579	261	1168	548
v/s Ratio Prot	0.10	c0.21		c0.19	0.20		c0.02	c0.21		0.01	0.20	
v/s Ratio Perm	0.19			0.25			0.11		0.07	0.08		0.02
v/c Ratio	0.77	0.84		0.93	0.61		0.31	0.57	0.19	0.25	0.58	0.06
Uniform Delay, d1	32.5	49.8		40.4	40.4		24.4	35.3	30.0	27.0	37.5	30.6
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	9.2	7.2		27.7	1.0		0.6	1.9	0.7	0.5	2.1	0.2
Delay (s)	41.7	57.1		68.1	41.4		25.1	37.2	30.7	27.5	39.6	30.8
Level of Service	D	E		E	D		C	D	C	C	D	C
Approach Delay (s)		52.8			51.2			34.6			37.6	
Approach LOS		D			D			C			D	

Intersection Summary				
HCM 2000 Control Delay	44.3	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.72			
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.2	
Intersection Capacity Utilization	79.9%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	105	20	50	25	95	40	825	10	50	1335	85
Future Volume (vph)	105	20	50	25	95	40	825	10	50	1335	85
Turn Type	Perm	NA	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		8		5	2		1	6	
Permitted Phases	4		8		8	2		2	6		6
Detector Phase	4	4	8	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	7.0	20.0	20.0	7.0	20.0	20.0
Minimum Split (s)	37.5	37.5	37.5	37.5	37.5	11.0	35.5	35.5	11.0	35.5	35.5
Total Split (s)	38.0	38.0	38.0	38.0	38.0	11.0	81.0	81.0	11.0	81.0	81.0
Total Split (%)	29.2%	29.2%	29.2%	29.2%	29.2%	8.5%	62.3%	62.3%	8.5%	62.3%	62.3%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.0	4.2	4.2	3.0	4.2	4.2
All-Red Time (s)	3.2	3.2	3.2	3.2	3.2	1.0	2.3	2.3	1.0	2.3	2.3
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	3.0	5.5	5.5	3.0	5.5	5.5
Lead/Lag						Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	17.5	17.5	17.5	17.5	17.5	101.6	92.7	92.7	101.7	92.7	92.7
Actuated g/C Ratio	0.13	0.13	0.13	0.13	0.13	0.78	0.71	0.71	0.78	0.71	0.71
v/c Ratio	0.63	0.39	0.36	0.11	0.36	0.15	0.37	0.01	0.11	0.59	0.08
Control Delay	68.1	18.3	56.1	48.0	12.1	2.6	9.7	0.4	3.8	11.7	3.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.1	18.3	56.1	48.0	12.1	2.6	9.7	0.4	3.8	11.7	3.2
LOS	E	B	E	D	B	A	A	A	A	B	A
Approach Delay		43.7		30.3			9.3			11.0	
Approach LOS		D		C			A			B	

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 64 (49%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 95			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.63			
Intersection Signal Delay: 14.1		Intersection LOS: B	
Intersection Capacity Utilization 65.3%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Regional Rd 25 & Whitlock Ave

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	114	109	54	27	103	43	897	11	54	1451	92
v/c Ratio	0.63	0.39	0.36	0.11	0.36	0.15	0.37	0.01	0.11	0.59	0.08
Control Delay	68.1	18.3	56.1	48.0	12.1	2.6	9.7	0.4	3.8	11.7	3.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.1	18.3	56.1	48.0	12.1	2.6	9.7	0.4	3.8	11.7	3.2
Queue Length 50th (m)	29.5	5.3	13.4	6.5	0.0	0.0	74.1	0.0	2.5	98.0	2.2
Queue Length 95th (m)	47.6	21.8	26.0	15.0	16.1	1.8	114.6	0.7	6.7	142.0	9.1
Internal Link Dist (m)		62.9		68.1			696.9			481.0	
Turn Bay Length (m)	35.0		65.0		65.0	100.0		25.0	100.0		25.0
Base Capacity (vph)	336	449	280	439	441	278	2427	938	507	2451	1093
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.24	0.19	0.06	0.23	0.15	0.37	0.01	0.11	0.59	0.08

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	20	80	50	25	95	40	825	10	50	1335	85
Future Volume (vph)	105	20	80	50	25	95	40	825	10	50	1335	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5		5.5	5.5	5.5	3.0	5.5	5.5	3.0	5.5	5.5
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	0.99	1.00		0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.88		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1725	1537		1726	1759	1455	1671	3406	1292	1805	3438	1509
Flt Permitted	0.74	1.00		0.62	1.00	1.00	0.14	1.00	1.00	0.29	1.00	1.00
Satd. Flow (perm)	1343	1537		1123	1759	1455	242	3406	1292	549	3438	1509
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	114	22	87	54	27	103	43	897	11	54	1451	92
RTOR Reduction (vph)	0	75	0	0	0	89	0	0	3	0	0	18
Lane Group Flow (vph)	114	34	0	54	27	14	43	897	8	54	1451	74
Confl. Peds. (#/hr)	5		5	5		5						
Heavy Vehicles (%)	4%	32%	1%	4%	8%	9%	8%	6%	25%	0%	5%	7%
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8	2		2	6		6
Actuated Green, G (s)	16.5	16.5		16.5	16.5	16.5	96.4	90.8	90.8	96.6	90.9	90.9
Effective Green, g (s)	17.5	17.5		17.5	17.5	17.5	98.4	91.8	91.8	98.6	91.9	91.9
Actuated g/C Ratio	0.13	0.13		0.13	0.13	0.13	0.76	0.71	0.71	0.76	0.71	0.71
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.5	6.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	180	206		151	236	195	255	2405	912	481	2430	1066
v/s Ratio Prot		0.02			0.02		c0.01	0.26		0.01	c0.42	
v/s Ratio Perm	c0.08			0.05		0.01	0.12		0.01	0.08		0.05
v/c Ratio	0.63	0.16		0.36	0.11	0.07	0.17	0.37	0.01	0.11	0.60	0.07
Uniform Delay, d1	53.2	49.8		51.1	49.4	49.1	6.2	7.6	5.6	4.2	9.7	5.9
Progression Factor	1.00	1.00		1.00	1.00	1.00	0.41	1.11	1.00	1.00	1.00	1.00
Incremental Delay, d2	7.1	0.4		1.5	0.2	0.2	0.3	0.4	0.0	0.1	1.1	0.1
Delay (s)	60.3	50.2		52.6	49.7	49.3	2.8	8.9	5.7	4.3	10.8	6.0
Level of Service	E	D		D	D	D	A	A	A	A	B	A
Approach Delay (s)		55.3			50.3			8.6			10.3	
Approach LOS		E			D			A			B	

Intersection Summary				
HCM 2000 Control Delay	15.6	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.58			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	14.0	
Intersection Capacity Utilization	65.3%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Configurations					
Traffic Volume (vph)	100	65	30	775	1410
Future Volume (vph)	100	65	30	775	1410
Turn Type	Prot	Perm	pm+pt	NA	NA
Protected Phases	4		5	2	6
Permitted Phases		4	2		
Detector Phase	4	4	5	2	6
Switch Phase					
Minimum Initial (s)	10.0	10.0	7.0	20.0	20.0
Minimum Split (s)	36.2	36.2	11.0	38.4	38.4
Total Split (s)	40.0	40.0	13.0	90.0	77.0
Total Split (%)	30.8%	30.8%	10.0%	69.2%	59.2%
Yellow Time (s)	3.3	3.3	3.0	4.2	4.2
All-Red Time (s)	2.9	2.9	1.0	2.2	2.2
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.2	5.2	3.0	5.4	5.4
Lead/Lag			Lead		Lag
Lead-Lag Optimize?			Yes		Yes
Recall Mode	None	None	None	C-Max	C-Max
Act Effct Green (s)	14.4	14.4	107.4	105.0	98.4
Actuated g/C Ratio	0.11	0.11	0.83	0.81	0.76
v/c Ratio	0.53	0.28	0.11	0.30	0.60
Control Delay	64.0	14.5	2.3	1.7	3.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	64.0	14.5	2.3	1.7	3.0
LOS	E	B	A	A	A
Approach Delay	44.5			1.8	3.0
Approach LOS	D			A	A

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 116 (89%), Referenced to phase 2:NBTL and 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.60			
Intersection Signal Delay: 5.4		Intersection LOS: A	
Intersection Capacity Utilization 57.9%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 5: Regional Rd 25 & Etheridge Ave

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	105	68	32	816	1542
v/c Ratio	0.53	0.28	0.11	0.30	0.60
Control Delay	64.0	14.5	2.3	1.7	3.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	64.0	14.5	2.3	1.7	3.0
Queue Length 50th (m)	27.3	0.0	0.9	12.3	19.3
Queue Length 95th (m)	45.3	13.8	m2.1	15.0	24.7
Internal Link Dist (m)	53.9			292.1	696.9
Turn Bay Length (m)	40.0		70.0		
Base Capacity (vph)	478	482	307	2751	2586
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.22	0.14	0.10	0.30	0.60

Intersection Summary

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

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	100	65	30	775	1410	55
Future Volume (vph)	100	65	30	775	1410	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	5.2	3.0	5.4	5.4	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frt	1.00	0.85	1.00	1.00	0.99	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1787	1615	1752	3406	3417	
Flt Permitted	0.95	1.00	0.12	1.00	1.00	
Satd. Flow (perm)	1787	1615	230	3406	3417	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	105	68	32	816	1484	58
RTOR Reduction (vph)	0	60	0	0	1	0
Lane Group Flow (vph)	105	8	32	816	1541	0
Heavy Vehicles (%)	1%	0%	3%	6%	5%	6%
Turn Type	Prot	Perm	pm+pt	NA	NA	
Protected Phases	4		5	2	6	
Permitted Phases		4	2			
Actuated Green, G (s)	13.4	13.4	104.0	104.0	95.8	
Effective Green, g (s)	14.4	14.4	105.0	105.0	96.8	
Actuated g/C Ratio	0.11	0.11	0.81	0.81	0.74	
Clearance Time (s)	6.2	6.2	4.0	6.4	6.4	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	197	178	246	2751	2544	
v/s Ratio Prot	c0.06		0.01	c0.24	c0.45	
v/s Ratio Perm		0.00	0.10			
v/c Ratio	0.53	0.04	0.13	0.30	0.61	
Uniform Delay, d1	54.6	51.6	5.1	3.2	7.7	
Progression Factor	1.00	1.00	0.64	0.44	0.27	
Incremental Delay, d2	2.8	0.1	0.2	0.3	0.9	
Delay (s)	57.4	51.7	3.5	1.6	3.0	
Level of Service	E	D	A	A	A	
Approach Delay (s)	55.2			1.7	3.0	
Approach LOS	E			A	A	

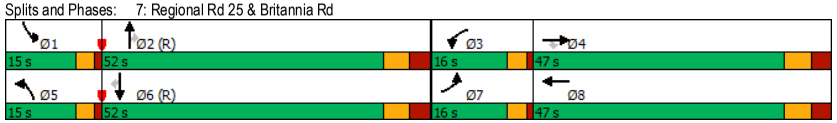
Intersection Summary				
HCM 2000 Control Delay	6.1	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.58			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	13.6	
Intersection Capacity Utilization	57.9%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	55	335	240	290	270	45	660	165	240	1225	10
Future Volume (vph)	55	335	240	290	270	45	660	165	240	1225	10
Turn Type	Prot	NA	Perm	Prot	NA	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8	5	2		1	6	
Permitted Phases			4					2			6
Detector Phase	7	4	4	3	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	7.0	20.0	20.0	7.0	20.0	20.0
Minimum Split (s)	11.0	45.5	45.5	11.0	45.5	11.0	49.7	49.7	11.0	49.7	49.7
Total Split (s)	16.0	47.0	47.0	16.0	47.0	15.0	52.0	52.0	15.0	52.0	52.0
Total Split (%)	12.3%	36.2%	36.2%	12.3%	36.2%	11.5%	40.0%	40.0%	11.5%	40.0%	40.0%
Yellow Time (s)	3.0	4.2	4.2	3.0	4.2	3.0	4.2	4.2	3.0	4.2	4.2
All-Red Time (s)	1.0	3.3	3.3	1.0	3.3	1.0	3.5	3.5	1.0	3.5	3.5
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.5	6.5	3.0	6.5	3.0	6.7	6.7	3.0	6.7	6.7
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	9.0	20.0	20.0	13.0	26.2	8.7	61.6	61.6	16.2	71.3	71.3
Actuated g/C Ratio	0.07	0.15	0.15	0.10	0.20	0.07	0.47	0.47	0.12	0.55	0.55
v/c Ratio	0.26	0.66	0.65	0.96	0.54	0.22	0.44	0.22	0.60	0.71	0.01
Control Delay	59.9	57.5	23.3	99.3	45.5	59.6	24.9	3.9	54.8	26.1	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.9	57.5	23.3	99.3	45.5	59.6	24.9	3.9	54.8	26.1	0.0
LOS	E	E	C	F	D	E	C	A	D	C	A
Approach Delay		44.7			69.5		22.7			30.6	
Approach LOS		D			E		C			C	

Intersection Summary		
Cycle Length: 130		
Actuated Cycle Length: 130		
Offset: 104 (80%), Referenced to phase 2:NBT and 6:SBT, Start of Green		
Natural Cycle: 120		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.96		
Intersection Signal Delay: 38.1	Intersection LOS: D	
Intersection Capacity Utilization 74.9%	ICU Level of Service D	
Analysis Period (min) 15		

Splits and Phases: 7: Regional Rd 25 & Britannia Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	60	364	261	315	391	49	717	179	261	1332	11
v/c Ratio	0.26	0.66	0.65	0.96	0.54	0.22	0.44	0.22	0.60	0.71	0.01
Control Delay	59.9	57.5	23.3	99.3	45.5	59.6	24.9	3.9	54.8	26.1	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.9	57.5	23.3	99.3	45.5	59.6	24.9	3.9	54.8	26.1	0.0
Queue Length 50th (m)	8.0	49.4	18.5	44.3	46.5	6.5	65.8	0.0	36.0	98.8	0.0
Queue Length 95th (m)	15.3	63.4	46.7	#74.5	62.0	13.2	94.6	14.6	52.5	146.1	m0.0
Internal Link Dist (m)		377.9			362.1		165.3			292.1	
Turn Bay Length (m)	60.0			120.0		90.0		90.0	90.0		90.0
Base Capacity (vph)	330	1113	625	327	1093	310	1628	830	437	1885	745
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.33	0.42	0.96	0.36	0.16	0.44	0.22	0.60	0.71	0.01

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	335	240	290	270	90	45	660	165	240	1225	10
Future Volume (vph)	55	335	240	290	270	90	45	660	165	240	1225	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.5	6.5	3.0	6.5		3.0	6.7	6.7	3.0	6.7	6.7
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95		0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3303	3574	1599	3273	3431		3367	3438	1553	3502	3438	1272
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3303	3574	1599	3273	3431		3367	3438	1553	3502	3438	1272
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	60	364	261	315	293	98	49	717	179	261	1332	11
RTOR Reduction (vph)	0	0	155	0	29	0	0	0	95	0	0	5
Lane Group Flow (vph)	60	364	106	315	362	0	49	717	84	261	1332	6
Heavy Vehicles (%)	6%	1%	1%	7%	1%	2%	4%	5%	4%	0%	5%	27%
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Actuated Green, G (s)	6.6	19.8	19.8	12.0	25.2		6.3	59.8	59.8	15.2	68.7	68.7
Effective Green, g (s)	7.6	20.8	20.8	13.0	26.2		7.3	60.8	60.8	16.2	69.7	69.7
Actuated g/C Ratio	0.06	0.16	0.16	0.10	0.20		0.06	0.47	0.47	0.12	0.54	0.54
Clearance Time (s)	4.0	7.5	7.5	4.0	7.5		4.0	7.7	7.7	4.0	7.7	7.7
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	193	571	255	327	691		189	1607	726	436	1843	681
v/s Ratio Prot	0.02	c0.10		c0.10	0.11		0.01	0.21		c0.07	c0.39	
v/s Ratio Perm			0.07						0.05			0.00
v/c Ratio	0.31	0.64	0.41	0.96	0.52		0.26	0.45	0.12	0.60	0.72	0.01
Uniform Delay, d1	58.7	51.1	49.1	58.3	46.3		58.8	23.3	19.5	53.8	22.8	14.1
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	0.93	1.03	1.00
Incremental Delay, d2	0.9	2.3	1.1	39.7	0.7		0.7	0.9	0.3	1.9	2.1	0.0
Delay (s)	59.6	53.4	50.2	98.0	47.1		59.5	24.2	19.8	52.0	25.7	14.1
Level of Service	E	D	D	F	D		E	C	B	D	C	B
Approach Delay (s)		52.7			69.8			25.2			29.9	
Approach LOS		D			E			C			C	

Intersection Summary				
HCM 2000 Control Delay	39.9	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.73			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	19.2	
Intersection Capacity Utilization	74.9%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	20	540	300	90	20
Future Volume (vph)	20	540	300	90	20
Turn Type	pm+pt	NA	NA	Prot	Perm
Protected Phases	5	2	6	8	
Permitted Phases	2				8
Detector Phase	5	2	6	8	8
Switch Phase					
Minimum Initial (s)	7.0	20.0	20.0	10.0	10.0
Minimum Split (s)	11.0	29.4	29.4	15.3	15.3
Total Split (s)	11.0	64.0	53.0	41.0	41.0
Total Split (%)	10.5%	61.0%	50.5%	39.0%	39.0%
Yellow Time (s)	3.0	4.2	4.2	3.3	3.3
All-Red Time (s)	1.0	2.2	2.2	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	5.4	5.4	4.3	4.3
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	None	None
Act Effct Green (s)	87.8	86.5	82.1	12.9	12.9
Actuated g/C Ratio	0.84	0.82	0.78	0.12	0.12
v/c Ratio	0.03	0.13	0.09	0.44	0.10
Control Delay	2.5	2.7	4.2	49.0	16.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	2.5	2.7	4.2	49.0	16.6
LOS	A	A	A	D	B
Approach Delay		2.7	4.2	43.1	
Approach LOS		A	A	D	

Intersection Summary			
Cycle Length: 105			
Actuated Cycle Length: 105			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.44			
Intersection Signal Delay: 7.7		Intersection LOS: A	
Intersection Capacity Utilization 33.1%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 10: Britannia Rd & Farmstead Dr

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	21	557	335	93	21
v/c Ratio	0.03	0.13	0.09	0.44	0.10
Control Delay	2.5	2.7	4.2	49.0	16.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	2.5	2.7	4.2	49.0	16.6
Queue Length 50th (m)	0.6	8.0	4.3	19.0	0.0
Queue Length 95th (m)	2.4	13.5	12.4	33.9	7.2
Internal Link Dist (m)		101.0	377.9	199.3	
Turn Bay Length (m)	20.0				
Base Capacity (vph)	817	4148	3735	595	551
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.03	0.13	0.09	0.16	0.04

Intersection Summary

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	20	540	300	25	90	20
Future Volume (vph)	20	540	300	25	90	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.4	5.4		4.3	4.3
Lane Util. Factor	1.00	0.91	0.91		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1656	5036	4774		1703	1538
Flt Permitted	0.52	1.00	1.00		0.95	1.00
Satd. Flow (perm)	910	5036	4774		1703	1538
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	21	557	309	26	93	21
RTOR Reduction (vph)	0	0	4	0	0	19
Lane Group Flow (vph)	21	557	331	0	93	2
Heavy Vehicles (%)	9%	3%	8%	0%	6%	5%
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		8	
Permitted Phases	2					8
Actuated Green, G (s)	83.4	83.4	76.6		9.9	9.9
Effective Green, g (s)	84.4	84.4	77.6		10.9	10.9
Actuated g/C Ratio	0.80	0.80	0.74		0.10	0.10
Clearance Time (s)	4.0	6.4	6.4		5.3	5.3
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	758	4047	3528		176	159
v/s Ratio Prot	0.00	c0.11	0.07		c0.05	
v/s Ratio Perm	0.02					0.00
v/c Ratio	0.03	0.14	0.09		0.53	0.01
Uniform Delay, d1	2.1	2.3	3.8		44.6	42.2
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.0	0.1	0.1		2.8	0.0
Delay (s)	2.1	2.3	3.9		47.5	42.3
Level of Service	A	A	A		D	D
Approach Delay (s)		2.3	3.9		46.5	
Approach LOS		A	A		D	

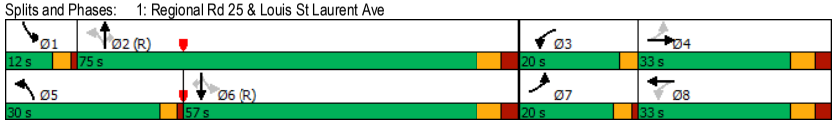
Intersection Summary				
HCM 2000 Control Delay	7.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.19		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	12.7
Intersection Capacity Utilization	33.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	195	375	250	535	170	690	355	75	650	195
Future Volume (vph)	195	375	250	535	170	690	355	75	650	195
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4	3	8	5	2		1	6	
Permitted Phases	4		8		2		2	6		6
Detector Phase	7	4	3	8	5	2	2	1	6	6
Switch Phase										
Minimum Initial (s)	5.0	10.0	10.0	10.0	5.0	20.0	20.0	5.0	20.0	20.0
Minimum Split (s)	9.0	30.0	14.0	30.0	9.0	32.2	32.2	9.0	32.2	32.2
Total Split (s)	20.0	33.0	20.0	33.0	30.0	75.0	75.0	12.0	57.0	57.0
Total Split (%)	14.3%	23.6%	14.3%	23.6%	21.4%	53.6%	53.6%	8.6%	40.7%	40.7%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	4.2	4.2	3.0	4.2	4.2
All-Red Time (s)	1.0	3.0	0.0	3.0	1.0	3.0	3.0	1.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.0	2.0	6.0	3.0	6.2	6.2	3.0	6.2	6.2
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	45.7	26.4	48.4	26.8	84.8	70.3	70.3	77.8	66.1	66.1
Actuated g/C Ratio	0.33	0.19	0.35	0.19	0.61	0.50	0.50	0.56	0.47	0.47
v/c Ratio	0.77	0.73	0.80	0.92	0.39	0.42	0.38	0.19	0.41	0.24
Control Delay	53.7	58.4	52.9	73.9	14.8	23.2	3.0	13.0	25.8	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.7	58.4	52.9	73.9	14.8	23.2	3.0	13.0	25.8	3.6
LOS	D	E	D	E	B	C	A	B	C	A
Approach Delay		57.0		67.8		16.2			20.0	
Approach LOS		E		E		B			C	

Intersection Summary

Cycle Length: 140
Actuated Cycle Length: 140
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.92
Intersection Signal Delay: 36.6 — Intersection LOS: D
Intersection Capacity Utilization 75.3% — ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 1: Regional Rd 25 & Louis St Laurent Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	203	490	260	625	177	719	370	78	677	203
v/c Ratio	0.77	0.73	0.80	0.92	0.39	0.42	0.38	0.19	0.41	0.24
Control Delay	53.7	58.4	52.9	73.9	14.8	23.2	3.0	13.0	25.8	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.7	58.4	52.9	73.9	14.8	23.2	3.0	13.0	25.8	3.6
Queue Length 50th (m)	42.8	68.3	56.0	93.7	21.9	69.5	0.0	9.1	67.7	0.0
Queue Length 95th (m)	#73.6	89.1	#83.7	#128.6	33.7	86.2	16.6	16.5	88.6	14.8
Internal Link Dist (m)		126.1		117.1		481.0			113.5	
Turn Bay Length (m)	90.0		35.0		65.0		65.0	80.0		90.0
Base Capacity (vph)	274	683	330	689	583	1710	971	426	1639	854
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	0.74	0.72	0.79	0.91	0.30	0.42	0.38	0.18	0.41	0.24

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	195	375	95	250	535	65	170	690	355	75	650	195
Future Volume (vph)	195	375	95	250	535	65	170	690	355	75	650	195
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0		2.0	6.0		3.0	6.2	6.2	3.0	6.2	6.2
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.97		1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1769	3458		1804	3535		1786	3406	1567	1804	3471	1582
Flt Permitted	0.15	1.00		0.24	1.00		0.31	1.00	1.00	0.33	1.00	1.00
Satd. Flow (perm)	281	3458		453	3535		580	3406	1567	628	3471	1582
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	203	391	99	260	557	68	177	719	370	78	677	203
RTOR Reduction (vph)	0	16	0	0	6	0	0	0	184	0	0	107
Lane Group Flow (vph)	203	474	0	260	619	0	177	719	186	78	677	96
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Heavy Vehicles (%)	2%	1%	0%	0%	0%	2%	1%	6%	1%	0%	4%	0%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	40.8	25.5		42.4	25.8		80.7	69.2	69.2	72.6	65.1	65.1
Effective Green, g (s)	42.8	26.5		44.4	26.8		81.7	70.2	70.2	74.6	66.1	66.1
Actuated g/C Ratio	0.31	0.19		0.32	0.19		0.58	0.50	0.50	0.53	0.47	0.47
Clearance Time (s)	4.0	7.0		3.0	7.0		4.0	7.2	7.2	4.0	7.2	7.2
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	259	654		313	676		447	1707	785	406	1638	746
v/s Ratio Prot	0.09	0.14		c0.10	c0.17		c0.04	c0.21		0.01	0.20	
v/s Ratio Perm	0.15			0.16			0.20		0.12	0.09		0.06
v/c Ratio	0.78	0.72		0.83	0.91		0.40	0.42	0.24	0.19	0.41	0.13
Uniform Delay, d1	39.7	53.3		39.0	55.5		14.5	22.1	19.7	16.2	24.2	20.8
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	14.3	4.0		16.8	17.0		0.6	0.8	0.7	0.2	0.8	0.4
Delay (s)	54.1	57.3		55.8	72.5		15.1	22.8	20.4	16.5	25.0	21.1
Level of Service	D	E		E	E		B	C	C	B	C	C
Approach Delay (s)		56.4			67.6			21.1			23.5	
Approach LOS		E			E			C			C	

Intersection Summary				
HCM 2000 Control Delay	38.9	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.60			
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.2	
Intersection Capacity Utilization	75.3%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	80	20	25	10	75	75	1240	40	60	780	95
Future Volume (vph)	80	20	25	10	75	75	1240	40	60	780	95
Turn Type	Perm	NA	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		8		5	2		1	6	
Permitted Phases	4		8		8	2		2	6		6
Detector Phase	4	4	8	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	7.0	20.0	20.0	7.0	20.0	20.0
Minimum Split (s)	37.5	37.5	37.5	37.5	37.5	11.0	35.5	35.5	11.0	35.5	35.5
Total Split (s)	38.0	38.0	38.0	38.0	38.0	11.0	81.0	81.0	11.0	81.0	81.0
Total Split (%)	29.2%	29.2%	29.2%	29.2%	29.2%	8.5%	62.3%	62.3%	8.5%	62.3%	62.3%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.0	4.2	4.2	3.0	4.2	4.2
All-Red Time (s)	3.2	3.2	3.2	3.2	3.2	1.0	2.3	2.3	1.0	2.3	2.3
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	3.0	5.5	5.5	3.0	5.5	5.5
Lead/Lag						Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	14.5	14.5	14.5	14.5	14.5	104.7	95.7	95.7	104.6	95.6	95.6
Actuated g/C Ratio	0.11	0.11	0.11	0.11	0.11	0.81	0.74	0.74	0.80	0.74	0.74
v/c Ratio	0.53	0.24	0.17	0.05	0.32	0.14	0.51	0.04	0.17	0.32	0.08
Control Delay	66.1	28.4	53.3	49.7	14.2	3.1	5.8	0.9	3.6	7.1	2.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.1	28.4	53.3	49.7	14.2	3.1	5.8	0.9	3.6	7.1	2.8
LOS	E	C	D	D	B	A	A	A	A	A	A
Approach Delay		51.5		26.3			5.5			6.4	
Approach LOS		D		C			A			A	

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 40 (31%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.53			
Intersection Signal Delay: 9.1		Intersection LOS: A	
Intersection Capacity Utilization 67.4%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Regional Rd 25 & Whitlock Ave

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	82	52	26	10	77	77	1278	41	62	804	98
v/c Ratio	0.53	0.24	0.17	0.05	0.32	0.14	0.51	0.04	0.17	0.32	0.08
Control Delay	66.1	28.4	53.3	49.7	14.2	3.1	5.8	0.9	3.6	7.1	2.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.1	28.4	53.3	49.7	14.2	3.1	5.8	0.9	3.6	7.1	2.8
Queue Length 50th (m)	21.3	5.2	6.5	2.5	0.0	3.7	35.1	0.0	2.3	36.7	2.4
Queue Length 95th (m)	37.2	17.5	15.3	7.8	14.7	6.9	40.6	0.5	6.2	55.5	8.9
Internal Link Dist (m)		62.9		68.1			696.9			481.0	
Turn Bay Length (m)	35.0		65.0		65.0	100.0		25.0	100.0		25.0
Base Capacity (vph)	351	442	341	475	442	570	2529	1168	361	2504	1203
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.12	0.08	0.02	0.17	0.14	0.51	0.04	0.17	0.32	0.08

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	20	30	25	10	75	75	1240	40	60	780	95
Future Volume (vph)	80	20	30	25	10	75	75	1240	40	60	780	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5		5.5	5.5	5.5	3.0	5.5	5.5	3.0	5.5	5.5
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	1.00
Flpb, ped/bikes	0.99	1.00		0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.91		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1776	1677		1794	1900	1539	1787	3438	1565	1769	3406	1615
Flt Permitted	0.75	1.00		0.72	1.00	1.00	0.33	1.00	1.00	0.18	1.00	1.00
Satd. Flow (perm)	1404	1677		1366	1900	1539	617	3438	1565	338	3406	1615
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	82	21	31	26	10	77	77	1278	41	62	804	98
RTOR Reduction (vph)	0	28	0	0	0	68	0	0	11	0	0	17
Lane Group Flow (vph)	82	24	0	26	10	9	77	1278	30	62	804	81
Confl. Peds. (#/hr)	5		5	5		5			5	5		
Heavy Vehicles (%)	1%	5%	0%	0%	0%	3%	1%	5%	0%	2%	6%	0%
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8	2		2	6		6
Actuated Green, G (s)	13.5	13.5		13.5	13.5	13.5	99.6	93.8	93.8	99.4	93.7	93.7
Effective Green, g (s)	14.5	14.5		14.5	14.5	14.5	101.6	94.8	94.8	101.4	94.7	94.7
Actuated g/C Ratio	0.11	0.11		0.11	0.11	0.11	0.78	0.73	0.73	0.78	0.73	0.73
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.5	6.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	156	187		152	211	171	543	2507	1141	337	2481	1176
v/s Ratio Prot		0.01			0.01		0.01	c0.37		c0.01	0.24	
v/s Ratio Perm	c0.06			0.02		0.01	0.10		0.02	0.13		0.05
v/c Ratio	0.53	0.13		0.17	0.05	0.05	0.14	0.51	0.03	0.18	0.32	0.07
Uniform Delay, d1	54.5	52.1		52.3	51.6	51.6	3.4	7.6	4.9	4.3	6.3	5.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.06	0.64	1.29	1.00	1.00	1.00
Incremental Delay, d2	3.2	0.3		0.5	0.1	0.1	0.1	0.7	0.0	0.3	0.3	0.1
Delay (s)	57.7	52.4		52.8	51.7	51.7	3.7	5.5	6.3	4.6	6.6	5.2
Level of Service	E	D		D	D	D	A	A	A	A	A	A
Approach Delay (s)		55.6			52.0			5.4			6.3	
Approach LOS		E			D			A			A	

Intersection Summary					
HCM 2000 Control Delay	10.4	HCM 2000 Level of Service	B		
HCM 2000 Volume to Capacity ratio	0.49				
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	14.0		
Intersection Capacity Utilization	67.4%	ICU Level of Service	C		
Analysis Period (min)	15				

c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Configurations					
Traffic Volume (vph)	75	25	60	1280	720
Future Volume (vph)	75	25	60	1280	720
Turn Type	Prot	Perm	pm+pt	NA	NA
Protected Phases	4		5	2	6
Permitted Phases		4	2		
Detector Phase	4	4	5	2	6
Switch Phase					
Minimum Initial (s)	10.0	10.0	7.0	20.0	20.0
Minimum Split (s)	36.2	36.2	11.0	38.4	38.4
Total Split (s)	40.0	40.0	13.0	90.0	77.0
Total Split (%)	30.8%	30.8%	10.0%	69.2%	59.2%
Yellow Time (s)	3.3	3.3	3.0	4.2	4.2
All-Red Time (s)	2.9	2.9	1.0	2.2	2.2
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.2	5.2	3.0	5.4	5.4
Lead/Lag			Lead		Lag
Lead-Lag Optimize?			Yes		Yes
Recall Mode	None	None	None	C-Max	C-Max
Act Effct Green (s)	13.1	13.1	111.9	110.6	101.8
Actuated g/C Ratio	0.10	0.10	0.86	0.85	0.78
v/c Ratio	0.46	0.14	0.12	0.47	0.34
Control Delay	63.2	19.0	1.2	1.5	3.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	63.2	19.0	1.2	1.5	3.0
LOS	E	B	A	A	A
Approach Delay	52.1			1.5	3.0
Approach LOS	D			A	A

Intersection Summary		
Cycle Length: 130		
Actuated Cycle Length: 130		
Offset: 103 (79%), Referenced to phase 2:NBTL and 6:SBT, Start of Green		
Natural Cycle: 90		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.47		
Intersection Signal Delay: 4.3	Intersection LOS: A	
Intersection Capacity Utilization 52.5%	ICU Level of Service A	
Analysis Period (min) 15		

Splits and Phases: 5: Regional Rd 25 & Etheridge Ave

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	81	27	65	1376	898
v/c Ratio	0.46	0.14	0.12	0.47	0.34
Control Delay	63.2	19.0	1.2	1.5	3.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	63.2	19.0	1.2	1.5	3.0
Queue Length 50th (m)	21.1	0.0	0.6	10.5	47.2
Queue Length 95th (m)	37.1	9.3	m1.7	18.7	7.1
Internal Link Dist (m)	53.9			292.1	696.9
Turn Bay Length (m)	40.0		70.0		
Base Capacity (vph)	468	452	571	2953	2672
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.17	0.06	0.11	0.47	0.34

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

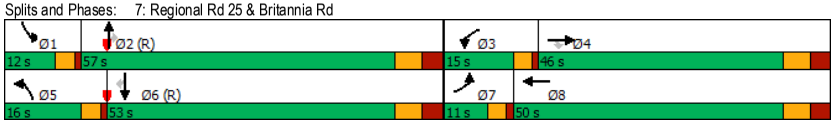
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	75	25	60	1280	720	115
Future Volume (vph)	75	25	60	1280	720	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	5.2	3.0	5.4	5.4	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frt	1.00	0.85	1.00	1.00	0.98	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1752	1615	1805	3471	3408	
Flt Permitted	0.95	1.00	0.29	1.00	1.00	
Satd. Flow (perm)	1752	1615	551	3471	3408	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	81	27	65	1376	774	124
RTOR Reduction (vph)	0	25	0	0	5	0
Lane Group Flow (vph)	81	2	65	1376	893	0
Heavy Vehicles (%)	3%	0%	0%	4%	4%	2%
Turn Type	Prot	Perm	pm+pt	NA	NA	
Protected Phases	4		5	2	6	
Permitted Phases		4	2			
Actuated Green, G (s)	10.1	10.1	107.3	107.3	97.7	
Effective Green, g (s)	11.1	11.1	108.3	108.3	98.7	
Actuated g/C Ratio	0.09	0.09	0.83	0.83	0.76	
Clearance Time (s)	6.2	6.2	4.0	6.4	6.4	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	149	137	522	2891	2587	
v/s Ratio Prot	c0.05		0.01	c0.40	0.26	
v/s Ratio Perm		0.00	0.10			
v/c Ratio	0.54	0.02	0.12	0.48	0.35	
Uniform Delay, d1	57.0	54.5	2.2	3.0	5.1	
Progression Factor	1.00	1.00	0.42	0.31	0.48	
Incremental Delay, d2	4.0	0.0	0.1	0.4	0.4	
Delay (s)	61.0	54.5	1.0	1.4	2.8	
Level of Service	E	D	A	A	A	
Approach Delay (s)	59.4			1.4	2.8	
Approach LOS	E			A	A	

Intersection Summary				
HCM 2000 Control Delay	4.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	13.6
Intersection Capacity Utilization	52.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	30	250	35	210	395	210	1060	315	95	610	40
Future Volume (vph)	30	250	35	210	395	210	1060	315	95	610	40
Turn Type	Prot	NA	Perm	Prot	NA	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8	5	2		1	6	
Permitted Phases			4					2			6
Detector Phase	7	4	4	3	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	7.0	20.0	20.0	7.0	20.0	20.0
Minimum Split (s)	11.0	45.5	45.5	11.0	45.5	11.0	49.7	49.7	11.0	49.7	49.7
Total Split (s)	11.0	46.0	46.0	15.0	50.0	16.0	57.0	57.0	12.0	53.0	53.0
Total Split (%)	8.5%	35.4%	35.4%	11.5%	38.5%	12.3%	43.8%	43.8%	9.2%	40.8%	40.8%
Yellow Time (s)	3.0	4.2	4.2	3.0	4.2	3.0	4.2	4.2	3.0	4.2	4.2
All-Red Time (s)	1.0	3.3	3.3	1.0	3.3	1.0	3.5	3.5	1.0	3.5	3.5
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.5	6.5	3.0	6.5	3.0	6.7	6.7	3.0	6.7	6.7
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	8.0	23.3	23.3	11.8	31.6	14.7	65.4	65.4	10.3	60.9	60.9
Actuated g/C Ratio	0.06	0.18	0.18	0.09	0.24	0.11	0.50	0.50	0.08	0.47	0.47
v/c Ratio	0.16	0.42	0.10	0.73	0.77	0.58	0.65	0.36	0.38	0.41	0.05
Control Delay	59.9	47.8	0.5	71.8	44.0	60.3	28.2	4.8	74.7	18.9	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.9	47.8	0.5	71.8	44.0	60.3	28.2	4.8	74.7	18.9	0.1
LOS	E	D	A	E	D	E	C	A	E	B	A
Approach Delay		43.7			50.8		27.8			25.0	
Approach LOS		D			D		C			C	

Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 104 (80%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.77
Intersection Signal Delay: 34.3 — Intersection LOS: C
Intersection Capacity Utilization 77.6% — ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 7: Regional Rd 25 & Britannia Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	33	272	38	228	701	228	1152	342	103	663	43
v/c Ratio	0.16	0.42	0.10	0.73	0.77	0.58	0.65	0.36	0.38	0.41	0.05
Control Delay	59.9	47.8	0.5	71.8	44.0	60.3	28.2	4.8	74.7	18.9	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.9	47.8	0.5	71.8	44.0	60.3	28.2	4.8	74.7	18.9	0.1
Queue Length 50th (m)	4.4	33.4	0.0	31.3	79.4	30.5	124.6	4.2	15.2	35.0	0.0
Queue Length 95th (m)	10.2	44.1	0.0	#47.5	95.6	43.0	173.1	25.3	25.7	54.7	0.0
Internal Link Dist (m)		377.9			362.1		165.3			292.1	
Turn Bay Length (m)	60.0			120.0		90.0		90.0	90.0		90.0
Base Capacity (vph)	203	1096	565	316	1204	406	1762	951	279	1627	812
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.25	0.07	0.72	0.58	0.56	0.65	0.36	0.37	0.41	0.05

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	250	35	210	395	250	210	1060	315	95	610	40
Future Volume (vph)	30	250	35	210	395	250	210	1060	315	95	610	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.5	6.5	3.0	6.5		3.0	6.7	6.7	3.0	6.7	6.7
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95		0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.94		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3303	3610	1615	3433	3366		3502	3505	1583	3467	3471	1615
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3303	3610	1615	3433	3366		3502	3505	1583	3467	3471	1615
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	272	38	228	429	272	228	1152	342	103	663	43
RTOR Reduction (vph)	0	0	31	0	89	0	0	0	159	0	0	23
Lane Group Flow (vph)	33	272	7	228	612	0	228	1152	183	103	663	20
Heavy Vehicles (%)	6%	0%	0%	2%	1%	1%	0%	3%	2%	1%	4%	0%
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Actuated Green, G (s)	4.2	24.0	24.0	10.8	30.6		13.7	62.7	62.7	9.3	58.3	58.3
Effective Green, g (s)	5.2	25.0	25.0	11.8	31.6		14.7	63.7	63.7	10.3	59.3	59.3
Actuated g/C Ratio	0.04	0.19	0.19	0.09	0.24		0.11	0.49	0.49	0.08	0.46	0.46
Clearance Time (s)	4.0	7.5	7.5	4.0	7.5		4.0	7.7	7.7	4.0	7.7	7.7
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	132	694	310	311	818		395	1717	775	274	1583	736
v/s Ratio Prot	0.01	0.08		c0.07	c0.18		c0.07	c0.33		0.03	0.19	
v/s Ratio Perm			0.00						0.12			0.01
v/c Ratio	0.25	0.39	0.02	0.73	0.75		0.58	0.67	0.24	0.38	0.42	0.03
Uniform Delay, d1	60.5	45.9	42.6	57.6	45.5		54.7	25.2	19.1	56.8	23.8	19.5
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.26	0.73	1.00
Incremental Delay, d2	1.0	0.4	0.0	8.6	3.8		2.0	2.1	0.7	0.8	0.8	0.1
Delay (s)	61.5	46.2	42.6	66.2	49.3		56.7	27.3	19.8	72.2	18.1	19.5
Level of Service	E	D	D	E	D		E	C	B	E	B	B
Approach Delay (s)		47.3			53.5			29.7			25.0	
Approach LOS		D			D			C			C	

Intersection Summary

HCM 2000 Control Delay	36.1	HCM 2000 Level of Service	D		
HCM 2000 Volume to Capacity ratio	0.71				
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	19.2		
Intersection Capacity Utilization	77.6%	ICU Level of Service	D		
Analysis Period (min)	15				

c Critical Lane Group

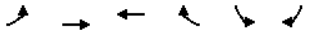
Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	15	260	565	55	15
Future Volume (vph)	15	260	565	55	15
Turn Type	pm+pt	NA	NA	Prot	Perm
Protected Phases	5	2	6	8	
Permitted Phases	2				8
Detector Phase	5	2	6	8	8
Switch Phase					
Minimum Initial (s)	7.0	20.0	20.0	10.0	10.0
Minimum Split (s)	11.0	29.4	29.4	15.3	15.3
Total Split (s)	11.0	64.0	53.0	41.0	41.0
Total Split (%)	10.5%	61.0%	50.5%	39.0%	39.0%
Yellow Time (s)	3.0	4.2	4.2	3.3	3.3
All-Red Time (s)	1.0	2.2	2.2	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	5.4	5.4	4.3	4.3
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	None	None
Act Effct Green (s)	89.2	87.9	83.5	11.6	11.6
Actuated g/C Ratio	0.85	0.84	0.80	0.11	0.11
v/c Ratio	0.02	0.06	0.17	0.31	0.08
Control Delay	1.9	2.1	3.8	47.4	19.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	1.9	2.1	3.8	47.4	19.2
LOS	A	A	A	D	B
Approach Delay		2.1	3.8	41.4	
Approach LOS		A	A	D	

Intersection Summary			
Cycle Length: 105			
Actuated Cycle Length: 105			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.31			
Intersection Signal Delay: 6.0		Intersection LOS: A	
Intersection Capacity Utilization 33.1%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 10: Britannia Rd & Farmstead Dr

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	16	280	694	59	16
v/c Ratio	0.02	0.06	0.17	0.31	0.08
Control Delay	1.9	2.1	3.8	47.4	19.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	1.9	2.1	3.8	47.4	19.2
Queue Length 50th (m)	0.5	3.5	9.1	12.0	0.0
Queue Length 95th (m)	1.7	6.0	22.4	24.5	6.6
Internal Link Dist (m)		101.0	377.9	199.3	
Turn Bay Length (m)	20.0				
Base Capacity (vph)	671	4341	4016	606	574
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.02	0.06	0.17	0.10	0.03

Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	15	260	565	80	55	15
Future Volume (vph)	15	260	565	80	55	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.4	5.4		4.3	4.3
Lane Util. Factor	1.00	0.91	0.91		1.00	1.00
Frt	1.00	1.00	0.98		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1805	5187	5046		1736	1615
Flt Permitted	0.36	1.00	1.00		0.95	1.00
Satd. Flow (perm)	689	5187	5046		1736	1615
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	16	280	608	86	59	16
RTOR Reduction (vph)	0	0	8	0	0	15
Lane Group Flow (vph)	16	280	686	0	59	1
Heavy Vehicles (%)	0%	0%	1%	0%	4%	0%
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		8	
Permitted Phases	2					8
Actuated Green, G (s)	84.7	84.7	77.9		8.6	8.6
Effective Green, g (s)	85.7	85.7	78.9		9.6	9.6
Actuated g/C Ratio	0.82	0.82	0.75		0.09	0.09
Clearance Time (s)	4.0	6.4	6.4		5.3	5.3
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	602	4233	3791		158	147
v/s Ratio Prot	0.00	c0.05	c0.14		c0.03	
v/s Ratio Perm	0.02					0.00
v/c Ratio	0.03	0.07	0.18		0.37	0.01
Uniform Delay, d1	1.8	1.9	3.8		44.9	43.4
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.0	0.0	0.1		1.5	0.0
Delay (s)	1.9	1.9	3.9		46.4	43.4
Level of Service	A	A	A		D	D
Approach Delay (s)		1.9	3.9		45.7	
Approach LOS		A	A		D	

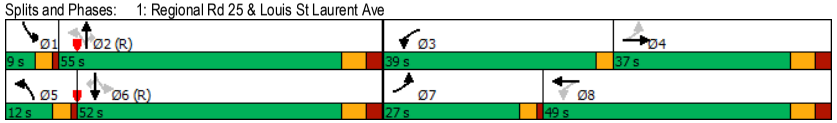
Intersection Summary			
HCM 2000 Control Delay	6.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.20		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	12.7
Intersection Capacity Utilization	33.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

2029 Future Background Traffic Conditions

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	270	535	475	560	105	830	300	65	775	95
Future Volume (vph)	270	535	475	560	105	830	300	65	775	95
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4	3	8	5	2		1	6	
Permitted Phases	4		8		2		2	6		6
Detector Phase	7	4	3	8	5	2	2	1	6	6
Switch Phase										
Minimum Initial (s)	5.0	10.0	10.0	10.0	5.0	20.0	20.0	5.0	20.0	20.0
Minimum Split (s)	9.0	30.0	14.0	30.0	9.0	32.2	32.2	9.0	32.2	32.2
Total Split (s)	27.0	37.0	39.0	49.0	12.0	55.0	55.0	9.0	52.0	52.0
Total Split (%)	19.3%	26.4%	27.9%	35.0%	8.6%	39.3%	39.3%	6.4%	37.1%	37.1%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	4.2	4.2	3.0	4.2	4.2
All-Red Time (s)	1.0	3.0	0.0	3.0	1.0	3.0	3.0	1.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.0	2.0	6.0	3.0	6.2	6.2	3.0	6.2	6.2
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	52.9	31.1	71.6	45.7	63.4	52.7	52.7	57.9	48.2	48.2
Actuated g/C Ratio	0.38	0.22	0.51	0.33	0.45	0.38	0.38	0.41	0.34	0.34
v/c Ratio	0.66	0.92	0.92	0.58	0.43	0.65	0.40	0.30	0.67	0.15
Control Delay	30.0	68.9	61.7	40.8	29.0	40.2	8.7	26.7	43.2	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.0	68.9	61.7	40.8	29.0	40.2	8.7	26.7	43.2	3.6
LOS	C	E	E	D	C	D	A	C	D	A
Approach Delay		58.3		49.6		31.6			38.0	
Approach LOS		E		D		C			D	

Intersection Summary		
Cycle Length: 140		
Actuated Cycle Length: 140		
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green		
Natural Cycle: 90		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.92		
Intersection Signal Delay: 43.9	Intersection LOS: D	
Intersection Capacity Utilization 91.1%	ICU Level of Service F	
Analysis Period (min) 15		

Splits and Phases: 1: Regional Rd 25 & Louis St Laurent Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	270	720	475	655	105	830	300	65	775	95
v/c Ratio	0.66	0.92	0.92	0.58	0.43	0.65	0.40	0.30	0.67	0.15
Control Delay	30.0	68.9	61.7	40.8	29.0	40.2	8.7	26.7	43.2	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.0	68.9	61.7	40.8	29.0	40.2	8.7	26.7	43.2	3.6
Queue Length 50th (m)	43.2	105.0	112.7	79.1	18.2	109.7	10.4	11.0	103.7	0.0
Queue Length 95th (m)	62.6	#142.8	#172.4	105.6	30.9	134.3	34.5	20.8	127.7	8.3
Internal Link Dist (m)		126.1		117.1		481.0			113.5	
Turn Bay Length (m)	90.0		35.0		65.0		65.0	80.0		90.0
Base Capacity (vph)	475	790	547	1133	245	1271	744	219	1161	621
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	0.57	0.91	0.87	0.58	0.43	0.65	0.40	0.30	0.67	0.15

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	270	535	185	475	560	95	105	830	300	65	775	95
Future Volume (vph)	270	535	185	475	560	95	105	830	300	65	775	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0		2.0	6.0		3.0	6.2	6.2	3.0	6.2	6.2
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.96		1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		1.00	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1767	3411		1863	3427		1703	3374	1568	1719	3374	1583
Flt Permitted	0.38	1.00		0.12	1.00		0.19	1.00	1.00	0.21	1.00	1.00
Satd. Flow (perm)	711	3411		225	3427		345	3374	1568	380	3374	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	270	535	185	475	560	95	105	830	300	65	775	95
RTOR Reduction (vph)	0	24	0	0	9	0	0	0	155	0	0	62
Lane Group Flow (vph)	270	696	0	475	646	0	105	830	145	65	775	33
Confl. Peds. (#/hr)	5					5						
Heavy Vehicles (%)	2%	2%	1%	2%	2%	7%	6%	7%	3%	5%	7%	2%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	47.9	30.1		66.6	44.8		58.9	50.9	50.9	51.5	47.2	47.2
Effective Green, g (s)	49.9	31.1		67.6	45.8		60.2	51.9	51.9	53.5	48.2	48.2
Actuated g/C Ratio	0.36	0.22		0.48	0.33		0.43	0.37	0.37	0.38	0.34	0.34
Clearance Time (s)	4.0	7.0		3.0	7.0		4.0	7.2	7.2	4.0	7.2	7.2
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	395	757		512	1121		235	1250	581	195	1161	545
v/s Ratio Prot	0.09	c0.20		c0.23	0.19		c0.03	c0.25		0.01	0.23	
v/s Ratio Perm	0.15			0.22			0.16		0.09	0.11		0.02
v/c Ratio	0.68	0.92		0.93	0.58		0.45	0.66	0.25	0.33	0.67	0.06
Uniform Delay, d1	34.2	53.2		41.0	39.0		26.6	36.8	30.5	29.1	39.1	30.7
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.8	16.1		23.0	0.7		1.4	2.8	1.0	1.0	3.1	0.2
Delay (s)	39.1	69.3		64.1	39.8		28.0	39.6	31.6	30.1	42.1	30.9
Level of Service	D	E		E	D		C	D	C	C	D	C
Approach Delay (s)		61.0			50.0			36.6			40.2	
Approach LOS		E			D			D			D	

Intersection Summary				
HCM 2000 Control Delay	46.6	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.80			
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.2	
Intersection Capacity Utilization	91.1%	ICU Level of Service	F	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	145	50	50	35	95	45	1020	10	50	1585	100
Future Volume (vph)	145	50	50	35	95	45	1020	10	50	1585	100
Turn Type	Perm	NA	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		8		5	2		1	6	
Permitted Phases	4		8		8	2		2	6		6
Detector Phase	4	4	8	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	7.0	20.0	20.0	7.0	20.0	20.0
Minimum Split (s)	37.5	37.5	37.5	37.5	37.5	11.0	35.5	35.5	11.0	35.5	35.5
Total Split (s)	38.0	38.0	38.0	38.0	38.0	11.0	81.0	81.0	11.0	81.0	81.0
Total Split (%)	29.2%	29.2%	29.2%	29.2%	29.2%	8.5%	62.3%	62.3%	8.5%	62.3%	62.3%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.0	4.2	4.2	3.0	4.2	4.2
All-Red Time (s)	3.2	3.2	3.2	3.2	3.2	1.0	2.3	2.3	1.0	2.3	2.3
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	3.0	5.5	5.5	3.0	5.5	5.5
Lead/Lag						Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	20.4	20.4	20.4	20.4	20.4	98.7	89.7	89.7	98.7	89.7	89.7
Actuated g/C Ratio	0.16	0.16	0.16	0.16	0.16	0.76	0.69	0.69	0.76	0.69	0.69
v/c Ratio	0.69	0.49	0.33	0.13	0.31	0.19	0.43	0.01	0.12	0.67	0.09
Control Delay	68.1	30.2	52.5	45.3	10.9	5.3	8.5	0.2	4.9	15.0	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.1	30.2	52.5	45.3	10.9	5.3	8.5	0.2	4.9	15.0	4.1
LOS	E	C	D	D	B	A	A	A	A	B	A
Approach Delay		49.2		29.2			8.3			14.1	
Approach LOS		D		C			A			B	

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 64 (49%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 95			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.69			
Intersection Signal Delay: 16.1		Intersection LOS: B	
Intersection Capacity Utilization 77.3%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 2: Regional Rd 25 & Whitlock Ave

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	145	145	50	35	95	45	1020	10	50	1585	100
v/c Ratio	0.69	0.49	0.33	0.13	0.31	0.19	0.43	0.01	0.12	0.67	0.09
Control Delay	68.1	30.2	52.5	45.3	10.9	5.3	8.5	0.2	4.9	15.0	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.1	30.2	52.5	45.3	10.9	5.3	8.5	0.2	4.9	15.0	4.1
Queue Length 50th (m)	37.5	18.2	12.1	8.2	0.0	0.8	105.3	0.0	2.6	125.2	3.1
Queue Length 95th (m)	57.3	37.4	23.8	17.1	14.7	3.7	144.1	m0.1	7.2	183.7	11.2
Internal Link Dist (m)		62.9		68.1			696.9			481.0	
Turn Bay Length (m)	35.0		65.0		65.0	100.0		25.0	100.0		25.0
Base Capacity (vph)	333	431	241	439	435	233	2349	910	434	2371	1060
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.44	0.34	0.21	0.08	0.22	0.19	0.43	0.01	0.12	0.67	0.09

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	145	50	95	50	35	95	45	1020	10	50	1585	100
Future Volume (vph)	145	50	95	50	35	95	45	1020	10	50	1585	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5		5.5	5.5	5.5	3.0	5.5	5.5	3.0	5.5	5.5
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.90		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1725	1516		1727	1759	1455	1671	3406	1292	1805	3438	1509
Flt Permitted	0.73	1.00		0.53	1.00	1.00	0.11	1.00	1.00	0.24	1.00	1.00
Satd. Flow (perm)	1333	1516		965	1759	1455	185	3406	1292	462	3438	1509
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	145	50	95	50	35	95	45	1020	10	50	1585	100
RTOR Reduction (vph)	0	59	0	0	0	80	0	0	3	0	0	20
Lane Group Flow (vph)	145	86	0	50	35	15	45	1020	7	50	1585	80
Confl. Peds. (#/hr)	5		5	5		5						
Heavy Vehicles (%)	4%	32%	1%	4%	8%	9%	8%	6%	25%	0%	5%	7%
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8	2		2	6		6
Actuated Green, G (s)	19.4	19.4		19.4	19.4	19.4	93.6	87.9	87.9	93.6	87.9	87.9
Effective Green, g (s)	20.4	20.4		20.4	20.4	20.4	95.6	88.9	88.9	95.6	88.9	88.9
Actuated g/C Ratio	0.16	0.16		0.16	0.16	0.16	0.74	0.68	0.68	0.74	0.68	0.68
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.5	6.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	209	237		151	276	228	212	2329	883	408	2351	1031
v/s Ratio Prot		0.06			0.02		c0.01	0.30		0.01	c0.46	
v/s Ratio Perm	c0.11			0.05		0.01	0.14		0.01	0.08		0.05
v/c Ratio	0.69	0.36		0.33	0.13	0.07	0.21	0.44	0.01	0.12	0.67	0.08
Uniform Delay, d1	51.8	49.0		48.7	47.1	46.7	8.8	9.3	6.5	5.3	12.1	6.9
Progression Factor	1.00	1.00		1.00	1.00	1.00	0.80	0.77	1.00	1.00	1.00	1.00
Incremental Delay, d2	9.6	0.9		1.3	0.2	0.1	0.5	0.6	0.0	0.1	1.6	0.1
Delay (s)	61.4	49.9		50.0	47.3	46.8	7.5	7.7	6.5	5.4	13.6	7.0
Level of Service	E	D		D	D	D	A	A	A	A	B	A
Approach Delay (s)		55.7			47.8			7.7			13.0	
Approach LOS		E			D			A			B	

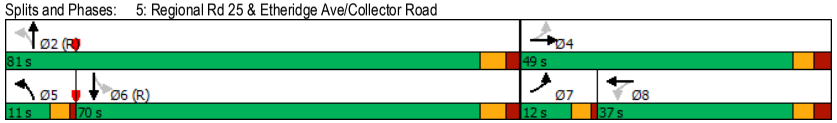
Intersection Summary				
HCM 2000 Control Delay	17.0	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.65			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	14.0	
Intersection Capacity Utilization	77.3%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	100	0	65	0	30	920	30	1645
Future Volume (vph)	100	0	65	0	30	920	30	1645
Turn Type	pm+pt	NA	Perm	NA	pm+pt	NA	Perm	NA
Protected Phases	7	4		8	5	2		6
Permitted Phases	4		8		2		6	
Detector Phase	7	4	8	8	5	2	6	6
Switch Phase								
Minimum Initial (s)	7.0	10.0	10.0	10.0	7.0	20.0	20.0	20.0
Minimum Split (s)	11.0	36.2	36.2	36.2	11.0	38.4	38.4	38.4
Total Split (s)	12.0	49.0	37.0	37.0	11.0	81.0	70.0	70.0
Total Split (%)	9.2%	37.7%	28.5%	28.5%	8.5%	62.3%	53.8%	53.8%
Yellow Time (s)	3.0	3.3	3.3	3.3	3.0	4.2	4.2	4.2
All-Red Time (s)	1.0	2.9	2.9	2.9	1.0	2.2	2.2	2.2
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	5.2	5.2	5.2	3.0	5.4	5.4	5.4
Lead/Lag	Lead		Lag	Lag	Lead		Lag	Lag
Lead-Lag Optimize?	Yes		Yes	Yes	Yes		Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max
Act Effct Green (s)	25.2	23.0	13.4	13.4	98.8	96.4	89.8	89.8
Actuated g/C Ratio	0.19	0.18	0.10	0.10	0.76	0.74	0.69	0.69
v/c Ratio	0.38	0.17	0.47	0.16	0.14	0.37	0.08	0.72
Control Delay	47.2	1.0	65.3	1.1	5.0	2.1	3.3	9.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.2	1.0	65.3	1.1	5.0	2.1	3.3	9.0
LOS	D	A	E	A	A	A	A	A
Approach Delay		29.0		35.9		2.2		8.9
Approach LOS		C		D		A		A

Intersection Summary		
Cycle Length: 130		
Actuated Cycle Length: 130		
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green		
Natural Cycle: 120		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.72		
Intersection Signal Delay: 8.9	Intersection LOS: A	
Intersection Capacity Utilization 68.3%	ICU Level of Service C	
Analysis Period (min) 15		

Splits and Phases: 5: Regional Rd 25 & Etheridge Ave/Collector Road



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	100	65	65	55	30	940	30	1700
v/c Ratio	0.38	0.17	0.47	0.16	0.14	0.37	0.08	0.72
Control Delay	47.2	1.0	65.3	1.1	5.0	2.1	3.3	9.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.2	1.0	65.3	1.1	5.0	2.1	3.3	9.0
Queue Length 50th (m)	22.9	0.0	16.9	0.0	0.3	8.2	0.8	180.5
Queue Length 95th (m)	37.9	0.6	31.7	0.0	m1.0	13.9	m1.0	176.3
Internal Link Dist (m)		53.9		63.1		292.1		696.9
Turn Bay Length (m)	40.0		40.0		70.0		70.0	
Base Capacity (vph)	262	623	332	536	208	2522	399	2363
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	0.38	0.10	0.20	0.10	0.14	0.37	0.08	0.72

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

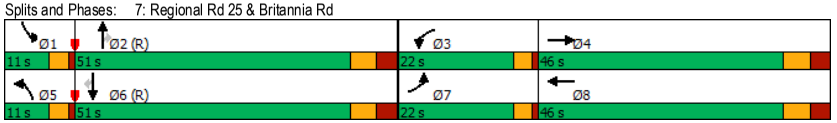
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	100	0	65	65	0	55	30	920	20	30	1645	55
Future Volume (vph)	100	0	65	65	0	55	30	920	20	30	1645	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.2		5.2	5.2		3.0	5.4		5.4	5.4	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.85		1.00	0.85		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1787	1615		1805	1615		1752	3399		1805	3420	
Flt Permitted	0.57	1.00		0.71	1.00		0.08	1.00		0.30	1.00	
Satd. Flow (perm)	1074	1615		1358	1615		145	3399		578	3420	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	100	0	65	65	0	55	30	920	20	30	1645	55
RTOR Reduction (vph)	0	53	0	0	50	0	0	1	0	0	1	0
Lane Group Flow (vph)	100	12	0	65	5	0	30	939	0	30	1699	0
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	3%	6%	0%	0%	5%	6%
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases	7	4			8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	23.2	23.2		10.4	10.4		94.2	94.2		86.0	86.0	
Effective Green, g (s)	24.2	24.2		11.4	11.4		95.2	95.2		87.0	87.0	
Actuated g/C Ratio	0.19	0.19		0.09	0.09		0.73	0.73		0.67	0.67	
Clearance Time (s)	4.0	6.2		6.2	6.2		4.0	6.4		6.4	6.4	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	253	300		119	141		170	2489		386	2288	
v/s Ratio Prot	c0.03	0.01			0.00		0.01	c0.28			c0.50	
v/s Ratio Perm	0.04			c0.05			0.12			0.05		
v/c Ratio	0.40	0.04		0.55	0.03		0.18	0.38		0.08	0.74	
Uniform Delay, d1	45.6	43.4		56.8	54.3		11.7	6.4		7.5	14.1	
Progression Factor	1.00	1.00		1.00	1.00		0.75	0.26		0.31	0.50	
Incremental Delay, d2	1.0	0.1		5.0	0.1		0.4	0.4		0.3	1.7	
Delay (s)	46.7	43.4		61.9	54.4		9.2	2.0		2.6	8.8	
Level of Service	D	D		E	D		A	A		A	A	
Approach Delay (s)		45.4			58.4			2.3			8.7	
Approach LOS		D			E			A			A	

Intersection Summary				
HCM 2000 Control Delay	10.7	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.68			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	16.6	
Intersection Capacity Utilization	68.3%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	60	390	410	325	50	800	210	280	1480	15
Future Volume (vph)	60	390	410	325	50	800	210	280	1480	15
Turn Type	Prot	NA	Prot	NA	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4	3	8	5	2		1	6	
Permitted Phases							2			6
Detector Phase	7	4	3	8	5	2	2	1	6	6
Switch Phase										
Minimum Initial (s)	7.0	10.0	7.0	10.0	7.0	20.0	20.0	7.0	20.0	20.0
Minimum Split (s)	11.0	45.5	11.0	45.5	11.0	49.7	49.7	11.0	49.7	49.7
Total Split (s)	22.0	46.0	22.0	46.0	11.0	51.0	51.0	11.0	51.0	51.0
Total Split (%)	16.9%	35.4%	16.9%	35.4%	8.5%	39.2%	39.2%	8.5%	39.2%	39.2%
Yellow Time (s)	3.0	4.2	3.0	4.2	3.0	4.2	4.2	3.0	4.2	4.2
All-Red Time (s)	1.0	3.3	1.0	3.3	1.0	3.5	3.5	1.0	3.5	3.5
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.5	3.0	6.5	3.0	6.7	6.7	3.0	6.7	6.7
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	9.0	23.8	18.6	35.5	8.7	47.3	47.3	21.1	61.9	61.9
Actuated g/C Ratio	0.07	0.18	0.14	0.27	0.07	0.36	0.36	0.16	0.48	0.48
v/c Ratio	0.26	0.76	0.83	0.35	0.22	0.64	0.30	0.49	0.90	0.02
Control Delay	59.9	46.5	65.8	30.5	59.6	37.5	5.0	51.0	48.4	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.9	46.5	65.8	30.5	59.6	37.5	5.0	51.0	48.4	0.1
LOS	E	D	E	C	E	D	A	D	D	A
Approach Delay		47.6		47.6		32.1			48.4	
Approach LOS		D		D		C			D	

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 104 (80%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 140			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.90			
Intersection Signal Delay: 44.2		Intersection LOS: D	
Intersection Capacity Utilization 89.7%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 7: Regional Rd 25 & Britannia Rd



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	60	660	410	435	50	800	210	280	1480	15
v/c Ratio	0.26	0.76	0.83	0.35	0.22	0.64	0.30	0.49	0.90	0.02
Control Delay	59.9	46.5	65.8	30.5	59.6	37.5	5.0	51.0	48.4	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.9	46.5	65.8	30.5	59.6	37.5	5.0	51.0	48.4	0.1
Queue Length 50th (m)	8.0	58.7	55.9	34.3	6.7	92.4	0.0	40.6	176.3	0.0
Queue Length 95th (m)	15.3	71.6	#80.0	47.0	13.4	120.7	17.3	56.9	#275.4	m0.0
Internal Link Dist (m)		377.9		182.4		165.3			292.1	
Turn Bay Length (m)	60.0		120.0		90.0		90.0	90.0		90.0
Base Capacity (vph)	482	1371	503	1359	225	1251	699	567	1637	660
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	0.12	0.48	0.82	0.32	0.22	0.64	0.30	0.49	0.90	0.02

Intersection Summary

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	390	270	410	325	110	50	800	210	280	1480	15
Future Volume (vph)	60	390	270	410	325	110	50	800	210	280	1480	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.5		3.0	6.5		3.0	6.7	6.7	3.0	6.7	6.7
Lane Util. Factor	0.97	*0.80		0.97	*0.80		0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	0.94		1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		1.00	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3303	4238		3445	4333		3367	3438	1553	3502	3438	1272
Flt Permitted	0.95	1.00		1.00	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3303	4238		3445	4333		3367	3438	1553	3502	3438	1272
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	60	390	270	410	325	110	50	800	210	280	1480	15
RTOR Reduction (vph)	0	97	0	0	45	0	0	0	135	0	0	8
Lane Group Flow (vph)	60	563	0	410	390	0	50	800	75	280	1480	7
Heavy Vehicles (%)	6%	1%	1%	7%	1%	2%	4%	5%	4%	0%	5%	27%
Turn Type	Prot	NA		Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			6
Actuated Green, G (s)	6.6	23.5		17.6	34.5		6.3	45.6	45.6	20.1	59.4	59.4
Effective Green, g (s)	7.6	24.5		18.6	35.5		7.3	46.6	46.6	21.1	60.4	60.4
Actuated g/C Ratio	0.06	0.19		0.14	0.27		0.06	0.36	0.36	0.16	0.46	0.46
Clearance Time (s)	4.0	7.5		4.0	7.5		4.0	7.7	7.7	4.0	7.7	7.7
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	193	798		492	1183		189	1232	556	568	1597	590
v/s Ratio Prot	0.02	c0.13		c0.12	0.09		0.01	0.23		c0.08	c0.43	
v/s Ratio Perm									0.05			0.01
v/c Ratio	0.31	0.71		0.83	0.33		0.26	0.65	0.14	0.49	0.93	0.01
Uniform Delay, d1	58.7	49.4		54.2	37.7		58.8	34.9	28.1	49.6	32.7	18.7
Progression Factor	1.00	1.00		0.93	0.92		1.00	1.00	1.00	0.96	1.30	1.00
Incremental Delay, d2	0.9	2.9		11.4	0.2		0.8	2.7	0.5	0.5	8.3	0.0
Delay (s)	59.6	52.2		61.9	34.8		59.5	37.5	28.6	48.2	50.9	18.8
Level of Service	E	D		E	C		E	D	C	D	D	B
Approach Delay (s)		52.8			47.9			36.8			50.2	
Approach LOS		D			D			D			D	

Intersection Summary

HCM 2000 Control Delay	47.0	HCM 2000 Level of Service		D	
HCM 2000 Volume to Capacity ratio	0.84				
Actuated Cycle Length (s)	130.0	Sum of lost time (s)		19.2	
Intersection Capacity Utilization	89.7%	ICU Level of Service		E	
Analysis Period (min)	15				

c Critical Lane Group

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	20	630	365	90	20
Future Volume (vph)	20	630	365	90	20
Turn Type	pm+pt	NA	NA	Prot	Perm
Protected Phases	5	2	6	8	
Permitted Phases	2				8
Detector Phase	5	2	6	8	8
Switch Phase					
Minimum Initial (s)	7.0	20.0	20.0	10.0	10.0
Minimum Split (s)	11.0	29.4	29.4	15.3	15.3
Total Split (s)	11.0	64.0	53.0	41.0	41.0
Total Split (%)	10.5%	61.0%	50.5%	39.0%	39.0%
Yellow Time (s)	3.0	4.2	4.2	3.3	3.3
All-Red Time (s)	1.0	2.2	2.2	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	5.4	5.4	4.3	4.3
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	None	None
Act Effct Green (s)	88.0	86.7	82.3	12.8	12.8
Actuated g/C Ratio	0.84	0.83	0.78	0.12	0.12
v/c Ratio	0.03	0.17	0.12	0.43	0.10
Control Delay	2.4	2.7	4.3	49.0	17.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	2.4	2.7	4.3	49.0	17.3
LOS	A	A	A	D	B
Approach Delay		2.7	4.3	43.2	
Approach LOS		A	A	D	

Intersection Summary			
Cycle Length: 105			
Actuated Cycle Length: 105			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.43			
Intersection Signal Delay: 7.2		Intersection LOS: A	
Intersection Capacity Utilization 33.1%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 10: Britannia Rd & Farmstead Dr

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	20	630	390	90	20
v/c Ratio	0.03	0.17	0.12	0.43	0.10
Control Delay	2.4	2.7	4.3	49.0	17.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	2.4	2.7	4.3	49.0	17.3
Queue Length 50th (m)	0.6	10.5	6.0	18.4	0.0
Queue Length 95th (m)	2.3	17.7	16.7	33.1	7.0
Internal Link Dist (m)		101.0	377.9	199.3	
Turn Bay Length (m)	20.0				
Base Capacity (vph)	747	3653	3292	595	550
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.03	0.17	0.12	0.15	0.04

Intersection Summary

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	20	630	365	25	90	20
Future Volume (vph)	20	630	365	25	90	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.4	5.4		4.3	4.3
Lane Util. Factor	1.00	*0.80	*0.80		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1656	4427	4202		1703	1538
Flt Permitted	0.47	1.00	1.00		0.95	1.00
Satd. Flow (perm)	815	4427	4202		1703	1538
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	20	630	365	25	90	20
RTOR Reduction (vph)	0	0	3	0	0	18
Lane Group Flow (vph)	20	630	387	0	90	2
Heavy Vehicles (%)	9%	3%	8%	0%	6%	5%
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		8	
Permitted Phases	2					8
Actuated Green, G (s)	83.5	83.5	76.7		9.8	9.8
Effective Green, g (s)	84.5	84.5	77.7		10.8	10.8
Actuated g/C Ratio	0.80	0.80	0.74		0.10	0.10
Clearance Time (s)	4.0	6.4	6.4		5.3	5.3
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	686	3562	3109		175	158
v/s Ratio Prot	0.00	c0.14	0.09		c0.05	
v/s Ratio Perm	0.02					0.00
v/c Ratio	0.03	0.18	0.12		0.51	0.01
Uniform Delay, d1	2.1	2.3	3.9		44.6	42.3
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.0	0.1	0.1		2.5	0.0
Delay (s)	2.1	2.4	4.0		47.2	42.3
Level of Service	A	A	A		D	D
Approach Delay (s)		2.4	4.0		46.3	
Approach LOS		A	A		D	

Intersection Summary				
HCM 2000 Control Delay	7.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.22		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	12.7
Intersection Capacity Utilization	33.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	25	855	770	55	75
Future Volume (vph)	25	855	770	55	75
Turn Type	pm+pt	NA	NA	Prot	Perm
Protected Phases	5	2	6	4	
Permitted Phases	2				4
Detector Phase	5	2	6	4	4
Switch Phase					
Minimum Initial (s)	7.0	20.0	20.0	10.0	10.0
Minimum Split (s)	11.0	29.0	29.0	43.0	43.0
Total Split (s)	15.0	80.0	65.0	50.0	50.0
Total Split (%)	11.5%	61.5%	50.0%	38.5%	38.5%
Yellow Time (s)	3.0	4.0	4.0	3.0	3.0
All-Red Time (s)	1.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.0	6.0	5.0	5.0
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	None	None
Act Effct Green (s)	110.2	107.2	100.6	11.8	11.8
Actuated g/C Ratio	0.85	0.82	0.77	0.09	0.09
v/c Ratio	0.05	0.23	0.22	0.34	0.35
Control Delay	4.8	7.3	4.6	61.1	16.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	4.8	7.3	4.6	61.1	16.3
LOS	A	A	A	E	B
Approach Delay		7.2	4.6	35.2	
Approach LOS		A	A	D	

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.35			
Intersection Signal Delay: 8.1		Intersection LOS: A	
Intersection Capacity Utilization 38.3%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 11: Britannia Rd & Rose Way

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	25	855	780	55	75
v/c Ratio	0.05	0.23	0.22	0.34	0.35
Control Delay	4.8	7.3	4.6	61.1	16.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	4.8	7.3	4.6	61.1	16.3
Queue Length 50th (m)	2.3	43.9	23.5	14.3	0.0
Queue Length 95th (m)	m5.0	51.6	32.0	27.8	15.3
Internal Link Dist (m)		182.4	155.7	76.0	
Turn Bay Length (m)	50.0			50.0	
Base Capacity (vph)	593	3761	3523	624	608
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.04	0.23	0.22	0.09	0.12

Intersection Summary

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

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	25	855	770	10	55	75
Future Volume (vph)	25	855	770	10	55	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0		5.0	5.0
Lane Util. Factor	1.00	*0.80	*0.80		1.00	1.00
Frt	1.00	1.00	1.00		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1805	4560	4551		1805	1615
Flt Permitted	0.30	1.00	1.00		0.95	1.00
Satd. Flow (perm)	564	4560	4551		1805	1615
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	25	855	770	10	55	75
RTOR Reduction (vph)	0	0	0	0	0	68
Lane Group Flow (vph)	25	855	780	0	55	7
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)	106.2	106.2	98.0		10.8	10.8
Effective Green, g (s)	107.2	107.2	99.0		11.8	11.8
Actuated g/C Ratio	0.82	0.82	0.76		0.09	0.09
Clearance Time (s)	4.0	7.0	7.0		6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	514	3760	3465		163	146
v/s Ratio Prot	0.00	c0.19	0.17		c0.03	
v/s Ratio Perm	0.04					0.00
v/c Ratio	0.05	0.23	0.22		0.34	0.05
Uniform Delay, d1	2.1	2.5	4.5		55.4	54.0
Progression Factor	2.78	2.85	1.00		1.00	1.00
Incremental Delay, d2	0.0	0.1	0.2		1.2	0.1
Delay (s)	5.8	7.2	4.6		56.7	54.1
Level of Service	A	A	A		E	D
Approach Delay (s)		7.1	4.6		55.2	
Approach LOS		A	A		E	

Intersection Summary				
HCM 2000 Control Delay	9.5	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.24			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	14.0	
Intersection Capacity Utilization	38.3%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	205	375	325	545	205	860	420	95	805	195
Future Volume (vph)	205	375	325	545	205	860	420	95	805	195
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4	3	8	5	2		1	6	
Permitted Phases	4		8		2		2	6		6
Detector Phase	7	4	3	8	5	2	2	1	6	6
Switch Phase										
Minimum Initial (s)	5.0	10.0	10.0	10.0	5.0	20.0	20.0	5.0	20.0	20.0
Minimum Split (s)	9.0	30.0	14.0	30.0	9.0	32.2	32.2	9.0	32.2	32.2
Total Split (s)	22.0	30.0	32.0	40.0	22.0	68.0	68.0	10.0	56.0	56.0
Total Split (%)	15.7%	21.4%	22.9%	28.6%	15.7%	48.6%	48.6%	7.1%	40.0%	40.0%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	4.2	4.2	3.0	4.2	4.2
All-Red Time (s)	1.0	3.0	0.0	3.0	1.0	3.0	3.0	1.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.0	2.0	6.0	3.0	6.2	6.2	3.0	6.2	6.2
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	43.8	23.9	54.1	30.2	80.8	66.7	66.7	71.5	60.3	60.3
Actuated g/C Ratio	0.31	0.17	0.39	0.22	0.58	0.48	0.48	0.51	0.43	0.43
v/c Ratio	0.70	0.81	0.80	0.79	0.53	0.53	0.44	0.29	0.54	0.25
Control Delay	44.7	63.7	47.9	59.1	20.4	28.1	4.8	17.5	32.9	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.7	63.7	47.9	59.1	20.4	28.1	4.8	17.5	32.9	4.7
LOS	D	E	D	E	C	C	A	B	C	A
Approach Delay		58.1		55.2		20.4			26.5	
Approach LOS		E		E		C			C	

Intersection Summary

Cycle Length: 140
Actuated Cycle Length: 140
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.81
Intersection Signal Delay: 36.0 — Intersection LOS: D
Intersection Capacity Utilization 83.4% — ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 1: Regional Rd 25 & Louis St Laurent Ave

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	205	490	325	610	205	860	420	95	805	195
v/c Ratio	0.70	0.81	0.80	0.79	0.53	0.53	0.44	0.29	0.54	0.25
Control Delay	44.7	63.7	47.9	59.1	20.4	28.1	4.8	17.5	32.9	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.7	63.7	47.9	59.1	20.4	28.1	4.8	17.5	32.9	4.7
Queue Length 50th (m)	41.0	68.7	68.5	87.7	28.0	94.7	5.0	12.1	91.8	0.0
Queue Length 95th (m)	60.2	90.8	96.4	106.9	45.8	118.6	26.9	22.7	126.6	16.8
Internal Link Dist (m)		126.1		117.1		481.0			113.5	
Turn Bay Length (m)	90.0		35.0		65.0		65.0	80.0		90.0
Base Capacity (vph)	318	634	469	865	433	1623	950	330	1495	792
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	0.64	0.77	0.69	0.71	0.47	0.53	0.44	0.29	0.54	0.25

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	205	375	115	325	545	65	205	860	420	95	805	195
Future Volume (vph)	205	375	115	325	545	65	205	860	420	95	805	195
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0		2.0	6.0		3.0	6.2	6.2	3.0	6.2	6.2
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.96		1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		1.00	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1769	3439		1899	3537		1787	3406	1567	1804	3471	1582
Flt Permitted	0.22	1.00		0.19	1.00		0.23	1.00	1.00	0.26	1.00	1.00
Satd. Flow (perm)	405	3439		364	3537		433	3406	1567	501	3471	1582
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	205	375	115	325	545	65	205	860	420	95	805	195
RTOR Reduction (vph)	0	21	0	0	7	0	0	0	204	0	0	111
Lane Group Flow (vph)	205	469	0	325	603	0	205	860	216	95	805	84
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Heavy Vehicles (%)	2%	1%	0%	0%	0%	2%	1%	6%	1%	0%	4%	0%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	38.8	22.9		49.1	29.2		76.7	65.7	65.7	66.3	59.3	59.3
Effective Green, g (s)	40.8	23.9		50.1	30.2		77.7	66.7	66.7	68.3	60.3	60.3
Actuated g/C Ratio	0.29	0.17		0.36	0.22		0.56	0.48	0.48	0.49	0.43	0.43
Clearance Time (s)	4.0	7.0		3.0	7.0		4.0	7.2	7.2	4.0	7.2	7.2
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	282	587		395	762		379	1622	746	318	1495	681
v/s Ratio Prot	0.09	0.14		c0.14	c0.17		c0.06	0.25		0.02	0.23	
v/s Ratio Perm	0.12			0.15			c0.24		0.14	0.13		0.05
v/c Ratio	0.73	0.80		0.82	0.79		0.54	0.53	0.29	0.30	0.54	0.12
Uniform Delay, d1	40.4	55.7		36.2	51.9		18.0	25.7	22.3	20.0	29.5	24.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	9.0	7.5		13.0	5.6		1.6	1.2	1.0	0.5	1.4	0.4
Delay (s)	49.4	63.3		49.1	57.5		19.6	26.9	23.2	20.5	30.9	24.3
Level of Service	D	E		D	E		B	C	C	C	C	C
Approach Delay (s)		59.2			54.6			24.9			28.9	
Approach LOS		E			D			C			C	

Intersection Summary				
HCM 2000 Control Delay	38.2	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.67			
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.2	
Intersection Capacity Utilization	83.4%	ICU Level of Service	E	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	105	40	25	40	75	90	1485	40	60	990	135
Future Volume (vph)	105	40	25	40	75	90	1485	40	60	990	135
Turn Type	Perm	NA	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		8		5	2		1	6	
Permitted Phases	4		8		8	2		2	6		6
Detector Phase	4	4	8	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	7.0	20.0	20.0	7.0	20.0	20.0
Minimum Split (s)	37.5	37.5	37.5	37.5	37.5	11.0	35.5	35.5	11.0	35.5	35.5
Total Split (s)	38.0	38.0	38.0	38.0	38.0	11.0	81.0	81.0	11.0	81.0	81.0
Total Split (%)	29.2%	29.2%	29.2%	29.2%	29.2%	8.5%	62.3%	62.3%	8.5%	62.3%	62.3%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.0	4.2	4.2	3.0	4.2	4.2
All-Red Time (s)	3.2	3.2	3.2	3.2	3.2	1.0	2.3	2.3	1.0	2.3	2.3
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	3.0	5.5	5.5	3.0	5.5	5.5
Lead/Lag						Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	16.6	16.6	16.6	16.6	16.6	102.8	93.5	93.5	101.7	91.1	91.1
Actuated g/C Ratio	0.13	0.13	0.13	0.13	0.13	0.79	0.72	0.72	0.78	0.70	0.70
v/c Ratio	0.60	0.32	0.15	0.17	0.29	0.20	0.60	0.03	0.21	0.41	0.12
Control Delay	67.4	31.8	50.2	50.0	13.0	1.6	7.1	1.3	4.8	9.4	3.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.4	31.8	50.2	50.0	13.0	1.6	7.1	1.3	4.8	9.4	3.9
LOS	E	C	D	D	B	A	A	A	A	A	A
Approach Delay		52.0		30.2			6.7			8.5	
Approach LOS		D		C			A			A	

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 40 (31%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 95			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.60			
Intersection Signal Delay: 11.1		Intersection LOS: B	
Intersection Capacity Utilization 74.2%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 2: Regional Rd 25 & Whitlock Ave

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	105	80	25	40	75	90	1485	40	60	990	135
v/c Ratio	0.60	0.32	0.15	0.17	0.29	0.20	0.60	0.03	0.21	0.41	0.12
Control Delay	67.4	31.8	50.2	50.0	13.0	1.6	7.1	1.3	4.8	9.4	3.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.4	31.8	50.2	50.0	13.0	1.6	7.1	1.3	4.8	9.4	3.9
Queue Length 50th (m)	27.2	10.6	6.1	9.8	0.0	1.4	50.7	0.4	2.6	52.7	4.8
Queue Length 95th (m)	45.1	25.0	14.4	20.3	14.0	m3.4	110.6	m1.7	6.9	80.2	13.8
Internal Link Dist (m)		62.9		68.1			696.9			481.0	
Turn Bay Length (m)	35.0		65.0		65.0	100.0		25.0	100.0		25.0
Base Capacity (vph)	341	452	333	475	441	459	2473	1143	291	2386	1152
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.18	0.08	0.08	0.17	0.20	0.60	0.03	0.21	0.41	0.12

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	40	40	25	40	75	90	1485	40	60	990	135
Future Volume (vph)	105	40	40	25	40	75	90	1485	40	60	990	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5		5.5	5.5	5.5	3.0	5.5	5.5	3.0	5.5	5.5
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	1.00
Flpb, ped/bikes	0.99	1.00		0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.93		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1776	1699		1795	1900	1539	1787	3438	1565	1769	3406	1615
Flt Permitted	0.73	1.00		0.70	1.00	1.00	0.25	1.00	1.00	0.13	1.00	1.00
Satd. Flow (perm)	1367	1699		1332	1900	1539	474	3438	1565	251	3406	1615
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	105	40	40	25	40	75	90	1485	40	60	990	135
RTOR Reduction (vph)	0	32	0	0	0	65	0	0	11	0	0	21
Lane Group Flow (vph)	105	48	0	25	40	10	90	1485	29	60	990	114
Confl. Peds. (#/hr)	5		5	5		5			5	5		
Heavy Vehicles (%)	1%	5%	0%	0%	0%	3%	1%	5%	0%	2%	6%	0%
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8	2		2	6		6
Actuated Green, G (s)	15.6	15.6		15.6	15.6	15.6	99.1	91.7	91.7	95.7	90.0	90.0
Effective Green, g (s)	16.6	16.6		16.6	16.6	16.6	101.1	92.7	92.7	97.7	91.0	91.0
Actuated g/C Ratio	0.13	0.13		0.13	0.13	0.13	0.78	0.71	0.71	0.75	0.70	0.70
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.5	6.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	174	216		170	242	196	453	2451	1115	266	2384	1130
v/s Ratio Prot		0.03			0.02		c0.01	c0.43		c0.01	0.29	
v/s Ratio Perm	c0.08			0.02		0.01	0.14		0.02	0.16		0.07
v/c Ratio	0.60	0.22		0.15	0.17	0.05	0.20	0.61	0.03	0.23	0.42	0.10
Uniform Delay, d1	53.6	50.9		50.4	50.5	49.8	4.1	9.4	5.5	6.3	8.2	6.3
Progression Factor	1.00	1.00		1.00	1.00	1.00	0.28	0.60	1.54	1.00	1.00	1.00
Incremental Delay, d2	5.8	0.5		0.4	0.3	0.1	0.2	0.9	0.0	0.4	0.5	0.2
Delay (s)	59.4	51.4		50.8	50.9	49.9	1.3	6.6	8.4	6.7	8.8	6.5
Level of Service	E	D		D	D	D	A	A	A	A	A	A
Approach Delay (s)		55.9			50.3			6.3			8.4	
Approach LOS		E			D			A			A	

Intersection Summary				
HCM 2000 Control Delay	12.0	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.59			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	14.0	
Intersection Capacity Utilization	74.2%	ICU Level of Service	D	
Analysis Period (min)	15			

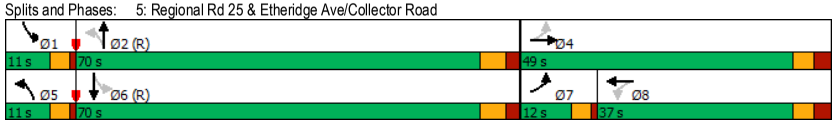
c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	75	0	40	0	60	1500	55	885
Future Volume (vph)	75	0	40	0	60	1500	55	885
Turn Type	pm+pt	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases	7	4		8	5	2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	7	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	7.0	10.0	10.0	10.0	7.0	20.0	7.0	20.0
Minimum Split (s)	11.0	36.2	36.2	36.2	11.0	38.4	11.0	38.4
Total Split (s)	12.0	49.0	37.0	37.0	11.0	70.0	11.0	70.0
Total Split (%)	9.2%	37.7%	28.5%	28.5%	8.5%	53.8%	8.5%	53.8%
Yellow Time (s)	3.0	3.3	3.3	3.3	3.0	4.2	3.0	4.2
All-Red Time (s)	1.0	2.9	2.9	2.9	1.0	2.2	1.0	2.2
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	5.2	5.2	5.2	3.0	5.4	3.0	5.4
Lead/Lag	Lead		Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	22.5	21.3	11.7	11.7	101.2	93.3	101.5	93.5
Actuated g/C Ratio	0.17	0.16	0.09	0.09	0.78	0.72	0.78	0.72
v/c Ratio	0.33	0.06	0.31	0.13	0.13	0.63	0.21	0.41
Control Delay	48.2	0.2	62.0	0.8	2.7	6.7	5.2	4.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.2	0.2	62.0	0.8	2.7	6.7	5.2	4.4
LOS	D	A	E	A	A	A	A	A
Approach Delay		36.2		31.4		6.6		4.5
Approach LOS		D		C		A		A

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 103 (79%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.63
Intersection Signal Delay: 7.5 Intersection LOS: A
Intersection Capacity Utilization 69.5% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 5: Regional Rd 25 & Etheridge Ave/Collector Road



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	75	25	40	40	60	1565	55	1000
v/c Ratio	0.33	0.06	0.31	0.13	0.13	0.63	0.21	0.41
Control Delay	48.2	0.2	62.0	0.8	2.7	6.7	5.2	4.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.2	0.2	62.0	0.8	2.7	6.7	5.2	4.4
Queue Length 50th (m)	17.2	0.0	10.3	0.0	1.5	53.9	0.8	68.4
Queue Length 95th (m)	31.1	0.0	22.4	0.0	m3.4	74.4	4.5	8.6
Internal Link Dist (m)		53.9		63.5		292.1		696.9
Turn Bay Length (m)	40.0		40.0		70.0		70.0	
Base Capacity (vph)	229	677	344	535	454	2482	265	2462
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	0.33	0.04	0.12	0.07	0.13	0.63	0.21	0.41

Intersection Summary

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

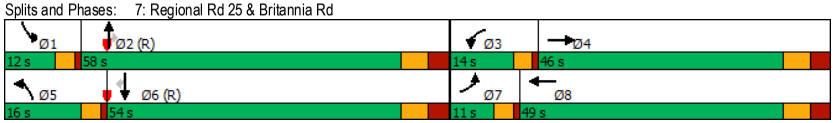
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	0	25	40	0	40	60	1500	65	55	885	115
Future Volume (vph)	75	0	25	40	0	40	60	1500	65	55	885	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.2		5.2	5.2		3.0	5.4		3.0	5.4	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.85		1.00	0.85		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1752	1615		1805	1615		1805	3455		1805	3419	
Flt Permitted	0.56	1.00		0.74	1.00		0.25	1.00		0.11	1.00	
Satd. Flow (perm)	1030	1615		1408	1615		477	3455		208	3419	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	75	0	25	40	0	40	60	1500	65	55	885	115
RTOR Reduction (vph)	0	21	0	0	37	0	0	2	0	0	5	0
Lane Group Flow (vph)	75	4	0	40	3	0	60	1563	0	55	995	0
Heavy Vehicles (%)	3%	0%	0%	0%	0%	0%	0%	4%	0%	0%	4%	2%
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	19.1	19.1		8.7	8.7		94.1	88.4		94.5	88.6	
Effective Green, g (s)	20.1	20.1		9.7	9.7		96.1	89.4		96.5	89.6	
Actuated g/C Ratio	0.15	0.15		0.07	0.07		0.74	0.69		0.74	0.69	
Clearance Time (s)	4.0	6.2		6.2	6.2		4.0	6.4		4.0	6.4	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	200	249		105	120		421	2375		239	2356	
v/s Ratio Prot	c0.02	0.00			0.00		0.01	c0.45		c0.01	0.29	
v/s Ratio Perm	c0.04			0.03			0.10			0.16		
v/c Ratio	0.38	0.02		0.38	0.02		0.14	0.66		0.23	0.42	
Uniform Delay, d1	48.6	46.6		57.3	55.8		5.1	11.6		8.4	8.9	
Progression Factor	1.00	1.00		1.00	1.00		0.54	0.44		0.83	0.41	
Incremental Delay, d2	1.2	0.0		2.3	0.1		0.1	1.1		0.5	0.5	
Delay (s)	49.8	46.6		59.6	55.8		2.9	6.2		7.5	4.1	
Level of Service	D	D		E	E		A	A		A	A	
Approach Delay (s)		49.0			57.7			6.1			4.3	
Approach LOS		D			E			A			A	

Intersection Summary				
HCM 2000 Control Delay	8.4	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.60			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	16.6	
Intersection Capacity Utilization	69.5%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	40	305	285	470	235	1290	445	120	780	50
Future Volume (vph)	40	305	285	470	235	1290	445	120	780	50
Turn Type	Prot	NA	Prot	NA	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4	3	8	5	2		1	6	
Permitted Phases							2			6
Detector Phase	7	4	3	8	5	2	2	1	6	6
Switch Phase										
Minimum Initial (s)	7.0	10.0	7.0	10.0	7.0	20.0	20.0	7.0	20.0	20.0
Minimum Split (s)	11.0	45.5	11.0	45.5	11.0	49.7	49.7	11.0	49.7	49.7
Total Split (s)	11.0	46.0	14.0	49.0	16.0	58.0	58.0	12.0	54.0	54.0
Total Split (%)	8.5%	35.4%	10.8%	37.7%	12.3%	44.6%	44.6%	9.2%	41.5%	41.5%
Yellow Time (s)	3.0	4.2	3.0	4.2	3.0	4.2	4.2	3.0	4.2	4.2
All-Red Time (s)	1.0	3.3	1.0	3.3	1.0	3.5	3.5	1.0	3.5	3.5
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.5	3.0	6.5	3.0	6.7	6.7	3.0	6.7	6.7
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	8.0	23.3	11.0	28.5	14.9	65.7	65.7	10.8	61.6	61.6
Actuated g/C Ratio	0.06	0.18	0.08	0.22	0.11	0.51	0.51	0.08	0.47	0.47
v/c Ratio	0.20	0.42	0.93	0.74	0.58	0.73	0.45	0.42	0.47	0.06
Control Delay	60.5	45.8	113.4	38.9	60.3	29.8	6.1	72.1	17.3	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.5	45.8	113.4	38.9	60.3	29.8	6.1	72.1	17.3	0.1
LOS	E	D	F	D	E	C	A	E	B	A
Approach Delay		47.3		59.1		28.1			23.3	
Approach LOS		D		E		C			C	

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 104 (80%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 120			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.93			
Intersection Signal Delay: 36.2		Intersection LOS: D	
Intersection Capacity Utilization 80.7%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 7: Regional Rd 25 & Britannia Rd



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	40	345	285	765	235	1290	445	120	780	50
v/c Ratio	0.20	0.42	0.93	0.74	0.58	0.73	0.45	0.42	0.47	0.06
Control Delay	60.5	45.8	113.4	38.9	60.3	29.8	6.1	72.1	17.3	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.5	45.8	113.4	38.9	60.3	29.8	6.1	72.1	17.3	0.1
Queue Length 50th (m)	5.3	32.8	42.4	43.1	31.4	141.8	10.8	17.0	38.9	0.0
Queue Length 95th (m)	11.7	42.0	#70.1	46.5	44.1	196.6	39.5	28.0	45.9	0.0
Internal Link Dist (m)		377.9		190.1		165.3			292.1	
Turn Bay Length (m)	60.0		120.0		90.0		90.0	90.0		90.0
Base Capacity (vph)	203	1372	305	1477	412	1771	981	293	1643	820
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	0.20	0.25	0.93	0.52	0.57	0.73	0.45	0.41	0.47	0.06

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	305	40	285	470	295	235	1290	445	120	780	50
Future Volume (vph)	40	305	40	285	470	295	235	1290	445	120	780	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.5		3.0	6.5		3.0	6.7	6.7	3.0	6.7	6.7
Lane Util. Factor	0.97	*0.80		0.97	*0.80		0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	0.98		1.00	0.94		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		1.00	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3303	4481		3614	4254		3502	3505	1583	3467	3471	1615
Flt Permitted	0.95	1.00		1.00	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3303	4481		3614	4254		3502	3505	1583	3467	3471	1615
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	40	305	40	285	470	295	235	1290	445	120	780	50
RTOR Reduction (vph)	0	12	0	0	101	0	0	0	184	0	0	27
Lane Group Flow (vph)	40	333	0	285	664	0	235	1290	261	120	780	23
Heavy Vehicles (%)	6%	0%	0%	2%	1%	1%	0%	3%	2%	1%	4%	0%
Turn Type	Prot	NA		Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			6
Actuated Green, G (s)	5.6	23.1		10.0	27.5		13.9	63.9	63.9	9.8	59.8	59.8
Effective Green, g (s)	6.6	24.1		11.0	28.5		14.9	64.9	64.9	10.8	60.8	60.8
Actuated g/C Ratio	0.05	0.19		0.08	0.22		0.11	0.50	0.50	0.08	0.47	0.47
Clearance Time (s)	4.0	7.5		4.0	7.5		4.0	7.7	7.7	4.0	7.7	7.7
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	167	830		305	932		401	1749	790	288	1623	755
v/s Ratio Prot	0.01	0.07		c0.08	c0.16		c0.07	c0.37		0.03	0.22	
v/s Ratio Perm									0.16			0.01
v/c Ratio	0.24	0.40		0.93	0.71		0.59	0.74	0.33	0.42	0.48	0.03
Uniform Delay, d1	59.3	46.6		59.1	47.0		54.6	25.8	19.5	56.6	23.8	18.7
Progression Factor	1.00	1.00		1.33	0.88		1.00	1.00	1.00	1.21	0.65	1.00
Incremental Delay, d2	0.7	0.3		33.9	2.5		2.2	2.8	1.1	0.9	1.0	0.1
Delay (s)	60.0	46.9		112.6	44.0		56.8	28.6	20.6	69.3	16.5	18.8
Level of Service	E	D		F	D		E	C	C	E	B	B
Approach Delay (s)		48.3			62.6			30.2			23.3	
Approach LOS		D			E			C			C	

Intersection Summary				
HCM 2000 Control Delay	38.1	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.76			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	19.2	
Intersection Capacity Utilization	80.7%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	15	330	675	55	15
Future Volume (vph)	15	330	675	55	15
Turn Type	pm+pt	NA	NA	Prot	Perm
Protected Phases	5	2	6	8	
Permitted Phases	2				8
Detector Phase	5	2	6	8	8
Switch Phase					
Minimum Initial (s)	7.0	20.0	20.0	10.0	10.0
Minimum Split (s)	11.0	29.4	29.4	15.3	15.3
Total Split (s)	11.0	64.0	53.0	41.0	41.0
Total Split (%)	10.5%	61.0%	50.5%	39.0%	39.0%
Yellow Time (s)	3.0	4.2	4.2	3.3	3.3
All-Red Time (s)	1.0	2.2	2.2	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	5.4	5.4	4.3	4.3
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	None	None
Act Effct Green (s)	89.3	88.0	83.6	11.4	11.4
Actuated g/C Ratio	0.85	0.84	0.80	0.11	0.11
v/c Ratio	0.03	0.09	0.21	0.29	0.08
Control Delay	1.9	2.1	4.0	47.2	19.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	1.9	2.1	4.0	47.2	19.9
LOS	A	A	A	D	B
Approach Delay		2.1	4.0	41.4	
Approach LOS		A	A	D	

Intersection Summary			
Cycle Length: 105			
Actuated Cycle Length: 105			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.29			
Intersection Signal Delay: 5.7		Intersection LOS: A	
Intersection Capacity Utilization 33.1%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 10: Britannia Rd & Farmstead Dr

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	15	330	755	55	15
v/c Ratio	0.03	0.09	0.21	0.29	0.08
Control Delay	1.9	2.1	4.0	47.2	19.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	1.9	2.1	4.0	47.2	19.9
Queue Length 50th (m)	0.4	4.8	12.0	11.1	0.0
Queue Length 95th (m)	1.6	7.8	28.9	23.1	6.3
Internal Link Dist (m)		101.0	377.9	199.3	
Turn Bay Length (m)	20.0				
Base Capacity (vph)	587	3822	3545	606	574
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.03	0.09	0.21	0.09	0.03

Intersection Summary

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	15	330	675	80	55	15
Future Volume (vph)	15	330	675	80	55	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.4	5.4		4.3	4.3
Lane Util. Factor	1.00	*0.80	*0.80		1.00	1.00
Frt	1.00	1.00	0.98		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1805	4560	4448		1736	1615
Flt Permitted	0.31	1.00	1.00		0.95	1.00
Satd. Flow (perm)	581	4560	4448		1736	1615
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	15	330	675	80	55	15
RTOR Reduction (vph)	0	0	5	0	0	14
Lane Group Flow (vph)	15	330	750	0	55	1
Heavy Vehicles (%)	0%	0%	1%	0%	4%	0%
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		8	
Permitted Phases	2					8
Actuated Green, G (s)	84.9	84.9	78.1		8.4	8.4
Effective Green, g (s)	85.9	85.9	79.1		9.4	9.4
Actuated g/C Ratio	0.82	0.82	0.75		0.09	0.09
Clearance Time (s)	4.0	6.4	6.4		5.3	5.3
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	519	3730	3350		155	144
v/s Ratio Prot	0.00	c0.07	c0.17		c0.03	
v/s Ratio Perm	0.02					0.00
v/c Ratio	0.03	0.09	0.22		0.35	0.01
Uniform Delay, d1	1.8	1.9	3.8		44.9	43.6
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.0	0.0	0.2		1.4	0.0
Delay (s)	1.8	1.9	4.0		46.3	43.6
Level of Service	A	A	A		D	D
Approach Delay (s)		1.9	4.0		45.8	
Approach LOS		A	A		D	

Intersection Summary				
HCM 2000 Control Delay	5.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.23		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	12.7
Intersection Capacity Utilization	33.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

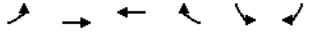
Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	80	790	1000	30	50
Future Volume (vph)	80	790	1000	30	50
Turn Type	pm+pt	NA	NA	Prot	Perm
Protected Phases	5	2	6	4	
Permitted Phases	2				4
Detector Phase	5	2	6	4	4
Switch Phase					
Minimum Initial (s)	7.0	20.0	20.0	10.0	10.0
Minimum Split (s)	11.0	29.0	29.0	43.0	43.0
Total Split (s)	15.0	80.0	65.0	50.0	50.0
Total Split (%)	11.5%	61.5%	50.0%	38.5%	38.5%
Yellow Time (s)	3.0	4.0	4.0	3.0	3.0
All-Red Time (s)	1.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.0	6.0	5.0	5.0
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	None	None
Act Effct Green (s)	114.2	112.4	103.5	11.0	11.0
Actuated g/C Ratio	0.88	0.86	0.80	0.08	0.08
v/c Ratio	0.19	0.20	0.29	0.20	0.27
Control Delay	1.9	1.2	4.9	58.7	18.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	1.9	1.2	4.9	58.7	18.8
LOS	A	A	A	E	B
Approach Delay		1.3	4.9	33.8	
Approach LOS		A	A	C	

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 65 (50%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.29			
Intersection Signal Delay: 4.5		Intersection LOS: A	
Intersection Capacity Utilization 47.3%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 11: Britannia Rd & Rose Way

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	80	790	1060	30	50
v/c Ratio	0.19	0.20	0.29	0.20	0.27
Control Delay	1.9	1.2	4.9	58.7	18.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	1.9	1.2	4.9	58.7	18.8
Queue Length 50th (m)	1.3	6.8	34.3	7.7	0.0
Queue Length 95th (m)	2.5	11.4	41.2	18.0	13.0
Internal Link Dist (m)		190.1	148.0	92.6	
Turn Bay Length (m)	50.0			50.0	
Base Capacity (vph)	475	3941	3604	624	591
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.17	0.20	0.29	0.05	0.08

Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	80	790	1000	60	30	50
Future Volume (vph)	80	790	1000	60	30	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0		5.0	5.0
Lane Util. Factor	1.00	*0.80	*0.80		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1805	4560	4521		1805	1615
Flt Permitted	0.21	1.00	1.00		0.95	1.00
Satd. Flow (perm)	393	4560	4521		1805	1615
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	80	790	1000	60	30	50
RTOR Reduction (vph)	0	0	2	0	0	47
Lane Group Flow (vph)	80	790	1058	0	30	3
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)	109.0	109.0	99.4		8.0	8.0
Effective Green, g (s)	110.0	110.0	100.4		9.0	9.0
Actuated g/C Ratio	0.85	0.85	0.77		0.07	0.07
Clearance Time (s)	4.0	7.0	7.0		6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	404	3858	3491		124	111
v/s Ratio Prot	0.01	c0.17	c0.23		c0.02	
v/s Ratio Perm	0.16					0.00
v/c Ratio	0.20	0.20	0.30		0.24	0.03
Uniform Delay, d1	1.8	1.9	4.4		57.3	56.4
Progression Factor	0.74	0.56	1.00		1.00	1.00
Incremental Delay, d2	0.2	0.1	0.2		1.0	0.1
Delay (s)	1.6	1.2	4.6		58.3	56.5
Level of Service	A	A	A		E	E
Approach Delay (s)		1.2	4.6		57.2	
Approach LOS		A	A		E	

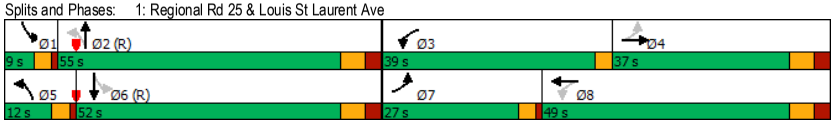
Intersection Summary				
HCM 2000 Control Delay	5.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	47.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

2032 Future Background Traffic Conditions

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	270	535	485	560	105	910	65	915
Future Volume (vph)	270	535	485	560	105	910	65	915
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	5.0	10.0	10.0	10.0	5.0	20.0	5.0	20.0
Minimum Split (s)	9.0	30.0	14.0	30.0	9.0	32.2	9.0	32.2
Total Split (s)	27.0	37.0	39.0	49.0	12.0	55.0	9.0	52.0
Total Split (%)	19.3%	26.4%	27.9%	35.0%	8.6%	39.3%	6.4%	37.1%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	4.2	3.0	4.2
All-Red Time (s)	1.0	3.0	0.0	3.0	1.0	3.0	1.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.0	2.0	6.0	3.0	6.2	3.0	6.2
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	52.9	31.2	72.1	46.3	62.9	52.5	57.3	47.9
Actuated g/C Ratio	0.38	0.22	0.52	0.33	0.45	0.38	0.41	0.34
v/c Ratio	0.65	0.92	0.93	0.57	0.55	0.77	0.48	0.70
Control Delay	29.6	69.1	63.1	40.4	34.7	41.2	35.2	42.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.6	69.1	63.1	40.4	34.7	41.2	35.2	42.9
LOS	C	E	E	D	C	D	D	D
Approach Delay		58.4		50.1		40.7		42.5
Approach LOS		E		D		D		D

Intersection Summary	
Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.93	
Intersection Signal Delay: 47.4	Intersection LOS: D
Intersection Capacity Utilization 93.1%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 1: Regional Rd 25 & Louis St Laurent Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	270	725	485	655	105	1215	65	1010
v/c Ratio	0.65	0.92	0.93	0.57	0.55	0.77	0.48	0.70
Control Delay	29.6	69.1	63.1	40.4	34.7	41.2	35.2	42.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.6	69.1	63.1	40.4	34.7	41.2	35.2	42.9
Queue Length 50th (m)	43.2	105.5	116.5	79.1	18.2	128.5	11.0	107.2
Queue Length 95th (m)	62.6	#144.0	#179.3	105.6	30.9	151.4	20.8	127.5
Internal Link Dist (m)		126.1		117.1		481.0		113.5
Turn Bay Length (m)	90.0		35.0		65.0		80.0	
Base Capacity (vph)	479	792	548	1142	192	1588	136	1451
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	0.56	0.92	0.89	0.57	0.55	0.77	0.48	0.70

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	270	535	190	485	560	95	105	910	305	65	915	95
Future Volume (vph)	270	535	190	485	560	95	105	910	305	65	915	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0		2.0	6.0		3.0	6.2		3.0	6.2	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	*0.80		1.00	*0.80	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.98		1.00	0.96		1.00	0.99	
Flt Protected	0.95	1.00		1.00	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1767	3409		1863	3427		1703	4140		1719	4220	
Flt Permitted	0.39	1.00		0.12	1.00		0.12	1.00		0.09	1.00	
Satd. Flow (perm)	723	3409		224	3427		215	4140		162	4220	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	270	535	190	485	560	95	105	910	305	65	915	95
RTOR Reduction (vph)	0	26	0	0	9	0	0	38	0	0	7	0
Lane Group Flow (vph)	270	699	0	485	646	0	105	1177	0	65	1003	0
Confl. Peds. (#/hr)	5					5						
Heavy Vehicles (%)	2%	2%	1%	2%	2%	7%	6%	7%	3%	5%	7%	2%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	48.0	30.2		67.1	45.3		58.5	50.7		50.9	46.9	
Effective Green, g (s)	50.0	31.2		68.1	46.3		59.7	51.7		52.9	47.9	
Actuated g/C Ratio	0.36	0.22		0.49	0.33		0.43	0.37		0.38	0.34	
Clearance Time (s)	4.0	7.0		3.0	7.0		4.0	7.2		4.0	7.2	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	398	759		517	1133		185	1528		116	1443	
v/s Ratio Prot	0.09	c0.21		c0.23	0.19		c0.04	c0.28		0.02	0.24	
v/s Ratio Perm	0.15			0.22			0.21			0.19		
v/c Ratio	0.68	0.92		0.94	0.57		0.57	0.77		0.56	0.69	
Uniform Delay, d1	34.2	53.2		41.2	38.6		27.5	38.9		30.8	39.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.6	16.5		24.8	0.7		4.0	3.8		6.1	2.8	
Delay (s)	38.7	69.7		66.0	39.3		31.4	42.7		36.9	42.5	
Level of Service	D	E		E	D		C	D		D	D	
Approach Delay (s)		61.3			50.7			41.8			42.2	
Approach LOS		E			D			D			D	

Intersection Summary					
HCM 2000 Control Delay	48.4	HCM 2000 Level of Service	D		
HCM 2000 Volume to Capacity ratio	0.86				
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.2		
Intersection Capacity Utilization	93.1%	ICU Level of Service	F		
Analysis Period (min)	15				

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	145	50	50	35	95	45	1105	50	1740
Future Volume (vph)	145	50	50	35	95	45	1105	50	1740
Turn Type	Perm	NA	Perm	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases		4		8		5	2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	7.0	20.0	7.0	20.0
Minimum Split (s)	37.5	37.5	37.5	37.5	37.5	11.0	35.5	11.0	35.5
Total Split (s)	38.0	38.0	38.0	38.0	38.0	11.0	81.0	11.0	81.0
Total Split (%)	29.2%	29.2%	29.2%	29.2%	29.2%	8.5%	62.3%	8.5%	62.3%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.0	4.2	3.0	4.2
All-Red Time (s)	3.2	3.2	3.2	3.2	3.2	1.0	2.3	1.0	2.3
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	3.0	5.5	3.0	5.5
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	20.4	20.4	20.4	20.4	20.4	98.7	89.7	98.7	89.6
Actuated g/C Ratio	0.16	0.16	0.16	0.16	0.16	0.76	0.69	0.76	0.69
v/c Ratio	0.69	0.49	0.33	0.13	0.31	0.25	0.38	0.14	0.62
Control Delay	68.1	30.2	52.5	45.3	10.9	12.9	6.0	5.1	13.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.1	30.2	52.5	45.3	10.9	12.9	6.0	5.1	13.4
LOS	E	C	D	D	B	B	A	A	B
Approach Delay		49.2		29.2			6.2		13.2
Approach LOS		D		C			A		B

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 64 (49%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 95			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.69			
Intersection Signal Delay: 14.7		Intersection LOS: B	
Intersection Capacity Utilization 75.1%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 2: Regional Rd 25 & Whitlock Ave

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	145	145	50	35	95	45	1115	50	1840
v/c Ratio	0.69	0.49	0.33	0.13	0.31	0.25	0.38	0.14	0.62
Control Delay	68.1	30.2	52.5	45.3	10.9	12.9	6.0	5.1	13.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.1	30.2	52.5	45.3	10.9	12.9	6.0	5.1	13.4
Queue Length 50th (m)	37.5	18.2	12.1	8.2	0.0	1.6	22.7	2.6	107.5
Queue Length 95th (m)	57.3	37.4	23.8	17.1	14.7	6.9	103.4	7.2	153.1
Internal Link Dist (m)		62.9		68.1			696.9		481.0
Turn Bay Length (m)	35.0		65.0		65.0	100.0		100.0	
Base Capacity (vph)	333	431	241	439	435	180	2959	360	2970
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	0.44	0.34	0.21	0.08	0.22	0.25	0.38	0.14	0.62

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	145	50	95	50	35	95	45	1105	10	50	1740	100
Future Volume (vph)	145	50	95	50	35	95	45	1105	10	50	1740	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5		5.5	5.5	5.5	3.0	5.5		3.0	5.5	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	*0.80		1.00	*0.80	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.90		1.00	1.00	0.85	1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1725	1516		1727	1759	1455	1671	4289		1805	4303	
Flt Permitted	0.73	1.00		0.53	1.00	1.00	0.06	1.00		0.19	1.00	
Satd. Flow (perm)	1333	1516		965	1759	1455	108	4289		355	4303	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	145	50	95	50	35	95	45	1105	10	50	1740	100
RTOR Reduction (vph)	0	59	0	0	0	80	0	0	0	0	3	0
Lane Group Flow (vph)	145	86	0	50	35	15	45	1115	0	50	1837	0
Confl. Peds. (#/hr)	5		5	5		5						
Heavy Vehicles (%)	4%	32%	1%	4%	8%	9%	8%	6%	25%	0%	5%	7%
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	19.4	19.4		19.4	19.4	19.4	93.6	87.9		93.6	87.9	
Effective Green, g (s)	20.4	20.4		20.4	20.4	20.4	95.6	88.9		95.6	88.9	
Actuated g/C Ratio	0.16	0.16		0.16	0.16	0.16	0.74	0.68		0.74	0.68	
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	4.0	6.5		4.0	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	209	237		151	276	228	159	2933		335	2942	
v/s Ratio Prot		0.06			0.02		c0.01	0.26		0.01	c0.43	
v/s Ratio Perm	c0.11			0.05		0.01	0.19			0.10		
v/c Ratio	0.69	0.36		0.33	0.13	0.07	0.28	0.38		0.15	0.62	
Uniform Delay, d1	51.8	49.0		48.7	47.1	46.7	8.1	8.8		5.0	11.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	2.20	0.58		1.00	1.00	
Incremental Delay, d2	9.6	0.9		1.3	0.2	0.1	0.9	0.4		0.2	1.0	
Delay (s)	61.4	49.9		50.0	47.3	46.8	18.8	5.5		5.2	12.3	
Level of Service	E	D		D	D	D	B	A		A	B	
Approach Delay (s)		55.7			47.8			6.0			12.2	
Approach LOS		E			D			A			B	

Intersection Summary				
HCM 2000 Control Delay	15.5	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.62			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	14.0	
Intersection Capacity Utilization	75.1%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	100	0	65	0	30	1005	30	1800
Future Volume (vph)	100	0	65	0	30	1005	30	1800
Turn Type	pm+pt	NA	Perm	NA	pm+pt	NA	Perm	NA
Protected Phases	7	4		8	5	2		6
Permitted Phases	4		8		2		6	
Detector Phase	7	4	8	8	5	2	6	6
Switch Phase								
Minimum Initial (s)	7.0	10.0	10.0	10.0	7.0	20.0	20.0	20.0
Minimum Split (s)	11.0	36.2	36.2	36.2	11.0	38.4	38.4	38.4
Total Split (s)	12.0	49.0	37.0	37.0	11.0	81.0	70.0	70.0
Total Split (%)	9.2%	37.7%	28.5%	28.5%	8.5%	62.3%	53.8%	53.8%
Yellow Time (s)	3.0	3.3	3.3	3.3	3.0	4.2	4.2	4.2
All-Red Time (s)	1.0	2.9	2.9	2.9	1.0	2.2	2.2	2.2
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	5.2	5.2	5.2	3.0	5.4	5.4	5.4
Lead/Lag	Lead		Lag	Lag	Lead		Lag	Lag
Lead-Lag Optimize?	Yes		Yes	Yes	Yes		Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max
Act Effct Green (s)	25.2	23.0	13.4	13.4	98.8	96.4	89.8	89.8
Actuated g/C Ratio	0.19	0.18	0.10	0.10	0.76	0.74	0.69	0.69
v/c Ratio	0.38	0.17	0.47	0.18	0.17	0.32	0.10	0.62
Control Delay	47.2	1.4	65.3	1.2	11.6	2.1	3.4	6.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.2	1.4	65.3	1.2	11.6	2.1	3.4	6.4
LOS	D	A	E	A	B	A	A	A
Approach Delay		29.2		36.0		2.3		6.4
Approach LOS		C		D		A		A

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.62			
Intersection Signal Delay: 7.3		Intersection LOS: A	
Intersection Capacity Utilization 57.0%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 5: Regional Rd 25 & Etheridge Ave/Collector Road

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	100	65	65	55	30	1025	30	1855
v/c Ratio	0.38	0.17	0.47	0.18	0.17	0.32	0.10	0.62
Control Delay	47.2	1.4	65.3	1.2	11.6	2.1	3.4	6.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.2	1.4	65.3	1.2	11.6	2.1	3.4	6.4
Queue Length 50th (m)	22.9	0.0	16.9	0.0	0.4	8.1	0.9	138.2
Queue Length 95th (m)	37.9	1.5	31.7	0.0	m1.4	12.7	m1.0	65.9
Internal Link Dist (m)		53.9		63.1		292.1		696.9
Turn Bay Length (m)	40.0		40.0		70.0		70.0	
Base Capacity (vph)	262	620	332	519	179	3184	303	2988
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	0.38	0.10	0.20	0.11	0.17	0.32	0.10	0.62

Intersection Summary

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

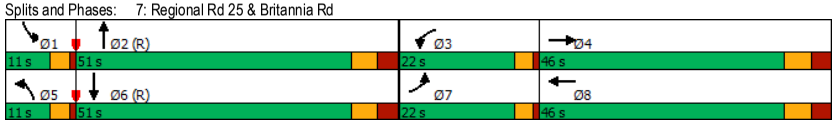
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	100	0	65	65	0	55	30	1005	20	30	1800	55
Future Volume (vph)	100	0	65	65	0	55	30	1005	20	30	1800	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.2		5.2	5.2		3.0	5.4		5.4	5.4	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	*0.80		1.00	*0.80	
Frt	1.00	0.85		1.00	0.85		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1787	1615		1805	1615		1752	4294		1805	4322	
Flt Permitted	0.57	1.00		0.71	1.00		0.06	1.00		0.23	1.00	
Satd. Flow (perm)	1074	1615		1358	1615		103	4294		438	4322	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	100	0	65	65	0	55	30	1005	20	30	1800	55
RTOR Reduction (vph)	0	53	0	0	50	0	0	1	0	0	1	0
Lane Group Flow (vph)	100	12	0	65	5	0	30	1024	0	30	1854	0
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	3%	6%	0%	0%	5%	6%
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases	7	4			8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	23.2	23.2		10.4	10.4		94.2	94.2		86.0	86.0	
Effective Green, g (s)	24.2	24.2		11.4	11.4		95.2	95.2		87.0	87.0	
Actuated g/C Ratio	0.19	0.19		0.09	0.09		0.73	0.73		0.67	0.67	
Clearance Time (s)	4.0	6.2		6.2	6.2		4.0	6.4		6.4	6.4	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	253	300		119	141		141	3144		293	2892	
v/s Ratio Prot	c0.03	0.01			0.00		0.01	c0.24			c0.43	
v/s Ratio Perm	0.04			c0.05			0.15			0.07		
v/c Ratio	0.40	0.04		0.55	0.03		0.21	0.33		0.10	0.64	
Uniform Delay, d1	45.6	43.4		56.8	54.3		9.0	6.1		7.6	12.5	
Progression Factor	1.00	1.00		1.00	1.00		2.03	0.30		0.28	0.44	
Incremental Delay, d2	1.0	0.1		5.0	0.1		0.6	0.2		0.6	0.9	
Delay (s)	46.7	43.4		61.9	54.4		18.9	2.0		2.7	6.4	
Level of Service	D	D		E	D		B	A		A	A	
Approach Delay (s)		45.4			58.4			2.5			6.3	
Approach LOS		D			E			A			A	

Intersection Summary				
HCM 2000 Control Delay	9.0	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.60			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	16.6	
Intersection Capacity Utilization	57.0%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	60	415	430	345	50	880	295	1620
Future Volume (vph)	60	415	430	345	50	880	295	1620
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases								
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	7.0	10.0	7.0	10.0	7.0	20.0	7.0	20.0
Minimum Split (s)	11.0	45.5	11.0	45.5	11.0	49.7	11.0	49.7
Total Split (s)	22.0	46.0	22.0	46.0	11.0	51.0	11.0	51.0
Total Split (%)	16.9%	35.4%	16.9%	35.4%	8.5%	39.2%	8.5%	39.2%
Yellow Time (s)	3.0	4.2	3.0	4.2	3.0	4.2	3.0	4.2
All-Red Time (s)	1.0	3.3	1.0	3.3	1.0	3.5	1.0	3.5
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.5	3.0	6.5	3.0	6.7	3.0	6.7
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	9.0	25.2	18.8	37.2	8.7	45.0	21.8	60.3
Actuated g/C Ratio	0.07	0.19	0.14	0.29	0.07	0.35	0.17	0.46
v/c Ratio	0.26	0.76	0.87	0.36	0.22	0.74	0.50	0.81
Control Delay	59.9	46.4	68.7	30.5	59.6	39.7	55.4	43.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.9	46.4	68.7	30.5	59.6	39.7	55.4	43.9
LOS	E	D	E	C	E	D	E	D
Approach Delay		47.5		48.9		40.6		45.6
Approach LOS		D		D		D		D

Intersection Summary		
Cycle Length: 130		
Actuated Cycle Length: 130		
Offset: 104 (80%), Referenced to phase 2:NBT and 6:SBT, Start of Green		
Natural Cycle: 130		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.87		
Intersection Signal Delay: 45.3	Intersection LOS: D	
Intersection Capacity Utilization 81.8%	ICU Level of Service D	
Analysis Period (min) 15		

Splits and Phases: 7: Regional Rd 25 & Britannia Rd



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	60	700	430	460	50	1105	295	1635
v/c Ratio	0.26	0.76	0.87	0.36	0.22	0.74	0.50	0.81
Control Delay	59.9	46.4	68.7	30.5	59.6	39.7	55.4	43.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.9	46.4	68.7	30.5	59.6	39.7	55.4	43.9
Queue Length 50th (m)	8.0	62.7	59.0	36.3	6.7	105.0	43.7	147.0
Queue Length 95th (m)	15.3	76.0	#86.2	50.0	13.4	127.2	59.3	#214.8
Internal Link Dist (m)		377.9		182.4		165.3		292.1
Turn Bay Length (m)	60.0		120.0		90.0		90.0	
Base Capacity (vph)	482	1370	503	1360	225	1486	586	2008
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	0.12	0.51	0.85	0.34	0.22	0.74	0.50	0.81

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	415	285	430	345	115	50	880	225	295	1620	15
Future Volume (vph)	60	415	285	430	345	115	50	880	225	295	1620	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.5		3.0	6.5		3.0	6.7		3.0	6.7	
Lane Util. Factor	0.97	*0.80		0.97	*0.80		0.97	*0.80		0.97	*0.80	
Frt	1.00	0.94		1.00	0.96		1.00	0.97		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3303	4239		3445	4335		3367	4218		3502	4329	
Flt Permitted	0.95	1.00		1.00	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3303	4239		3445	4335		3367	4218		3502	4329	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	60	415	285	430	345	115	50	880	225	295	1620	15
RTOR Reduction (vph)	0	94	0	0	42	0	0	26	0	0	1	0
Lane Group Flow (vph)	60	606	0	430	418	0	50	1079	0	295	1634	0
Heavy Vehicles (%)	6%	1%	1%	7%	1%	2%	4%	5%	4%	0%	5%	27%
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	6.6	25.0		17.8	36.2		6.3	43.2		20.8	57.7	
Effective Green, g (s)	7.6	26.0		18.8	37.2		7.3	44.2		21.8	58.7	
Actuated g/C Ratio	0.06	0.20		0.14	0.29		0.06	0.34		0.17	0.45	
Clearance Time (s)	4.0	7.5		4.0	7.5		4.0	7.7		4.0	7.7	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	193	847		498	1240		189	1434		587	1954	
v/s Ratio Prot	0.02	c0.14		c0.12	0.10		0.01	0.26		c0.08	c0.38	
v/s Ratio Perm												
v/c Ratio	0.31	0.71		0.86	0.34		0.26	0.75		0.50	0.84	
Uniform Delay, d1	58.7	48.5		54.3	36.7		58.8	38.0		49.2	31.4	
Progression Factor	1.00	1.00		0.93	0.93		1.00	1.00		1.04	1.30	
Incremental Delay, d2	0.9	2.9		14.2	0.2		0.8	3.7		0.6	3.6	
Delay (s)	59.6	51.4		64.8	34.1		59.5	41.7		51.9	44.4	
Level of Service	E	D		E	C		E	D		D	D	
Approach Delay (s)		52.1			48.9			42.5			45.5	
Approach LOS		D			D			D			D	

Intersection Summary				
HCM 2000 Control Delay	46.5	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.79			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	19.2	
Intersection Capacity Utilization	81.8%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	20	670	385	90	20
Future Volume (vph)	20	670	385	90	20
Turn Type	pm+pt	NA	NA	Prot	Perm
Protected Phases	5	2	6	8	
Permitted Phases	2				8
Detector Phase	5	2	6	8	8
Switch Phase					
Minimum Initial (s)	7.0	20.0	20.0	10.0	10.0
Minimum Split (s)	11.0	29.4	29.4	15.3	15.3
Total Split (s)	11.0	64.0	53.0	41.0	41.0
Total Split (%)	10.5%	61.0%	50.5%	39.0%	39.0%
Yellow Time (s)	3.0	4.2	4.2	3.3	3.3
All-Red Time (s)	1.0	2.2	2.2	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	5.4	5.4	4.3	4.3
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	None	None
Act Effct Green (s)	88.0	86.7	82.3	12.8	12.8
Actuated g/C Ratio	0.84	0.83	0.78	0.12	0.12
v/c Ratio	0.03	0.18	0.12	0.43	0.10
Control Delay	2.4	2.8	4.4	49.0	17.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	2.4	2.8	4.4	49.0	17.3
LOS	A	A	A	D	B
Approach Delay		2.8	4.4	43.2	
Approach LOS		A	A	D	

Intersection Summary			
Cycle Length: 105			
Actuated Cycle Length: 105			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.43			
Intersection Signal Delay: 7.0		Intersection LOS: A	
Intersection Capacity Utilization 33.1%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 10: Britannia Rd & Farmstead Dr

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	20	670	410	90	20
v/c Ratio	0.03	0.18	0.12	0.43	0.10
Control Delay	2.4	2.8	4.4	49.0	17.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	2.4	2.8	4.4	49.0	17.3
Queue Length 50th (m)	0.6	11.4	6.3	18.4	0.0
Queue Length 95th (m)	2.3	18.8	17.5	33.1	7.0
Internal Link Dist (m)		101.0	377.9	199.3	
Turn Bay Length (m)	20.0				
Base Capacity (vph)	733	3653	3295	595	550
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.03	0.18	0.12	0.15	0.04

Intersection Summary

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	20	670	385	25	90	20
Future Volume (vph)	20	670	385	25	90	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.4	5.4		4.3	4.3
Lane Util. Factor	1.00	*0.80	*0.80		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1656	4427	4203		1703	1538
Flt Permitted	0.46	1.00	1.00		0.95	1.00
Satd. Flow (perm)	797	4427	4203		1703	1538
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	20	670	385	25	90	20
RTOR Reduction (vph)	0	0	3	0	0	18
Lane Group Flow (vph)	20	670	407	0	90	2
Heavy Vehicles (%)	9%	3%	8%	0%	6%	5%
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		8	
Permitted Phases	2					8
Actuated Green, G (s)	83.5	83.5	76.7		9.8	9.8
Effective Green, g (s)	84.5	84.5	77.7		10.8	10.8
Actuated g/C Ratio	0.80	0.80	0.74		0.10	0.10
Clearance Time (s)	4.0	6.4	6.4		5.3	5.3
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	672	3562	3110		175	158
v/s Ratio Prot	0.00	c0.15	0.10		c0.05	
v/s Ratio Perm	0.02					0.00
v/c Ratio	0.03	0.19	0.13		0.51	0.01
Uniform Delay, d1	2.1	2.4	3.9		44.6	42.3
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.0	0.1	0.1		2.5	0.0
Delay (s)	2.1	2.5	4.0		47.2	42.3
Level of Service	A	A	A		D	D
Approach Delay (s)		2.5	4.0		46.3	
Approach LOS		A	A		D	

Intersection Summary				
HCM 2000 Control Delay	7.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.23		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	12.7
Intersection Capacity Utilization	33.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	25	910	815	55	75
Future Volume (vph)	25	910	815	55	75
Turn Type	pm+pt	NA	NA	Prot	Perm
Protected Phases	5	2	6	4	
Permitted Phases	2				4
Detector Phase	5	2	6	4	4
Switch Phase					
Minimum Initial (s)	7.0	20.0	20.0	10.0	10.0
Minimum Split (s)	11.0	29.0	29.0	43.0	43.0
Total Split (s)	15.0	80.0	65.0	50.0	50.0
Total Split (%)	11.5%	61.5%	50.0%	38.5%	38.5%
Yellow Time (s)	3.0	4.0	4.0	3.0	3.0
All-Red Time (s)	1.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.0	6.0	5.0	5.0
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	None	None
Act Effct Green (s)	110.2	107.2	100.6	11.8	11.8
Actuated g/C Ratio	0.85	0.82	0.77	0.09	0.09
v/c Ratio	0.05	0.24	0.23	0.34	0.35
Control Delay	4.2	6.3	4.7	61.1	16.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	4.2	6.3	4.7	61.1	16.3
LOS	A	A	A	E	B
Approach Delay		6.2	4.7	35.2	
Approach LOS		A	A	D	

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.35			
Intersection Signal Delay: 7.5		Intersection LOS: A	
Intersection Capacity Utilization 38.3%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 11: Britannia Rd & Rose Way

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	25	910	825	55	75
v/c Ratio	0.05	0.24	0.23	0.34	0.35
Control Delay	4.2	6.3	4.7	61.1	16.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	4.2	6.3	4.7	61.1	16.3
Queue Length 50th (m)	2.0	41.4	25.1	14.3	0.0
Queue Length 95th (m)	m3.7	49.5	34.0	27.8	15.3
Internal Link Dist (m)		182.4	155.7	76.0	
Turn Bay Length (m)	50.0			50.0	
Base Capacity (vph)	568	3761	3523	624	608
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.04	0.24	0.23	0.09	0.12

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

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	25	910	815	10	55	75
Future Volume (vph)	25	910	815	10	55	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0		5.0	5.0
Lane Util. Factor	1.00	*0.80	*0.80		1.00	1.00
Frt	1.00	1.00	1.00		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1805	4560	4552		1805	1615
Flt Permitted	0.28	1.00	1.00		0.95	1.00
Satd. Flow (perm)	532	4560	4552		1805	1615
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	25	910	815	10	55	75
RTOR Reduction (vph)	0	0	0	0	0	68
Lane Group Flow (vph)	25	910	825	0	55	7
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)	106.2	106.2	98.0		10.8	10.8
Effective Green, g (s)	107.2	107.2	99.0		11.8	11.8
Actuated g/C Ratio	0.82	0.82	0.76		0.09	0.09
Clearance Time (s)	4.0	7.0	7.0		6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	489	3760	3466		163	146
v/s Ratio Prot	0.00	c0.20	0.18		c0.03	
v/s Ratio Perm	0.04					0.00
v/c Ratio	0.05	0.24	0.24		0.34	0.05
Uniform Delay, d1	2.1	2.5	4.5		55.4	54.0
Progression Factor	2.47	2.40	1.00		1.00	1.00
Incremental Delay, d2	0.0	0.1	0.2		1.2	0.1
Delay (s)	5.2	6.1	4.7		56.7	54.1
Level of Service	A	A	A		E	D
Approach Delay (s)		6.1	4.7		55.2	
Approach LOS		A	A		E	

Intersection Summary				
HCM 2000 Control Delay	8.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.26		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	38.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	205	375	330	545	210	980	95	880
Future Volume (vph)	205	375	330	545	210	980	95	880
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	5.0	10.0	10.0	10.0	5.0	20.0	5.0	20.0
Minimum Split (s)	9.0	30.0	14.0	30.0	9.0	32.2	9.0	32.2
Total Split (s)	22.0	30.0	32.0	40.0	22.0	68.0	10.0	56.0
Total Split (%)	15.7%	21.4%	22.9%	28.6%	15.7%	48.6%	7.1%	40.0%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	4.2	3.0	4.2
All-Red Time (s)	1.0	3.0	0.0	3.0	1.0	3.0	1.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.0	2.0	6.0	3.0	6.2	3.0	6.2
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	43.7	23.9	54.3	30.4	80.6	66.5	70.8	59.5
Actuated g/C Ratio	0.31	0.17	0.39	0.22	0.58	0.48	0.51	0.42
v/c Ratio	0.70	0.81	0.81	0.79	0.68	0.70	0.53	0.58
Control Delay	44.4	63.9	48.4	58.7	28.6	29.7	29.9	33.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.4	63.9	48.4	58.7	28.6	29.7	29.9	33.0
LOS	D	E	D	E	C	C	C	C
Approach Delay		58.1		55.1		29.5		32.7
Approach LOS		E		E		C		C

Intersection Summary			
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 40.3		Intersection LOS: D	
Intersection Capacity Utilization 84.0%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 1: Regional Rd 25 & Louis St Laurent Ave

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	205	490	330	610	210	1410	95	1075
v/c Ratio	0.70	0.81	0.81	0.79	0.68	0.70	0.53	0.58
Control Delay	44.4	63.9	48.4	58.7	28.6	29.7	29.9	33.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.4	63.9	48.4	58.7	28.6	29.7	29.9	33.0
Queue Length 50th (m)	40.9	68.7	69.7	87.4	28.9	129.2	12.2	97.6
Queue Length 95th (m)	59.7	90.8	98.6	106.9	53.1	154.1	#28.3	128.6
Internal Link Dist (m)		126.1		117.1		481.0		113.5
Turn Bay Length (m)	90.0		35.0		65.0		80.0	
Base Capacity (vph)	319	633	470	865	355	2019	179	1838
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	0.64	0.77	0.70	0.71	0.59	0.70	0.53	0.58

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	205	375	115	330	545	65	210	980	430	95	880	195
Future Volume (vph)	205	375	115	330	545	65	210	980	430	95	880	195
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0		2.0	6.0		3.0	6.2		3.0	6.2	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	*0.80		1.00	*0.80	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.98		1.00	0.95		1.00	0.97	
Flt Protected	0.95	1.00		1.00	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1769	3439		1899	3537		1787	4139		1805	4280	
Flt Permitted	0.22	1.00		0.19	1.00		0.14	1.00		0.09	1.00	
Satd. Flow (perm)	413	3439		364	3537		255	4139		172	4280	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	205	375	115	330	545	65	210	980	430	95	880	195
RTOR Reduction (vph)	0	21	0	0	7	0	0	53	0	0	18	0
Lane Group Flow (vph)	205	469	0	330	603	0	210	1357	0	95	1057	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Heavy Vehicles (%)	2%	1%	0%	0%	0%	2%	1%	6%	1%	0%	4%	0%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	38.8	22.9		49.3	29.4		76.5	65.5		65.5	58.5	
Effective Green, g (s)	40.8	23.9		50.3	30.4		77.5	66.5		67.5	59.5	
Actuated g/C Ratio	0.29	0.17		0.36	0.22		0.55	0.48		0.48	0.42	
Clearance Time (s)	4.0	7.0		3.0	7.0		4.0	7.2		4.0	7.2	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	284	587		398	768		305	1966		176	1819	
v/s Ratio Prot	0.09	0.14		c0.14	c0.17		c0.07	c0.33		0.03	0.25	
v/s Ratio Perm	0.12			0.15			0.31			0.23		
v/c Ratio	0.72	0.80		0.83	0.79		0.69	0.69		0.54	0.58	
Uniform Delay, d1	40.4	55.7		36.1	51.7		19.9	28.7		22.6	30.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	8.7	7.5		13.3	5.3		6.3	2.0		3.2	1.4	
Delay (s)	49.1	63.3		49.4	57.0		26.2	30.7		25.7	32.1	
Level of Service	D	E		D	E		C	C		C	C	
Approach Delay (s)		59.1			54.4			30.1			31.6	
Approach LOS		E			D			C			C	

Intersection Summary				
HCM 2000 Control Delay	40.2	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.77			
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.2	
Intersection Capacity Utilization	84.0%	ICU Level of Service	E	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	105	40	25	40	75	90	1620	60	1070
Future Volume (vph)	105	40	25	40	75	90	1620	60	1070
Turn Type	Perm	NA	Perm	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases		4		8		5	2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	7.0	20.0	7.0	20.0
Minimum Split (s)	37.5	37.5	37.5	37.5	37.5	11.0	35.5	11.0	35.5
Total Split (s)	38.0	38.0	38.0	38.0	38.0	11.0	81.0	11.0	81.0
Total Split (%)	29.2%	29.2%	29.2%	29.2%	29.2%	8.5%	62.3%	8.5%	62.3%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.0	4.2	3.0	4.2
All-Red Time (s)	3.2	3.2	3.2	3.2	3.2	1.0	2.3	1.0	2.3
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	3.0	5.5	3.0	5.5
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	16.6	16.6	16.6	16.6	16.6	102.7	93.4	101.8	91.1
Actuated g/C Ratio	0.13	0.13	0.13	0.13	0.13	0.79	0.72	0.78	0.70
v/c Ratio	0.60	0.32	0.15	0.17	0.29	0.27	0.53	0.26	0.40
Control Delay	67.4	31.8	50.2	50.0	13.0	2.7	5.6	6.0	8.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.4	31.8	50.2	50.0	13.0	2.7	5.6	6.0	8.9
LOS	E	C	D	D	B	A	A	A	A
Approach Delay		52.0		30.2			5.4		8.7
Approach LOS		D		C			A		A

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 40 (31%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.60			
Intersection Signal Delay: 10.3		Intersection LOS: B	
Intersection Capacity Utilization 65.3%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Regional Rd 25 & Whitlock Ave

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	105	80	25	40	75	90	1660	60	1205
v/c Ratio	0.60	0.32	0.15	0.17	0.29	0.27	0.53	0.26	0.40
Control Delay	67.4	31.8	50.2	50.0	13.0	2.7	5.6	6.0	8.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.4	31.8	50.2	50.0	13.0	2.7	5.6	6.0	8.9
Queue Length 50th (m)	27.2	10.6	6.1	9.8	0.0	1.6	46.4	2.6	49.2
Queue Length 95th (m)	45.1	25.0	14.4	20.3	14.0	4.5	63.7	6.9	72.4
Internal Link Dist (m)		62.9		68.1			696.9		481.0
Turn Bay Length (m)	35.0		65.0		65.0	100.0		100.0	
Base Capacity (vph)	341	452	333	475	441	337	3111	229	2989
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	0.31	0.18	0.08	0.08	0.17	0.27	0.53	0.26	0.40

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	40	40	25	40	75	90	1620	40	60	1070	135
Future Volume (vph)	105	40	40	25	40	75	90	1620	40	60	1070	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5		5.5	5.5	5.5	3.0	5.5		3.0	5.5	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	*0.80		1.00	*0.80	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		0.99	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.93		1.00	1.00	0.85	1.00	1.00		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1776	1699		1795	1900	1539	1787	4329		1770	4257	
Flt Permitted	0.73	1.00		0.70	1.00	1.00	0.16	1.00		0.09	1.00	
Satd. Flow (perm)	1367	1699		1332	1900	1539	308	4329		164	4257	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	105	40	40	25	40	75	90	1620	40	60	1070	135
RTOR Reduction (vph)	0	32	0	0	0	65	0	1	0	0	7	0
Lane Group Flow (vph)	105	48	0	25	40	10	90	1659	0	60	1198	0
Confl. Peds. (#/hr)	5		5	5		5			5	5		
Heavy Vehicles (%)	1%	5%	0%	0%	0%	3%	1%	5%	0%	2%	6%	0%
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	15.6	15.6		15.6	15.6	15.6	99.0	91.6		95.8	90.0	
Effective Green, g (s)	16.6	16.6		16.6	16.6	16.6	101.0	92.6		97.8	91.0	
Actuated g/C Ratio	0.13	0.13		0.13	0.13	0.13	0.78	0.71		0.75	0.70	
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	4.0	6.5		4.0	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	174	216		170	242	196	334	3083		207	2979	
v/s Ratio Prot		0.03			0.02		c0.02	c0.38		c0.02	0.28	
v/s Ratio Perm	c0.08			0.02		0.01	0.19			0.20		
v/c Ratio	0.60	0.22		0.15	0.17	0.05	0.27	0.54		0.29	0.40	
Uniform Delay, d1	53.6	50.9		50.4	50.5	49.8	4.1	8.7		5.6	8.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00	0.33	0.53		1.00	1.00	
Incremental Delay, d2	5.8	0.5		0.4	0.3	0.1	0.4	0.6		0.8	0.4	
Delay (s)	59.4	51.4		50.8	50.9	49.9	1.7	5.2		6.4	8.5	
Level of Service	E	D		D	D	D	A	A		A	A	
Approach Delay (s)		55.9			50.3			5.1			8.4	
Approach LOS		E			D			A			A	

Intersection Summary				
HCM 2000 Control Delay	11.1	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.54			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	14.0	
Intersection Capacity Utilization	65.3%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	75	0	40	0	60	1635	55	965
Future Volume (vph)	75	0	40	0	60	1635	55	965
Turn Type	pm+pt	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases	7	4		8	5	2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	7	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	7.0	10.0	10.0	10.0	7.0	20.0	7.0	20.0
Minimum Split (s)	11.0	36.2	36.2	36.2	11.0	38.4	11.0	38.4
Total Split (s)	12.0	49.0	37.0	37.0	11.0	70.0	11.0	70.0
Total Split (%)	9.2%	37.7%	28.5%	28.5%	8.5%	53.8%	8.5%	53.8%
Yellow Time (s)	3.0	3.3	3.3	3.3	3.0	4.2	3.0	4.2
All-Red Time (s)	1.0	2.9	2.9	2.9	1.0	2.2	1.0	2.2
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	5.2	5.2	5.2	3.0	5.4	3.0	5.4
Lead/Lag	Lead		Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	22.5	21.3	11.7	11.7	101.2	93.3	101.5	93.5
Actuated g/C Ratio	0.17	0.16	0.09	0.09	0.78	0.72	0.78	0.72
v/c Ratio	0.33	0.06	0.31	0.13	0.16	0.54	0.25	0.35
Control Delay	48.2	0.3	62.0	0.8	3.0	6.5	10.9	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.2	0.3	62.0	0.8	3.0	6.5	10.9	3.7
LOS	D	A	E	A	A	A	B	A
Approach Delay		36.2		31.4		6.4		4.0
Approach LOS		D		C		A		A

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 103 (79%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.54			
Intersection Signal Delay: 7.1		Intersection LOS: A	
Intersection Capacity Utilization 61.9%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 5: Regional Rd 25 & Etheridge Ave/Collector Road

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	75	25	40	40	60	1700	55	1080
v/c Ratio	0.33	0.06	0.31	0.13	0.16	0.54	0.25	0.35
Control Delay	48.2	0.3	62.0	0.8	3.0	6.5	10.9	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.2	0.3	62.0	0.8	3.0	6.5	10.9	3.7
Queue Length 50th (m)	17.2	0.0	10.3	0.0	1.5	46.5	1.4	47.6
Queue Length 95th (m)	31.1	0.0	22.4	0.0	m3.0	64.9	7.1	7.5
Internal Link Dist (m)		53.9		63.5		292.1		696.9
Turn Bay Length (m)	40.0		40.0		70.0		70.0	
Base Capacity (vph)	229	664	344	531	380	3134	221	3113
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	0.33	0.04	0.12	0.08	0.16	0.54	0.25	0.35

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	0	25	40	0	40	60	1635	65	55	965	115
Future Volume (vph)	75	0	25	40	0	40	60	1635	65	55	965	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.2		5.2	5.2		3.0	5.4		3.0	5.4	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	*0.80		1.00	*0.80	
Frt	1.00	0.85		1.00	0.85		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1752	1615		1805	1615		1805	4366		1805	4323	
Flt Permitted	0.56	1.00		0.74	1.00		0.20	1.00		0.08	1.00	
Satd. Flow (perm)	1030	1615		1408	1615		374	4366		148	4323	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	75	0	25	40	0	40	60	1635	65	55	965	115
RTOR Reduction (vph)	0	21	0	0	37	0	0	2	0	0	6	0
Lane Group Flow (vph)	75	4	0	40	3	0	60	1698	0	55	1074	0
Heavy Vehicles (%)	3%	0%	0%	0%	0%	0%	0%	4%	0%	0%	4%	2%
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	19.1	19.1		8.7	8.7		94.1	88.4		94.5	88.6	
Effective Green, g (s)	20.1	20.1		9.7	9.7		96.1	89.4		96.5	89.6	
Actuated g/C Ratio	0.15	0.15		0.07	0.07		0.74	0.69		0.74	0.69	
Clearance Time (s)	4.0	6.2		6.2	6.2		4.0	6.4		4.0	6.4	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	200	249		105	120		350	3002		197	2979	
v/s Ratio Prot	c0.02	0.00			0.00		0.01	c0.39		c0.01	0.25	
v/s Ratio Perm	c0.04			0.03			0.12			0.19		
v/c Ratio	0.38	0.02		0.38	0.02		0.17	0.57		0.28	0.36	
Uniform Delay, d1	48.6	46.6		57.3	55.8		4.9	10.4		6.9	8.4	
Progression Factor	1.00	1.00		1.00	1.00		0.60	0.53		1.97	0.37	
Incremental Delay, d2	1.2	0.0		2.3	0.1		0.1	0.4		0.7	0.3	
Delay (s)	49.8	46.6		59.6	55.8		3.0	5.9		14.2	3.4	
Level of Service	D	D		E	E		A	A		B	A	
Approach Delay (s)		49.0			57.7			5.8			3.9	
Approach LOS		D			E			A			A	

Intersection Summary				
HCM 2000 Control Delay	7.9	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.53			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	16.6	
Intersection Capacity Utilization	61.9%	ICU Level of Service	B	
Analysis Period (min)	15			

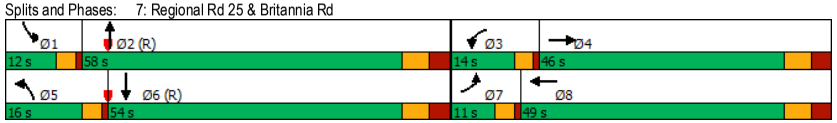
c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	40	320	300	500	250	1410	125	855
Future Volume (vph)	40	320	300	500	250	1410	125	855
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases								
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	7.0	10.0	7.0	10.0	7.0	20.0	7.0	20.0
Minimum Split (s)	11.0	45.5	11.0	45.5	11.0	49.7	11.0	49.7
Total Split (s)	11.0	46.0	14.0	49.0	16.0	58.0	12.0	54.0
Total Split (%)	8.5%	35.4%	10.8%	37.7%	12.3%	44.6%	9.2%	41.5%
Yellow Time (s)	3.0	4.2	3.0	4.2	3.0	4.2	3.0	4.2
All-Red Time (s)	1.0	3.3	1.0	3.3	1.0	3.5	1.0	3.5
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.5	3.0	6.5	3.0	6.7	3.0	6.7
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	8.0	24.5	11.0	29.7	15.5	64.2	11.0	59.7
Actuated g/C Ratio	0.06	0.19	0.08	0.23	0.12	0.49	0.08	0.46
v/c Ratio	0.20	0.42	0.98	0.76	0.60	0.87	0.43	0.45
Control Delay	60.5	45.0	123.2	39.0	60.1	35.0	74.4	17.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.5	45.0	123.2	39.0	60.1	35.0	74.4	17.6
LOS	E	D	F	D	E	D	E	B
Approach Delay		46.6		61.8		38.0		24.5
Approach LOS		D		E		D		C

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 104 (80%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 130
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.98
Intersection Signal Delay: 41.4 — Intersection LOS: D
Intersection Capacity Utilization 83.6% — ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 7: Regional Rd 25 & Britannia Rd



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	40	360	300	810	250	1875	125	905
v/c Ratio	0.20	0.42	0.98	0.76	0.60	0.87	0.43	0.45
Control Delay	60.5	45.0	123.2	39.0	60.1	35.0	74.4	17.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.5	45.0	123.2	39.0	60.1	35.0	74.4	17.6
Queue Length 50th (m)	5.3	34.1	44.6	45.5	33.4	181.3	17.8	35.1
Queue Length 95th (m)	11.7	43.2	#74.9	48.5	46.3	#258.8	29.2	40.7
Internal Link Dist (m)		377.9		190.1		165.3		292.1
Turn Bay Length (m)	60.0		120.0		90.0		90.0	
Base Capacity (vph)	203	1371	305	1478	425	2146	298	2007
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	0.20	0.26	0.98	0.55	0.59	0.87	0.42	0.45

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	320	40	300	500	310	250	1410	465	125	855	50
Future Volume (vph)	40	320	40	300	500	310	250	1410	465	125	855	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.5		3.0	6.5		3.0	6.7		3.0	6.7	
Lane Util. Factor	0.97	*0.80		0.97	*0.80		0.97	*0.80		0.97	*0.80	
Frt	1.00	0.98		1.00	0.94		1.00	0.96		1.00	0.99	
Flt Protected	0.95	1.00		1.00	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3303	4484		3614	4256		3502	4273		3467	4358	
Flt Permitted	0.95	1.00		1.00	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3303	4484		3614	4256		3502	4273		3467	4358	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	40	320	40	300	500	310	250	1410	465	125	855	50
RTOR Reduction (vph)	0	11	0	0	99	0	0	34	0	0	4	0
Lane Group Flow (vph)	40	349	0	300	711	0	250	1841	0	125	901	0
Heavy Vehicles (%)	6%	0%	0%	2%	1%	1%	0%	3%	2%	1%	4%	0%
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	5.6	24.3		10.0	28.7		14.5	62.5		10.0	58.0	
Effective Green, g (s)	6.6	25.3		11.0	29.7		15.5	63.5		11.0	59.0	
Actuated g/C Ratio	0.05	0.19		0.08	0.23		0.12	0.49		0.08	0.45	
Clearance Time (s)	4.0	7.5		4.0	7.5		4.0	7.7		4.0	7.7	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	167	872		305	972		417	2087		293	1977	
v/s Ratio Prot	0.01	0.08		c0.08	c0.17		c0.07	c0.43		0.04	0.21	
v/s Ratio Perm												
v/c Ratio	0.24	0.40		0.98	0.73		0.60	0.88		0.43	0.46	
Uniform Delay, d1	59.3	45.7		59.4	46.5		54.3	29.9		56.5	24.4	
Progression Factor	1.00	1.00		1.33	0.88		1.00	1.00		1.25	0.66	
Incremental Delay, d2	0.7	0.3		45.9	2.8		2.3	5.8		1.0	0.7	
Delay (s)	60.0	46.0		124.8	43.7		56.6	35.7		71.6	17.0	
Level of Service	E	D		F	D		E	D		E	B	
Approach Delay (s)		47.4			65.6			38.2			23.6	
Approach LOS		D			E			D			C	

Intersection Summary				
HCM 2000 Control Delay	42.3	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.85			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	19.2	
Intersection Capacity Utilization	83.6%	ICU Level of Service	E	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	15	345	720	55	15
Future Volume (vph)	15	345	720	55	15
Turn Type	pm+pt	NA	NA	Prot	Perm
Protected Phases	5	2	6	8	
Permitted Phases	2				8
Detector Phase	5	2	6	8	8
Switch Phase					
Minimum Initial (s)	7.0	20.0	20.0	10.0	10.0
Minimum Split (s)	11.0	29.4	29.4	15.3	15.3
Total Split (s)	11.0	64.0	53.0	41.0	41.0
Total Split (%)	10.5%	61.0%	50.5%	39.0%	39.0%
Yellow Time (s)	3.0	4.2	4.2	3.3	3.3
All-Red Time (s)	1.0	2.2	2.2	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	5.4	5.4	4.3	4.3
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	None	None
Act Effct Green (s)	89.3	88.0	83.6	11.4	11.4
Actuated g/C Ratio	0.85	0.84	0.80	0.11	0.11
v/c Ratio	0.03	0.09	0.23	0.29	0.08
Control Delay	1.9	2.1	4.1	47.2	19.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	1.9	2.1	4.1	47.2	19.9
LOS	A	A	A	D	B
Approach Delay		2.1	4.1	41.4	
Approach LOS		A	A	D	

Intersection Summary			
Cycle Length: 105			
Actuated Cycle Length: 105			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.29			
Intersection Signal Delay: 5.6		Intersection LOS: A	
Intersection Capacity Utilization 33.1%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 10: Britannia Rd & Farmstead Dr

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	15	345	800	55	15
v/c Ratio	0.03	0.09	0.23	0.29	0.08
Control Delay	1.9	2.1	4.1	47.2	19.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	1.9	2.1	4.1	47.2	19.9
Queue Length 50th (m)	0.4	5.0	12.8	11.1	0.0
Queue Length 95th (m)	1.6	8.2	30.9	23.1	6.3
Internal Link Dist (m)		101.0	377.9	199.3	
Turn Bay Length (m)	20.0				
Base Capacity (vph)	561	3822	3549	606	574
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.03	0.09	0.23	0.09	0.03

Intersection Summary

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	15	345	720	80	55	15
Future Volume (vph)	15	345	720	80	55	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.4	5.4		4.3	4.3
Lane Util. Factor	1.00	*0.80	*0.80		1.00	1.00
Frt	1.00	1.00	0.98		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1805	4560	4452		1736	1615
Flt Permitted	0.29	1.00	1.00		0.95	1.00
Satd. Flow (perm)	548	4560	4452		1736	1615
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	15	345	720	80	55	15
RTOR Reduction (vph)	0	0	5	0	0	14
Lane Group Flow (vph)	15	345	795	0	55	1
Heavy Vehicles (%)	0%	0%	1%	0%	4%	0%
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		8	
Permitted Phases	2					8
Actuated Green, G (s)	84.9	84.9	78.1		8.4	8.4
Effective Green, g (s)	85.9	85.9	79.1		9.4	9.4
Actuated g/C Ratio	0.82	0.82	0.75		0.09	0.09
Clearance Time (s)	4.0	6.4	6.4		5.3	5.3
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	493	3730	3353		155	144
v/s Ratio Prot	0.00	c0.08	c0.18		c0.03	
v/s Ratio Perm	0.02					0.00
v/c Ratio	0.03	0.09	0.24		0.35	0.01
Uniform Delay, d1	1.8	1.9	3.9		44.9	43.6
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.0	0.0	0.2		1.4	0.0
Delay (s)	1.8	1.9	4.1		46.3	43.6
Level of Service	A	A	A		D	D
Approach Delay (s)		1.9	4.1		45.8	
Approach LOS		A	A		D	

Intersection Summary				
HCM 2000 Control Delay	5.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.24		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	12.7
Intersection Capacity Utilization	33.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

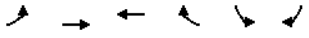
Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	80	830	1060	30	50
Future Volume (vph)	80	830	1060	30	50
Turn Type	pm+pt	NA	NA	Prot	Perm
Protected Phases	5	2	6	4	
Permitted Phases	2				4
Detector Phase	5	2	6	4	4
Switch Phase					
Minimum Initial (s)	7.0	20.0	20.0	10.0	10.0
Minimum Split (s)	11.0	29.0	29.0	43.0	43.0
Total Split (s)	15.0	80.0	65.0	50.0	50.0
Total Split (%)	11.5%	61.5%	50.0%	38.5%	38.5%
Yellow Time (s)	3.0	4.0	4.0	3.0	3.0
All-Red Time (s)	1.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.0	6.0	5.0	5.0
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	None	None
Act Effct Green (s)	114.2	112.4	103.5	11.0	11.0
Actuated g/C Ratio	0.88	0.86	0.80	0.08	0.08
v/c Ratio	0.20	0.21	0.31	0.20	0.27
Control Delay	2.8	2.5	5.0	58.7	18.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	2.8	2.5	5.0	58.7	18.8
LOS	A	A	A	E	B
Approach Delay		2.6	5.0	33.8	
Approach LOS		A	A	C	

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 65 (50%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.31			
Intersection Signal Delay: 5.0		Intersection LOS: A	
Intersection Capacity Utilization 48.5%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 11: Britannia Rd & Rose Way

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	80	830	1120	30	50
v/c Ratio	0.20	0.21	0.31	0.20	0.27
Control Delay	2.8	2.5	5.0	58.7	18.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	2.8	2.5	5.0	58.7	18.8
Queue Length 50th (m)	2.9	18.5	36.9	7.7	0.0
Queue Length 95th (m)	m4.5	m23.7	44.3	18.0	13.0
Internal Link Dist (m)		190.1	148.0	92.6	
Turn Bay Length (m)	50.0			50.0	
Base Capacity (vph)	452	3941	3604	624	591
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.18	0.21	0.31	0.05	0.08

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



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	80	830	1060	60	30	50
Future Volume (vph)	80	830	1060	60	30	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0		5.0	5.0
Lane Util. Factor	1.00	*0.80	*0.80		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1805	4560	4523		1805	1615
Flt Permitted	0.19	1.00	1.00		0.95	1.00
Satd. Flow (perm)	363	4560	4523		1805	1615
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	80	830	1060	60	30	50
RTOR Reduction (vph)	0	0	2	0	0	47
Lane Group Flow (vph)	80	830	1118	0	30	3
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)	109.0	109.0	99.4		8.0	8.0
Effective Green, g (s)	110.0	110.0	100.4		9.0	9.0
Actuated g/C Ratio	0.85	0.85	0.77		0.07	0.07
Clearance Time (s)	4.0	7.0	7.0		6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	380	3858	3493		124	111
v/s Ratio Prot	0.01	c0.18	c0.25		c0.02	
v/s Ratio Perm	0.17					0.00
v/c Ratio	0.21	0.22	0.32		0.24	0.03
Uniform Delay, d1	1.9	1.9	4.5		57.3	56.4
Progression Factor	1.35	1.24	1.00		1.00	1.00
Incremental Delay, d2	0.2	0.1	0.2		1.0	0.1
Delay (s)	2.8	2.4	4.7		58.3	56.5
Level of Service	A	A	A		E	E
Approach Delay (s)		2.5	4.7		57.2	
Approach LOS		A	A		E	

Intersection Summary				
HCM 2000 Control Delay	5.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	48.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

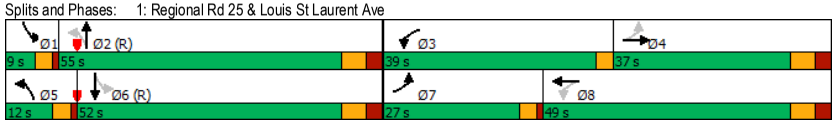
2037 Future Background Traffic Conditions

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	270	535	485	560	105	1100	65	1255
Future Volume (vph)	270	535	485	560	105	1100	65	1255
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	5.0	10.0	10.0	10.0	5.0	20.0	5.0	20.0
Minimum Split (s)	9.0	30.0	14.0	30.0	9.0	32.2	9.0	32.2
Total Split (s)	27.0	37.0	39.0	49.0	12.0	55.0	9.0	52.0
Total Split (%)	19.3%	26.4%	27.9%	35.0%	8.6%	39.3%	6.4%	37.1%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	4.2	3.0	4.2
All-Red Time (s)	1.0	3.0	0.0	3.0	1.0	3.0	1.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.0	2.0	6.0	3.0	6.2	3.0	6.2
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	52.9	31.2	72.1	46.3	62.9	52.5	57.3	47.8
Actuated g/C Ratio	0.38	0.22	0.52	0.33	0.45	0.38	0.41	0.34
v/c Ratio	0.65	0.92	0.93	0.57	0.65	0.89	0.50	0.93
Control Delay	29.6	69.1	63.1	40.4	44.1	48.5	36.3	56.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.6	69.1	63.1	40.4	44.1	48.5	36.3	56.8
LOS	C	E	E	D	D	D	D	E
Approach Delay		58.4		50.1		48.2		55.8
Approach LOS		E		D		D		E

Intersection Summary

Cycle Length: 140
Actuated Cycle Length: 140
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.93
Intersection Signal Delay: 52.7 — Intersection LOS: D
Intersection Capacity Utilization 96.8% — ICU Level of Service F
Analysis Period (min) 15

Splits and Phases: 1: Regional Rd 25 & Louis St Laurent Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	270	725	485	655	105	1405	65	1350
v/c Ratio	0.65	0.92	0.93	0.57	0.65	0.89	0.50	0.93
Control Delay	29.6	69.1	63.1	40.4	44.1	48.5	36.3	56.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.6	69.1	63.1	40.4	44.1	48.5	36.3	56.8
Queue Length 50th (m)	43.2	105.5	116.5	79.1	18.2	162.0	11.0	161.0
Queue Length 95th (m)	62.6	#144.0	#179.3	105.6	#38.0	#200.1	20.8	#200.1
Internal Link Dist (m)		126.1		117.1		481.0		113.5
Turn Bay Length (m)	90.0		35.0		65.0		80.0	
Base Capacity (vph)	479	792	548	1142	164	1584	131	1450
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	0.56	0.92	0.89	0.57	0.64	0.89	0.50	0.93

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	270	535	190	485	560	95	105	1100	305	65	1255	95
Future Volume (vph)	270	535	190	485	560	95	105	1100	305	65	1255	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0		2.0	6.0		3.0	6.2		3.0	6.2	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	*0.80		1.00	*0.80	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.98		1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00		1.00	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1767	3409		1863	3427		1703	4157		1719	4231	
Flt Permitted	0.39	1.00		0.12	1.00		0.08	1.00		0.08	1.00	
Satd. Flow (perm)	723	3409		224	3427		141	4157		151	4231	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	270	535	190	485	560	95	105	1100	305	65	1255	95
RTOR Reduction (vph)	0	26	0	0	9	0	0	27	0	0	5	0
Lane Group Flow (vph)	270	699	0	485	646	0	105	1378	0	65	1345	0
Confl. Peds. (#/hr)	5					5						
Heavy Vehicles (%)	2%	2%	1%	2%	2%	7%	6%	7%	3%	5%	7%	2%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	48.0	30.2		67.1	45.3		58.6	50.7		50.8	46.8	
Effective Green, g (s)	50.0	31.2		68.1	46.3		59.7	51.7		52.8	47.8	
Actuated g/C Ratio	0.36	0.22		0.49	0.33		0.43	0.37		0.38	0.34	
Clearance Time (s)	4.0	7.0		3.0	7.0		4.0	7.2		4.0	7.2	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	398	759		517	1133		159	1535		112	1444	
v/s Ratio Prot	0.09	c0.21		c0.23	0.19		c0.04	c0.33		0.02	0.32	
v/s Ratio Perm	0.15			0.22			0.24			0.20		
v/c Ratio	0.68	0.92		0.94	0.57		0.66	0.90		0.58	0.93	
Uniform Delay, d1	34.2	53.2		41.2	38.6		31.0	41.7		32.6	44.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.6	16.5		24.8	0.7		9.8	8.7		7.4	12.1	
Delay (s)	38.7	69.7		66.0	39.3		40.9	50.3		40.0	56.6	
Level of Service	D	E		E	D		D	D		D	E	
Approach Delay (s)		61.3			50.7			49.7			55.9	
Approach LOS		E			D			D			E	

Intersection Summary				
HCM 2000 Control Delay	53.9	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.92			
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.2	
Intersection Capacity Utilization	96.8%	ICU Level of Service	F	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	145	50	50	35	95	45	1295	50	2080
Future Volume (vph)	145	50	50	35	95	45	1295	50	2080
Turn Type	Perm	NA	Perm	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases		4		8		5	2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	7.0	20.0	7.0	20.0
Minimum Split (s)	37.5	37.5	37.5	37.5	37.5	11.0	35.5	11.0	35.5
Total Split (s)	38.0	38.0	38.0	38.0	38.0	11.0	81.0	11.0	81.0
Total Split (%)	29.2%	29.2%	29.2%	29.2%	29.2%	8.5%	62.3%	8.5%	62.3%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.0	4.2	3.0	4.2
All-Red Time (s)	3.2	3.2	3.2	3.2	3.2	1.0	2.3	1.0	2.3
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	3.0	5.5	3.0	5.5
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	20.4	20.4	20.4	20.4	20.4	98.7	89.7	98.7	89.6
Actuated g/C Ratio	0.16	0.16	0.16	0.16	0.16	0.76	0.69	0.76	0.69
v/c Ratio	0.69	0.49	0.33	0.13	0.31	0.28	0.44	0.17	0.73
Control Delay	68.1	30.2	52.5	45.3	10.9	24.8	6.1	5.5	16.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.1	30.2	52.5	45.3	10.9	24.8	6.1	5.5	16.2
LOS	E	C	D	D	B	C	A	A	B
Approach Delay		49.2		29.2			6.7		16.0
Approach LOS		D		C			A		B

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 64 (49%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 105			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 15.8		Intersection LOS: B	
Intersection Capacity Utilization 75.9%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 2: Regional Rd 25 & Whitlock Ave

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	145	145	50	35	95	45	1305	50	2180
v/c Ratio	0.69	0.49	0.33	0.13	0.31	0.28	0.44	0.17	0.73
Control Delay	68.1	30.2	52.5	45.3	10.9	24.8	6.1	5.5	16.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.1	30.2	52.5	45.3	10.9	24.8	6.1	5.5	16.2
Queue Length 50th (m)	37.5	18.2	12.1	8.2	0.0	2.9	18.2	2.6	148.1
Queue Length 95th (m)	57.3	37.4	23.8	17.1	14.7	9.6	139.4	7.2	209.2
Internal Link Dist (m)		62.9		68.1			696.9		481.0
Turn Bay Length (m)	35.0		65.0		65.0	100.0		100.0	
Base Capacity (vph)	333	431	241	439	435	159	2960	300	2973
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	0.44	0.34	0.21	0.08	0.22	0.28	0.44	0.17	0.73

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	145	50	95	50	35	95	45	1295	10	50	2080	100
Future Volume (vph)	145	50	95	50	35	95	45	1295	10	50	2080	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5		5.5	5.5	5.5	3.0	5.5		3.0	5.5	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	*0.80		1.00	*0.80	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.90		1.00	1.00	0.85	1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1725	1516		1727	1759	1455	1671	4291		1805	4309	
Flt Permitted	0.73	1.00		0.53	1.00	1.00	0.04	1.00		0.14	1.00	
Satd. Flow (perm)	1333	1516		965	1759	1455	79	4291		270	4309	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	145	50	95	50	35	95	45	1295	10	50	2080	100
RTOR Reduction (vph)	0	59	0	0	0	80	0	0	0	0	3	0
Lane Group Flow (vph)	145	86	0	50	35	15	45	1305	0	50	2177	0
Confl. Peds. (#/hr)	5		5	5		5						
Heavy Vehicles (%)	4%	32%	1%	4%	8%	9%	8%	6%	25%	0%	5%	7%
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	19.4	19.4		19.4	19.4	19.4	93.6	87.9		93.6	87.9	
Effective Green, g (s)	20.4	20.4		20.4	20.4	20.4	95.6	88.9		95.6	88.9	
Actuated g/C Ratio	0.16	0.16		0.16	0.16	0.16	0.74	0.68		0.74	0.68	
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	4.0	6.5		4.0	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	209	237		151	276	228	140	2934		277	2946	
v/s Ratio Prot		0.06			0.02		c0.02	0.30		0.01	c0.51	
v/s Ratio Perm	c0.11			0.05		0.01	0.22			0.12		
v/c Ratio	0.69	0.36		0.33	0.13	0.07	0.32	0.44		0.18	0.74	
Uniform Delay, d1	51.8	49.0		48.7	47.1	46.7	12.3	9.3		5.4	13.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00	2.60	0.55		1.00	1.00	
Incremental Delay, d2	9.6	0.9		1.3	0.2	0.1	1.3	0.5		0.3	1.7	
Delay (s)	61.4	49.9		50.0	47.3	46.8	33.3	5.6		5.7	14.8	
Level of Service	E	D		D	D	D	C	A		A	B	
Approach Delay (s)		55.7			47.8			6.5			14.6	
Approach LOS		E			D			A			B	

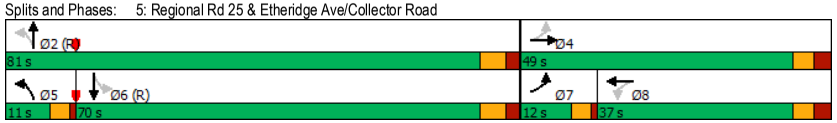
Intersection Summary				
HCM 2000 Control Delay	16.4	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.71			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	14.0	
Intersection Capacity Utilization	75.9%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	100	0	65	0	30	1195	30	2140
Future Volume (vph)	100	0	65	0	30	1195	30	2140
Turn Type	pm+pt	NA	Perm	NA	pm+pt	NA	Perm	NA
Protected Phases	7	4		8	5	2		6
Permitted Phases	4		8		2		6	
Detector Phase	7	4	8	8	5	2	6	6
Switch Phase								
Minimum Initial (s)	7.0	10.0	10.0	10.0	7.0	20.0	20.0	20.0
Minimum Split (s)	11.0	36.2	36.2	36.2	11.0	38.4	38.4	38.4
Total Split (s)	12.0	49.0	37.0	37.0	11.0	81.0	70.0	70.0
Total Split (%)	9.2%	37.7%	28.5%	28.5%	8.5%	62.3%	53.8%	53.8%
Yellow Time (s)	3.0	3.3	3.3	3.3	3.0	4.2	4.2	4.2
All-Red Time (s)	1.0	2.9	2.9	2.9	1.0	2.2	2.2	2.2
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	5.2	5.2	5.2	3.0	5.4	5.4	5.4
Lead/Lag	Lead		Lag	Lag	Lead		Lag	Lag
Lead-Lag Optimize?	Yes		Yes	Yes	Yes		Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max
Act Effct Green (s)	25.2	23.0	13.4	13.4	98.8	96.4	89.8	89.8
Actuated g/C Ratio	0.19	0.18	0.10	0.10	0.76	0.74	0.69	0.69
v/c Ratio	0.38	0.17	0.47	0.20	0.18	0.38	0.12	0.73
Control Delay	47.2	2.0	65.3	1.6	17.9	2.0	3.2	7.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.2	2.0	65.3	1.6	17.9	2.0	3.2	7.0
LOS	D	A	E	A	B	A	A	A
Approach Delay		29.4		36.1		2.4		6.9
Approach LOS		C		D		A		A

Intersection Summary		
Cycle Length: 130		
Actuated Cycle Length: 130		
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green		
Natural Cycle: 130		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.73		
Intersection Signal Delay: 7.3	Intersection LOS: A	
Intersection Capacity Utilization 63.6%	ICU Level of Service B	
Analysis Period (min) 15		

Splits and Phases: 5: Regional Rd 25 & Etheridge Ave/Collector Road



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	100	65	65	55	30	1215	30	2195
v/c Ratio	0.38	0.17	0.47	0.20	0.18	0.38	0.12	0.73
Control Delay	47.2	2.0	65.3	1.6	17.9	2.0	3.2	7.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.2	2.0	65.3	1.6	17.9	2.0	3.2	7.0
Queue Length 50th (m)	22.9	0.0	16.9	0.0	0.4	9.6	0.7	186.2
Queue Length 95th (m)	37.9	2.3	31.7	0.0	m1.5	13.8	m0.7	66.8
Internal Link Dist (m)		53.9		63.1		292.1		696.9
Turn Bay Length (m)	40.0		40.0		70.0		70.0	
Base Capacity (vph)	262	617	332	491	164	3187	241	2988
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	0.38	0.11	0.20	0.11	0.18	0.38	0.12	0.73

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	100	0	65	65	0	55	30	1195	20	30	2140	55
Future Volume (vph)	100	0	65	65	0	55	30	1195	20	30	2140	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.2		5.2	5.2		3.0	5.4		5.4	5.4	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	*0.80		1.00	*0.80	
Frt	1.00	0.85		1.00	0.85		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1787	1615		1805	1615		1752	4295		1805	4326	
Flt Permitted	0.57	1.00		0.71	1.00		0.04	1.00		0.18	1.00	
Satd. Flow (perm)	1074	1615		1358	1615		82	4295		349	4326	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	100	0	65	65	0	55	30	1195	20	30	2140	55
RTOR Reduction (vph)	0	53	0	0	50	0	0	1	0	0	1	0
Lane Group Flow (vph)	100	12	0	65	5	0	30	1214	0	30	2194	0
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	3%	6%	0%	0%	5%	6%
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases	7	4			8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	23.2	23.2		10.4	10.4		94.2	94.2		86.0	86.0	
Effective Green, g (s)	24.2	24.2		11.4	11.4		95.2	95.2		87.0	87.0	
Actuated g/C Ratio	0.19	0.19		0.09	0.09		0.73	0.73		0.67	0.67	
Clearance Time (s)	4.0	6.2		6.2	6.2		4.0	6.4		6.4	6.4	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	253	300		119	141		126	3145		233	2895	
v/s Ratio Prot	c0.03	0.01			0.00		0.01	c0.28			c0.51	
v/s Ratio Perm	0.04			c0.05			0.16			0.09		
v/c Ratio	0.40	0.04		0.55	0.03		0.24	0.39		0.13	0.76	
Uniform Delay, d1	45.6	43.4		56.8	54.3		13.2	6.5		7.8	14.4	
Progression Factor	1.00	1.00		1.00	1.00		3.31	0.27		0.23	0.39	
Incremental Delay, d2	1.0	0.1		5.0	0.1		0.6	0.2		0.8	1.3	
Delay (s)	46.7	43.4		61.9	54.4		44.1	1.9		2.6	6.9	
Level of Service	D	D		E	D		D	A		A	A	
Approach Delay (s)		45.4			58.4			3.0			6.9	
Approach LOS		D			E			A			A	

Intersection Summary				
HCM 2000 Control Delay	8.9	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.69			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	16.6	
Intersection Capacity Utilization	63.6%	ICU Level of Service	B	
Analysis Period (min)	15			

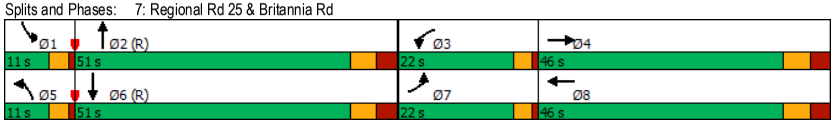
c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	65	455	465	380	55	1055	325	1930
Future Volume (vph)	65	455	465	380	55	1055	325	1930
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases								
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	7.0	10.0	7.0	10.0	7.0	20.0	7.0	20.0
Minimum Split (s)	11.0	45.5	11.0	45.5	11.0	49.7	11.0	49.7
Total Split (s)	22.0	46.0	22.0	46.0	11.0	51.0	11.0	51.0
Total Split (%)	16.9%	35.4%	16.9%	35.4%	8.5%	39.2%	8.5%	39.2%
Yellow Time (s)	3.0	4.2	3.0	4.2	3.0	4.2	3.0	4.2
All-Red Time (s)	1.0	3.3	1.0	3.3	1.0	3.5	1.0	3.5
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.5	3.0	6.5	3.0	6.7	3.0	6.7
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	9.2	27.8	19.0	39.8	8.8	44.3	19.7	57.3
Actuated g/C Ratio	0.07	0.21	0.15	0.31	0.07	0.34	0.15	0.44
v/c Ratio	0.28	0.87dr	0.92	0.37	0.24	0.89	0.61	1.02
Control Delay	60.0	45.9	76.0	30.3	59.7	48.0	56.9	66.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.0	45.9	76.0	30.3	59.7	48.0	56.9	66.2
LOS	E	D	E	C	E	D	E	E
Approach Delay		47.0		52.2		48.5		64.9
Approach LOS		D		D		D		E

Intersection Summary		
Cycle Length: 130		
Actuated Cycle Length: 130		
Offset: 104 (80%), Referenced to phase 2:NBT and 6:SBT, Start of Green		
Natural Cycle: 150		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 1.02		
Intersection Signal Delay: 55.8	Intersection LOS: E	
Intersection Capacity Utilization 90.2%	ICU Level of Service E	
Analysis Period (min) 15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Splits and Phases: 7: Regional Rd 25 & Britannia Rd



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	65	770	465	505	55	1300	325	1945
v/c Ratio	0.28	0.87dr	0.92	0.37	0.24	0.89	0.61	1.02
Control Delay	60.0	45.9	76.0	30.3	59.7	48.0	56.9	66.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.0	45.9	76.0	30.3	59.7	48.0	56.9	66.2
Queue Length 50th (m)	8.7	70.3	64.6	41.1	7.4	134.6	48.2	~232.8
Queue Length 95th (m)	16.3	83.0	#97.4	54.8	14.3	158.7	#75.7	#302.4
Internal Link Dist (m)		377.9		182.4		165.3		292.1
Turn Bay Length (m)	60.0		120.0		90.0		90.0	
Base Capacity (vph)	482	1368	503	1400	229	1464	530	1911
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	0.13	0.56	0.92	0.36	0.24	0.89	0.61	1.02

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	455	315	465	380	125	55	1055	245	325	1930	15
Future Volume (vph)	65	455	315	465	380	125	55	1055	245	325	1930	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.5		3.0	6.5		3.0	6.7		3.0	6.7	
Lane Util. Factor	0.97	*0.80		0.97	*0.80		0.97	*0.80		0.97	*0.80	
Frt	1.00	0.94		1.00	0.96		1.00	0.97		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3303	4238		3445	4337		3367	4228		3502	4331	
Flt Permitted	0.95	1.00		1.00	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3303	4238		3445	4337		3367	4228		3502	4331	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	65	455	315	465	380	125	55	1055	245	325	1930	15
RTOR Reduction (vph)	0	90	0	0	40	0	0	23	0	0	1	0
Lane Group Flow (vph)	65	680	0	465	465	0	55	1277	0	325	1944	0
Heavy Vehicles (%)	6%	1%	1%	7%	1%	2%	4%	5%	4%	0%	5%	27%
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	6.8	27.6		18.0	38.8		6.4	42.5		18.7	54.8	
Effective Green, g (s)	7.8	28.6		19.0	39.8		7.4	43.5		19.7	55.8	
Actuated g/C Ratio	0.06	0.22		0.15	0.31		0.06	0.33		0.15	0.43	
Clearance Time (s)	4.0	7.5		4.0	7.5		4.0	7.7		4.0	7.7	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	198	932		503	1327		191	1414		530	1858	
v/s Ratio Prot	0.02	c0.16		c0.13	0.11		0.02	0.30		c0.09	c0.45	
v/s Ratio Perm												
v/c Ratio	0.33	0.87dr		0.92	0.35		0.29	0.90		0.61	1.05	
Uniform Delay, d1	58.6	47.1		54.8	35.1		58.8	41.2		51.6	37.1	
Progression Factor	1.00	1.00		0.93	0.95		1.00	1.00		1.01	1.26	
Incremental Delay, d2	1.0	2.9		22.5	0.2		0.8	9.7		1.5	31.2	
Delay (s)	59.6	50.0		73.4	33.5		59.6	50.9		53.4	78.0	
Level of Service	E	D		E	C		E	D		D	E	
Approach Delay (s)		50.7			52.6			51.3			74.5	
Approach LOS		D			D			D			E	

Intersection Summary

HCM 2000 Control Delay	61.1	HCM 2000 Level of Service	E		
HCM 2000 Volume to Capacity ratio	0.92				
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	19.2		
Intersection Capacity Utilization	90.2%	ICU Level of Service	E		
Analysis Period (min)	15				

dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	20	745	425	90	20
Future Volume (vph)	20	745	425	90	20
Turn Type	pm+pt	NA	NA	Prot	Perm
Protected Phases	5	2	6	8	
Permitted Phases	2				8
Detector Phase	5	2	6	8	8
Switch Phase					
Minimum Initial (s)	7.0	20.0	20.0	10.0	10.0
Minimum Split (s)	11.0	29.4	29.4	15.3	15.3
Total Split (s)	11.0	64.0	53.0	41.0	41.0
Total Split (%)	10.5%	61.0%	50.5%	39.0%	39.0%
Yellow Time (s)	3.0	4.2	4.2	3.3	3.3
All-Red Time (s)	1.0	2.2	2.2	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	5.4	5.4	4.3	4.3
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	None	None
Act Effct Green (s)	88.0	86.7	82.3	12.8	12.8
Actuated g/C Ratio	0.84	0.83	0.78	0.12	0.12
v/c Ratio	0.03	0.20	0.14	0.43	0.10
Control Delay	2.4	2.8	4.4	49.0	17.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	2.4	2.8	4.4	49.0	17.3
LOS	A	A	A	D	B
Approach Delay		2.8	4.4	43.2	
Approach LOS		A	A	D	

Intersection Summary			
Cycle Length: 105			
Actuated Cycle Length: 105			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.43			
Intersection Signal Delay: 6.7		Intersection LOS: A	
Intersection Capacity Utilization 33.1%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 10: Britannia Rd & Farmstead Dr

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	20	745	450	90	20
v/c Ratio	0.03	0.20	0.14	0.43	0.10
Control Delay	2.4	2.8	4.4	49.0	17.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	2.4	2.8	4.4	49.0	17.3
Queue Length 50th (m)	0.6	12.9	7.1	18.4	0.0
Queue Length 95th (m)	2.3	21.1	19.2	33.1	7.0
Internal Link Dist (m)		101.0	377.9	199.3	
Turn Bay Length (m)	20.0				
Base Capacity (vph)	705	3653	3297	595	550
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.03	0.20	0.14	0.15	0.04

Intersection Summary

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	20	745	425	25	90	20
Future Volume (vph)	20	745	425	25	90	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.4	5.4		4.3	4.3
Lane Util. Factor	1.00	*0.80	*0.80		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1656	4427	4204		1703	1538
Flt Permitted	0.44	1.00	1.00		0.95	1.00
Satd. Flow (perm)	761	4427	4204		1703	1538
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	20	745	425	25	90	20
RTOR Reduction (vph)	0	0	3	0	0	18
Lane Group Flow (vph)	20	745	447	0	90	2
Heavy Vehicles (%)	9%	3%	8%	0%	6%	5%
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		8	
Permitted Phases	2					8
Actuated Green, G (s)	83.5	83.5	76.7		9.8	9.8
Effective Green, g (s)	84.5	84.5	77.7		10.8	10.8
Actuated g/C Ratio	0.80	0.80	0.74		0.10	0.10
Clearance Time (s)	4.0	6.4	6.4		5.3	5.3
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	644	3562	3110		175	158
v/s Ratio Prot	0.00	c0.17	0.11		c0.05	
v/s Ratio Perm	0.02					0.00
v/c Ratio	0.03	0.21	0.14		0.51	0.01
Uniform Delay, d1	2.1	2.4	4.0		44.6	42.3
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.0	0.1	0.1		2.5	0.0
Delay (s)	2.1	2.5	4.1		47.2	42.3
Level of Service	A	A	A		D	D
Approach Delay (s)		2.5	4.1		46.3	
Approach LOS		A	A		D	

Intersection Summary				
HCM 2000 Control Delay	6.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.25		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	12.7
Intersection Capacity Utilization	33.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	25	1000	895	55	75
Future Volume (vph)	25	1000	895	55	75
Turn Type	pm+pt	NA	NA	Prot	Perm
Protected Phases	5	2	6	4	
Permitted Phases	2				4
Detector Phase	5	2	6	4	4
Switch Phase					
Minimum Initial (s)	7.0	20.0	20.0	10.0	10.0
Minimum Split (s)	11.0	29.0	29.0	43.0	43.0
Total Split (s)	15.0	80.0	65.0	50.0	50.0
Total Split (%)	11.5%	61.5%	50.0%	38.5%	38.5%
Yellow Time (s)	3.0	4.0	4.0	3.0	3.0
All-Red Time (s)	1.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.0	6.0	5.0	5.0
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	None	None
Act Effct Green (s)	110.2	107.2	100.6	11.8	11.8
Actuated g/C Ratio	0.85	0.82	0.77	0.09	0.09
v/c Ratio	0.05	0.27	0.26	0.34	0.35
Control Delay	4.0	6.0	4.8	61.1	16.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	4.0	6.0	4.8	61.1	16.3
LOS	A	A	A	E	B
Approach Delay		5.9	4.8	35.2	
Approach LOS		A	A	D	

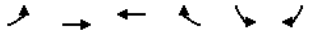
Intersection Summary		
Cycle Length: 130		
Actuated Cycle Length: 130		
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green		
Natural Cycle: 85		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.35		
Intersection Signal Delay: 7.3	Intersection LOS: A	
Intersection Capacity Utilization 38.3%	ICU Level of Service A	
Analysis Period (min) 15		

Splits and Phases: 11: Britannia Rd & Rose Way

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	25	1000	905	55	75
v/c Ratio	0.05	0.27	0.26	0.34	0.35
Control Delay	4.0	6.0	4.8	61.1	16.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	4.0	6.0	4.8	61.1	16.3
Queue Length 50th (m)	1.8	45.8	28.1	14.3	0.0
Queue Length 95th (m)	m2.9	m53.3	37.7	27.8	15.3
Internal Link Dist (m)		182.4	155.7	76.0	
Turn Bay Length (m)	50.0			50.0	
Base Capacity (vph)	528	3761	3523	624	608
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.05	0.27	0.26	0.09	0.12

Intersection Summary

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



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	25	1000	895	10	55	75
Future Volume (vph)	25	1000	895	10	55	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0		5.0	5.0
Lane Util. Factor	1.00	*0.80	*0.80		1.00	1.00
Frt	1.00	1.00	1.00		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1805	4560	4552		1805	1615
Flt Permitted	0.25	1.00	1.00		0.95	1.00
Satd. Flow (perm)	480	4560	4552		1805	1615
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	25	1000	895	10	55	75
RTOR Reduction (vph)	0	0	0	0	0	68
Lane Group Flow (vph)	25	1000	905	0	55	7
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)	106.2	106.2	98.0		10.8	10.8
Effective Green, g (s)	107.2	107.2	99.0		11.8	11.8
Actuated g/C Ratio	0.82	0.82	0.76		0.09	0.09
Clearance Time (s)	4.0	7.0	7.0		6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	448	3760	3466		163	146
v/s Ratio Prot	0.00	c0.22	0.20		c0.03	
v/s Ratio Perm	0.04					0.00
v/c Ratio	0.06	0.27	0.26		0.34	0.05
Uniform Delay, d1	2.1	2.6	4.6		55.4	54.0
Progression Factor	2.28	2.24	1.00		1.00	1.00
Incremental Delay, d2	0.0	0.1	0.2		1.2	0.1
Delay (s)	4.9	5.9	4.8		56.7	54.1
Level of Service	A	A	A		E	D
Approach Delay (s)		5.8	4.8		55.2	
Approach LOS		A	A		E	

Intersection Summary				
HCM 2000 Control Delay	8.5	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.28			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	14.0	
Intersection Capacity Utilization	38.3%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	205	375	330	545	210	1285	95	1060
Future Volume (vph)	205	375	330	545	210	1285	95	1060
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	5.0	10.0	10.0	10.0	5.0	20.0	5.0	20.0
Minimum Split (s)	9.0	30.0	14.0	30.0	9.0	32.2	9.0	32.2
Total Split (s)	22.0	30.0	32.0	40.0	22.0	68.0	10.0	56.0
Total Split (%)	15.7%	21.4%	22.9%	28.6%	15.7%	48.6%	7.1%	40.0%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	4.2	3.0	4.2
All-Red Time (s)	1.0	3.0	0.0	3.0	1.0	3.0	1.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.0	2.0	6.0	3.0	6.2	3.0	6.2
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	43.7	23.9	54.3	30.4	80.6	66.4	70.0	58.7
Actuated g/C Ratio	0.31	0.17	0.39	0.22	0.58	0.47	0.50	0.42
v/c Ratio	0.70	0.81	0.81	0.79	0.75	0.85	0.59	0.69
Control Delay	44.4	63.9	48.4	58.7	43.3	37.0	39.4	36.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.4	63.9	48.4	58.7	43.3	37.0	39.4	36.7
LOS	D	E	D	E	D	D	D	D
Approach Delay		58.1		55.1		37.7		36.9
Approach LOS		E		E		D		D

Intersection Summary		
Cycle Length: 140		
Actuated Cycle Length: 140		
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green		
Natural Cycle: 90		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.85		
Intersection Signal Delay: 43.7	Intersection LOS: D	
Intersection Capacity Utilization 89.9%	ICU Level of Service E	
Analysis Period (min) 15		

Splits and Phases: 1: Regional Rd 25 & Louis St Laurent Ave

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	205	490	330	610	210	1715	95	1255
v/c Ratio	0.70	0.81	0.81	0.79	0.75	0.85	0.59	0.69
Control Delay	44.4	63.9	48.4	58.7	43.3	37.0	39.4	36.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.4	63.9	48.4	58.7	43.3	37.0	39.4	36.7
Queue Length 50th (m)	40.9	68.7	69.7	87.4	35.6	182.7	12.2	125.6
Queue Length 95th (m)	59.7	90.8	98.6	106.9	66.5	214.5	#38.5	158.3
Internal Link Dist (m)		126.1		117.1		481.0		113.5
Turn Bay Length (m)	90.0		35.0		65.0		80.0	
Base Capacity (vph)	319	633	470	865	316	2013	161	1814
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	0.64	0.77	0.70	0.71	0.66	0.85	0.59	0.69

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	205	375	115	330	545	65	210	1285	430	95	1060	195
Future Volume (vph)	205	375	115	330	545	65	210	1285	430	95	1060	195
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0		2.0	6.0		3.0	6.2		3.0	6.2	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	*0.80		1.00	*0.80	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.98		1.00	0.96		1.00	0.98	
Flt Protected	0.95	1.00		1.00	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1769	3439		1899	3537		1787	4168		1805	4295	
Flt Permitted	0.22	1.00		0.19	1.00		0.09	1.00		0.07	1.00	
Satd. Flow (perm)	413	3439		364	3537		168	4168		130	4295	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	205	375	115	330	545	65	210	1285	430	95	1060	195
RTOR Reduction (vph)	0	21	0	0	7	0	0	36	0	0	14	0
Lane Group Flow (vph)	205	469	0	330	603	0	210	1679	0	95	1241	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Heavy Vehicles (%)	2%	1%	0%	0%	0%	2%	1%	6%	1%	0%	4%	0%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	38.8	22.9		49.3	29.4		76.5	65.4		64.7	57.6	
Effective Green, g (s)	40.8	23.9		50.3	30.4		77.5	66.4		66.7	58.6	
Actuated g/C Ratio	0.29	0.17		0.36	0.22		0.55	0.47		0.48	0.42	
Clearance Time (s)	4.0	7.0		3.0	7.0		4.0	7.2		4.0	7.2	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	284	587		398	768		276	1976		158	1797	
v/s Ratio Prot	0.09	0.14		c0.14	c0.17		c0.09	c0.40		0.03	0.29	
v/s Ratio Perm	0.12			0.15			0.33			0.25		
v/c Ratio	0.72	0.80		0.83	0.79		0.76	0.85		0.60	0.69	
Uniform Delay, d1	40.4	55.7		36.1	51.7		30.1	32.4		26.3	33.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	8.7	7.5		13.3	5.3		11.7	4.8		6.3	2.2	
Delay (s)	49.1	63.3		49.4	57.0		41.8	37.2		32.6	35.5	
Level of Service	D	E		D	E		D	D		C	D	
Approach Delay (s)		59.1			54.4			37.7			35.3	
Approach LOS		E			D			D			D	

Intersection Summary				
HCM 2000 Control Delay	43.3	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.86			
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.2	
Intersection Capacity Utilization	89.9%	ICU Level of Service	E	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	105	40	25	40	75	90	1925	60	1250
Future Volume (vph)	105	40	25	40	75	90	1925	60	1250
Turn Type	Perm	NA	Perm	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases		4		8		5	2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	7.0	20.0	7.0	20.0
Minimum Split (s)	37.5	37.5	37.5	37.5	37.5	11.0	35.5	11.0	35.5
Total Split (s)	38.0	38.0	38.0	38.0	38.0	11.0	81.0	11.0	81.0
Total Split (%)	29.2%	29.2%	29.2%	29.2%	29.2%	8.5%	62.3%	8.5%	62.3%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.0	4.2	3.0	4.2
All-Red Time (s)	3.2	3.2	3.2	3.2	3.2	1.0	2.3	1.0	2.3
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	3.0	5.5	3.0	5.5
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	16.6	16.6	16.6	16.6	16.6	102.5	93.2	102.0	91.1
Actuated g/C Ratio	0.13	0.13	0.13	0.13	0.13	0.79	0.72	0.78	0.70
v/c Ratio	0.60	0.32	0.15	0.17	0.29	0.31	0.63	0.32	0.46
Control Delay	67.4	31.8	50.2	50.0	13.0	4.0	7.4	10.3	9.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.4	31.8	50.2	50.0	13.0	4.0	7.4	10.3	9.6
LOS	E	C	D	D	B	A	A	B	A
Approach Delay		52.0		30.2			7.3		9.6
Approach LOS		D		C			A		A

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 40 (31%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 95			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.63			
Intersection Signal Delay: 11.2		Intersection LOS: B	
Intersection Capacity Utilization 71.2%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Regional Rd 25 & Whitlock Ave

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	105	80	25	40	75	90	1965	60	1385
v/c Ratio	0.60	0.32	0.15	0.17	0.29	0.31	0.63	0.32	0.46
Control Delay	67.4	31.8	50.2	50.0	13.0	4.0	7.4	10.3	9.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.4	31.8	50.2	50.0	13.0	4.0	7.4	10.3	9.6
Queue Length 50th (m)	27.2	10.6	6.1	9.8	0.0	1.4	62.9	2.6	60.2
Queue Length 95th (m)	45.1	25.0	14.4	20.3	14.0	m3.4	180.2	10.1	88.2
Internal Link Dist (m)		62.9		68.1			696.9		481.0
Turn Bay Length (m)	35.0		65.0		65.0	100.0		100.0	
Base Capacity (vph)	341	452	333	475	441	286	3106	187	2991
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	0.31	0.18	0.08	0.08	0.17	0.31	0.63	0.32	0.46

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	40	40	25	40	75	90	1925	40	60	1250	135
Future Volume (vph)	105	40	40	25	40	75	90	1925	40	60	1250	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5		5.5	5.5	5.5	3.0	5.5		3.0	5.5	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	*0.80		1.00	*0.80	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		0.99	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.93		1.00	1.00	0.85	1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1776	1699		1795	1900	1539	1787	4331		1770	4263	
Flt Permitted	0.73	1.00		0.70	1.00	1.00	0.13	1.00		0.05	1.00	
Satd. Flow (perm)	1367	1699		1332	1900	1539	238	4331		100	4263	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	105	40	40	25	40	75	90	1925	40	60	1250	135
RTOR Reduction (vph)	0	32	0	0	0	65	0	1	0	0	6	0
Lane Group Flow (vph)	105	48	0	25	40	10	90	1964	0	60	1379	0
Confl. Peds. (#/hr)	5		5	5		5			5	5		
Heavy Vehicles (%)	1%	5%	0%	0%	0%	3%	1%	5%	0%	2%	6%	0%
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	15.6	15.6		15.6	15.6	15.6	98.8	91.4		96.0	90.0	
Effective Green, g (s)	16.6	16.6		16.6	16.6	16.6	100.8	92.4		98.0	91.0	
Actuated g/C Ratio	0.13	0.13		0.13	0.13	0.13	0.78	0.71		0.75	0.70	
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	4.0	6.5		4.0	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	174	216		170	242	196	284	3078		165	2984	
v/s Ratio Prot		0.03			0.02		c0.02	c0.45		c0.02	0.32	
v/s Ratio Perm	c0.08			0.02		0.01	0.22			0.25		
v/c Ratio	0.60	0.22		0.15	0.17	0.05	0.32	0.64		0.36	0.46	
Uniform Delay, d1	53.6	50.9		50.4	50.5	49.8	4.6	10.0		8.2	8.6	
Progression Factor	1.00	1.00		1.00	1.00	1.00	0.56	0.61		1.00	1.00	
Incremental Delay, d2	5.8	0.5		0.4	0.3	0.1	0.5	0.8		1.4	0.5	
Delay (s)	59.4	51.4		50.8	50.9	49.9	3.1	6.9		9.6	9.2	
Level of Service	E	D		D	D	D	A	A		A	A	
Approach Delay (s)		55.9			50.3			6.7			9.2	
Approach LOS		E			D			A			A	

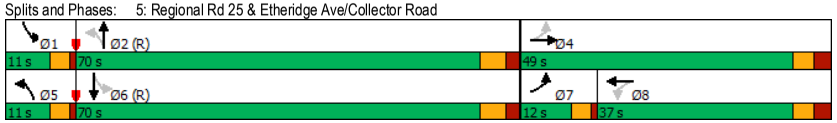
Intersection Summary					
HCM 2000 Control Delay	11.6	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio	0.62				
Actuated Cycle Length (s)	130.0	Sum of lost time (s)		14.0	
Intersection Capacity Utilization	71.2%	ICU Level of Service		C	
Analysis Period (min)	15				

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	75	0	40	0	60	1940	55	1145
Future Volume (vph)	75	0	40	0	60	1940	55	1145
Turn Type	pm+pt	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases	7	4		8	5	2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	7	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	7.0	10.0	10.0	10.0	7.0	20.0	7.0	20.0
Minimum Split (s)	11.0	36.2	36.2	36.2	11.0	38.4	11.0	38.4
Total Split (s)	12.0	49.0	37.0	37.0	11.0	70.0	11.0	70.0
Total Split (%)	9.2%	37.7%	28.5%	28.5%	8.5%	53.8%	8.5%	53.8%
Yellow Time (s)	3.0	3.3	3.3	3.3	3.0	4.2	3.0	4.2
All-Red Time (s)	1.0	2.9	2.9	2.9	1.0	2.2	1.0	2.2
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	5.2	5.2	5.2	3.0	5.4	3.0	5.4
Lead/Lag	Lead		Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	22.5	21.3	11.7	11.7	101.2	93.3	101.5	93.5
Actuated g/C Ratio	0.17	0.16	0.09	0.09	0.78	0.72	0.78	0.72
v/c Ratio	0.33	0.06	0.31	0.13	0.19	0.64	0.31	0.40
Control Delay	48.2	0.3	62.0	0.9	3.0	8.1	29.9	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.2	0.3	62.0	0.9	3.0	8.1	29.9	3.6
LOS	D	A	E	A	A	A	C	A
Approach Delay		36.2		31.4		8.0		4.7
Approach LOS		D		C		A		A

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 103 (79%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.64			
Intersection Signal Delay: 8.1		Intersection LOS: A	
Intersection Capacity Utilization 67.8%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 5: Regional Rd 25 & Etheridge Ave/Collector Road



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	75	25	40	40	60	2005	55	1260
v/c Ratio	0.33	0.06	0.31	0.13	0.19	0.64	0.31	0.40
Control Delay	48.2	0.3	62.0	0.9	3.0	8.1	29.9	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.2	0.3	62.0	0.9	3.0	8.1	29.9	3.6
Queue Length 50th (m)	17.2	0.0	10.3	0.0	1.8	64.1	2.1	54.9
Queue Length 95th (m)	31.1	0.0	22.4	0.0	m2.4	m66.2	14.6	7.5
Internal Link Dist (m)		53.9		63.5		292.1		696.9
Turn Bay Length (m)	40.0		40.0		70.0		70.0	
Base Capacity (vph)	229	645	344	527	321	3136	177	3118
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	0.33	0.04	0.12	0.08	0.19	0.64	0.31	0.40

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

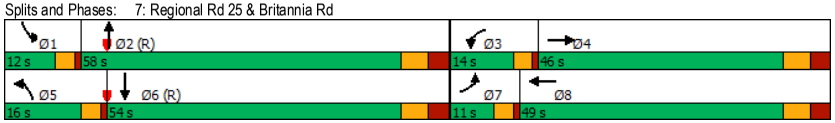
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	0	25	40	0	40	60	1940	65	55	1145	115
Future Volume (vph)	75	0	25	40	0	40	60	1940	65	55	1145	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.2		5.2	5.2		3.0	5.4		3.0	5.4	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	*0.80		1.00	*0.80	
Frt	1.00	0.85		1.00	0.85		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1752	1615		1805	1615		1805	4369		1805	4332	
Flt Permitted	0.56	1.00		0.74	1.00		0.15	1.00		0.05	1.00	
Satd. Flow (perm)	1030	1615		1408	1615		290	4369		88	4332	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	75	0	25	40	0	40	60	1940	65	55	1145	115
RTOR Reduction (vph)	0	21	0	0	37	0	0	2	0	0	5	0
Lane Group Flow (vph)	75	4	0	40	3	0	60	2003	0	55	1255	0
Heavy Vehicles (%)	3%	0%	0%	0%	0%	0%	0%	4%	0%	0%	4%	2%
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	19.1	19.1		8.7	8.7		94.1	88.4		94.5	88.6	
Effective Green, g (s)	20.1	20.1		9.7	9.7		96.1	89.4		96.5	89.6	
Actuated g/C Ratio	0.15	0.15		0.07	0.07		0.74	0.69		0.74	0.69	
Clearance Time (s)	4.0	6.2		6.2	6.2		4.0	6.4		4.0	6.4	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	200	249		105	120		292	3004		156	2985	
v/s Ratio Prot	c0.02	0.00			0.00		0.01	c0.46		c0.02	0.29	
v/s Ratio Perm	c0.04			0.03			0.14			0.24		
v/c Ratio	0.38	0.02		0.38	0.02		0.21	0.67		0.35	0.42	
Uniform Delay, d1	48.6	46.6		57.3	55.8		5.1	11.7		10.4	8.8	
Progression Factor	1.00	1.00		1.00	1.00		0.63	0.60		3.07	0.34	
Incremental Delay, d2	1.2	0.0		2.3	0.1		0.1	0.4		1.3	0.4	
Delay (s)	49.8	46.6		59.6	55.8		3.3	7.4		33.0	3.4	
Level of Service	D	D		E	E		A	A		C	A	
Approach Delay (s)		49.0			57.7			7.3			4.6	
Approach LOS		D			E			A			A	

Intersection Summary				
HCM 2000 Control Delay	8.6	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.61			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	16.6	
Intersection Capacity Utilization	67.8%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	45	350	325	550	275	1680	135	1020
Future Volume (vph)	45	350	325	550	275	1680	135	1020
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases								
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	7.0	10.0	7.0	10.0	7.0	20.0	7.0	20.0
Minimum Split (s)	11.0	45.5	11.0	45.5	11.0	49.7	11.0	49.7
Total Split (s)	11.0	46.0	14.0	49.0	16.0	58.0	12.0	54.0
Total Split (%)	8.5%	35.4%	10.8%	37.7%	12.3%	44.6%	9.2%	41.5%
Yellow Time (s)	3.0	4.2	3.0	4.2	3.0	4.2	3.0	4.2
All-Red Time (s)	1.0	3.3	1.0	3.3	1.0	3.5	1.0	3.5
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.5	3.0	6.5	3.0	6.7	3.0	6.7
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	8.0	26.9	11.0	32.1	16.1	61.7	11.2	56.9
Actuated g/C Ratio	0.06	0.21	0.08	0.25	0.12	0.47	0.09	0.44
v/c Ratio	0.22	0.42	1.07	0.78	0.64	1.06	0.45	0.56
Control Delay	60.9	43.3	139.9	38.8	61.1	70.8	76.8	20.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.9	43.3	139.9	38.8	61.1	70.8	76.8	20.1
LOS	E	D	F	D	E	E	E	C
Approach Delay		45.1		65.9		69.7		26.5
Approach LOS		D		E		E		C

Intersection Summary		
Cycle Length: 130		
Actuated Cycle Length: 130		
Offset: 104 (80%), Referenced to phase 2:NBT and 6:SBT, Start of Green		
Natural Cycle: 150		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 1.07		
Intersection Signal Delay: 57.0	Intersection LOS: E	
Intersection Capacity Utilization 91.3%	ICU Level of Service F	
Analysis Period (min) 15		

Splits and Phases: 7: Regional Rd 25 & Britannia Rd



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	45	395	325	890	275	2185	135	1075
v/c Ratio	0.22	0.42	1.07	0.78	0.64	1.06	0.45	0.56
Control Delay	60.9	43.3	139.9	38.8	61.1	70.8	76.8	20.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.9	43.3	139.9	38.8	61.1	70.8	76.8	20.1
Queue Length 50th (m)	6.0	36.8	~51.0	49.2	36.7	~272.3	19.3	41.3
Queue Length 95th (m)	12.7	45.8	#83.4	52.0	51.5	#340.9	31.3	60.2
Internal Link Dist (m)		377.9		190.1		165.3		292.1
Turn Bay Length (m)	60.0		120.0		90.0		90.0	
Base Capacity (vph)	203	1372	305	1477	434	2063	302	1910
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	0.22	0.29	1.07	0.60	0.63	1.06	0.45	0.56

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	350	45	325	550	340	275	1680	505	135	1020	55
Future Volume (vph)	45	350	45	325	550	340	275	1680	505	135	1020	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.5		3.0	6.5		3.0	6.7		3.0	6.7	
Lane Util. Factor	0.97	*0.80		0.97	*0.80		0.97	*0.80		0.97	*0.80	
Frt	1.00	0.98		1.00	0.94		1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00		1.00	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3303	4482		3614	4256		3502	4283		3467	4360	
Flt Permitted	0.95	1.00		1.00	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3303	4482		3614	4256		3502	4283		3467	4360	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	45	350	45	325	550	340	275	1680	505	135	1020	55
RTOR Reduction (vph)	0	12	0	0	96	0	0	30	0	0	3	0
Lane Group Flow (vph)	45	383	0	325	794	0	275	2155	0	135	1072	0
Heavy Vehicles (%)	6%	0%	0%	2%	1%	1%	0%	3%	2%	1%	4%	0%
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	5.6	26.7		10.0	31.1		15.1	59.9		10.2	55.0	
Effective Green, g (s)	6.6	27.7		11.0	32.1		16.1	60.9		11.2	56.0	
Actuated g/C Ratio	0.05	0.21		0.08	0.25		0.12	0.47		0.09	0.43	
Clearance Time (s)	4.0	7.5		4.0	7.5		4.0	7.7		4.0	7.7	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	167	955		305	1050		433	2006		298	1878	
v/s Ratio Prot	0.01	0.09		c0.09	c0.19		c0.08	c0.50		0.04	0.25	
v/s Ratio Perm												
v/c Ratio	0.27	0.40		1.07	0.76		0.64	1.07		0.45	0.57	
Uniform Delay, d1	59.4	44.0		59.5	45.3		54.2	34.5		56.5	27.9	
Progression Factor	1.00	1.00		1.32	0.88		1.00	1.00		1.29	0.66	
Incremental Delay, d2	0.9	0.3		68.9	3.0		3.0	43.4		1.0	1.2	
Delay (s)	60.3	44.3		147.7	42.8		57.2	77.9		73.7	19.5	
Level of Service	E	D		F	D		E	E		E	B	
Approach Delay (s)		45.9			70.9			75.6			25.6	
Approach LOS		D			E			E			C	

Intersection Summary				
HCM 2000 Control Delay	60.7	HCM 2000 Level of Service	E	
HCM 2000 Volume to Capacity ratio	0.97			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	19.2	
Intersection Capacity Utilization	91.3%	ICU Level of Service	F	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	15	385	800	55	15
Future Volume (vph)	15	385	800	55	15
Turn Type	pm+pt	NA	NA	Prot	Perm
Protected Phases	5	2	6	8	
Permitted Phases	2				8
Detector Phase	5	2	6	8	8
Switch Phase					
Minimum Initial (s)	7.0	20.0	20.0	10.0	10.0
Minimum Split (s)	11.0	29.4	29.4	15.3	15.3
Total Split (s)	11.0	64.0	53.0	41.0	41.0
Total Split (%)	10.5%	61.0%	50.5%	39.0%	39.0%
Yellow Time (s)	3.0	4.2	4.2	3.3	3.3
All-Red Time (s)	1.0	2.2	2.2	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	5.4	5.4	4.3	4.3
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	None	None
Act Effct Green (s)	89.3	88.0	83.6	11.4	11.4
Actuated g/C Ratio	0.85	0.84	0.80	0.11	0.11
v/c Ratio	0.03	0.10	0.25	0.29	0.08
Control Delay	1.9	2.2	4.2	47.2	19.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	1.9	2.2	4.2	47.2	19.9
LOS	A	A	A	D	B
Approach Delay		2.2	4.2	41.4	
Approach LOS		A	A	D	

Intersection Summary			
Cycle Length: 105			
Actuated Cycle Length: 105			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.29			
Intersection Signal Delay: 5.5		Intersection LOS: A	
Intersection Capacity Utilization 33.7%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 10: Britannia Rd & Farmstead Dr

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	15	385	880	55	15
v/c Ratio	0.03	0.10	0.25	0.29	0.08
Control Delay	1.9	2.2	4.2	47.2	19.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	1.9	2.2	4.2	47.2	19.9
Queue Length 50th (m)	0.4	5.7	14.5	11.1	0.0
Queue Length 95th (m)	1.6	9.0	34.6	23.1	6.3
Internal Link Dist (m)		101.0	377.9	199.3	
Turn Bay Length (m)	20.0				
Base Capacity (vph)	519	3822	3552	606	574
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.03	0.10	0.25	0.09	0.03

Intersection Summary

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	15	385	800	80	55	15
Future Volume (vph)	15	385	800	80	55	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.4	5.4		4.3	4.3
Lane Util. Factor	1.00	*0.80	*0.80		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1805	4560	4457		1736	1615
Flt Permitted	0.26	1.00	1.00		0.95	1.00
Satd. Flow (perm)	494	4560	4457		1736	1615
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	15	385	800	80	55	15
RTOR Reduction (vph)	0	0	4	0	0	14
Lane Group Flow (vph)	15	385	876	0	55	1
Heavy Vehicles (%)	0%	0%	1%	0%	4%	0%
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		8	
Permitted Phases	2					8
Actuated Green, G (s)	84.9	84.9	78.1		8.4	8.4
Effective Green, g (s)	85.9	85.9	79.1		9.4	9.4
Actuated g/C Ratio	0.82	0.82	0.75		0.09	0.09
Clearance Time (s)	4.0	6.4	6.4		5.3	5.3
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	451	3730	3357		155	144
v/s Ratio Prot	0.00	c0.08	c0.20		c0.03	
v/s Ratio Perm	0.03					0.00
v/c Ratio	0.03	0.10	0.26		0.35	0.01
Uniform Delay, d1	1.8	1.9	4.0		44.9	43.6
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.0	0.1	0.2		1.4	0.0
Delay (s)	1.9	2.0	4.2		46.3	43.6
Level of Service	A	A	A		D	D
Approach Delay (s)		1.9	4.2		45.8	
Approach LOS		A	A		D	

Intersection Summary				
HCM 2000 Control Delay	5.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.26		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	12.7
Intersection Capacity Utilization	33.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	80	910	1165	30	50
Future Volume (vph)	80	910	1165	30	50
Turn Type	pm+pt	NA	NA	Prot	Perm
Protected Phases	5	2	6	4	
Permitted Phases	2				4
Detector Phase	5	2	6	4	4
Switch Phase					
Minimum Initial (s)	7.0	20.0	20.0	10.0	10.0
Minimum Split (s)	11.0	29.0	29.0	43.0	43.0
Total Split (s)	15.0	80.0	65.0	50.0	50.0
Total Split (%)	11.5%	61.5%	50.0%	38.5%	38.5%
Yellow Time (s)	3.0	4.0	4.0	3.0	3.0
All-Red Time (s)	1.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.0	6.0	5.0	5.0
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	None	None
Act Effct Green (s)	114.2	112.4	103.5	11.0	11.0
Actuated g/C Ratio	0.88	0.86	0.80	0.08	0.08
v/c Ratio	0.22	0.23	0.34	0.20	0.27
Control Delay	3.0	2.6	5.2	58.7	18.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	3.0	2.6	5.2	58.7	18.8
LOS	A	A	A	E	B
Approach Delay		2.6	5.2	33.8	
Approach LOS		A	A	C	

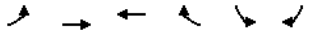
Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 65 (50%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.34
Intersection Signal Delay: 5.1 — Intersection LOS: A
Intersection Capacity Utilization 50.5% — ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 11: Britannia Rd & Rose Way

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	80	910	1225	30	50
v/c Ratio	0.22	0.23	0.34	0.20	0.27
Control Delay	3.0	2.6	5.2	58.7	18.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	3.0	2.6	5.2	58.7	18.8
Queue Length 50th (m)	2.7	19.0	41.7	7.7	0.0
Queue Length 95th (m)	m4.4	m25.0	49.6	18.0	13.0
Internal Link Dist (m)		190.1	148.0	92.6	
Turn Bay Length (m)	50.0			50.0	
Base Capacity (vph)	414	3941	3607	624	591
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.19	0.23	0.34	0.05	0.08

Intersection Summary

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



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	80	910	1165	60	30	50
Future Volume (vph)	80	910	1165	60	30	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0		5.0	5.0
Lane Util. Factor	1.00	*0.80	*0.80		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1805	4560	4526		1805	1615
Flt Permitted	0.17	1.00	1.00		0.95	1.00
Satd. Flow (perm)	316	4560	4526		1805	1615
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	80	910	1165	60	30	50
RTOR Reduction (vph)	0	0	2	0	0	47
Lane Group Flow (vph)	80	910	1223	0	30	3
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)	109.0	109.0	99.4		8.0	8.0
Effective Green, g (s)	110.0	110.0	100.4		9.0	9.0
Actuated g/C Ratio	0.85	0.85	0.77		0.07	0.07
Clearance Time (s)	4.0	7.0	7.0		6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	342	3858	3495		124	111
v/s Ratio Prot	0.01	c0.20	c0.27		c0.02	
v/s Ratio Perm	0.19					0.00
v/c Ratio	0.23	0.24	0.35		0.24	0.03
Uniform Delay, d1	2.0	1.9	4.6		57.3	56.4
Progression Factor	1.43	1.24	1.00		1.00	1.00
Incremental Delay, d2	0.2	0.1	0.3		1.0	0.1
Delay (s)	3.1	2.5	4.9		58.3	56.5
Level of Service	A	A	A		E	E
Approach Delay (s)		2.5	4.9		57.2	
Approach LOS		A	A		E	

Intersection Summary				
HCM 2000 Control Delay	5.7	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.34			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	14.0	
Intersection Capacity Utilization	50.5%	ICU Level of Service	A	
Analysis Period (min)	15			

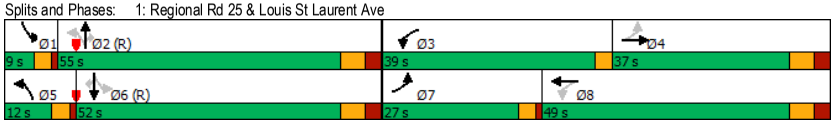
c Critical Lane Group

2029 (South Parcel Only) Future Total Traffic Conditions

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	270	535	480	560	110	855	315	65	790	95
Future Volume (vph)	270	535	480	560	110	855	315	65	790	95
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4	3	8	5	2		1	6	
Permitted Phases	4		8		2		2	6		6
Detector Phase	7	4	3	8	5	2	2	1	6	6
Switch Phase										
Minimum Initial (s)	5.0	10.0	10.0	10.0	5.0	20.0	20.0	5.0	20.0	20.0
Minimum Split (s)	9.0	30.0	14.0	30.0	9.0	32.2	32.2	9.0	32.2	32.2
Total Split (s)	27.0	37.0	39.0	49.0	12.0	55.0	55.0	9.0	52.0	52.0
Total Split (%)	19.3%	26.4%	27.9%	35.0%	8.6%	39.3%	39.3%	6.4%	37.1%	37.1%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	4.2	4.2	3.0	4.2	4.2
All-Red Time (s)	1.0	3.0	0.0	3.0	1.0	3.0	3.0	1.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.0	2.0	6.0	3.0	6.2	6.2	3.0	6.2	6.2
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	53.0	31.2	71.8	46.0	63.2	52.6	52.6	57.5	48.0	48.0
Actuated g/C Ratio	0.38	0.22	0.51	0.33	0.45	0.38	0.38	0.41	0.34	0.34
v/c Ratio	0.66	0.92	0.92	0.58	0.47	0.67	0.42	0.31	0.68	0.15
Control Delay	29.8	69.1	62.5	40.6	30.1	40.9	9.4	27.2	43.8	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.8	69.1	62.5	40.6	30.1	40.9	9.4	27.2	43.8	3.6
LOS	C	E	E	D	C	D	A	C	D	A
Approach Delay		58.4		49.9		32.3			38.6	
Approach LOS		E		D		C			D	

Intersection Summary	
Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.92	
Intersection Signal Delay: 44.2	Intersection LOS: D
Intersection Capacity Utilization 92.2%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 1: Regional Rd 25 & Louis St Laurent Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	270	725	480	655	110	855	315	65	790	95
v/c Ratio	0.66	0.92	0.92	0.58	0.47	0.67	0.42	0.31	0.68	0.15
Control Delay	29.8	69.1	62.5	40.6	30.1	40.9	9.4	27.2	43.8	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.8	69.1	62.5	40.6	30.1	40.9	9.4	27.2	43.8	3.6
Queue Length 50th (m)	43.2	105.5	114.6	79.1	19.1	114.1	12.4	11.0	106.4	0.0
Queue Length 95th (m)	62.6	#144.0	#176.2	105.6	32.1	139.4	38.0	20.8	130.8	8.3
Internal Link Dist (m)		126.1		117.1		481.0			113.5	
Turn Bay Length (m)	90.0		35.0		65.0		65.0	80.0		90.0
Base Capacity (vph)	478	792	548	1136	238	1267	746	208	1155	619
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	0.56	0.92	0.88	0.58	0.46	0.67	0.42	0.31	0.68	0.15

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	270	535	190	480	560	95	110	855	315	65	790	95
Future Volume (vph)	270	535	190	480	560	95	110	855	315	65	790	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0		2.0	6.0		3.0	6.2	6.2	3.0	6.2	6.2
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.96		1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		1.00	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1767	3409		1863	3427		1703	3374	1568	1719	3374	1583
Flt Permitted	0.39	1.00		0.12	1.00		0.18	1.00	1.00	0.20	1.00	1.00
Satd. Flow (perm)	717	3409		224	3427		328	3374	1568	356	3374	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	270	535	190	480	560	95	110	855	315	65	790	95
RTOR Reduction (vph)	0	26	0	0	9	0	0	0	159	0	0	62
Lane Group Flow (vph)	270	699	0	480	646	0	110	855	156	65	790	33
Confl. Peds. (#/hr)	5					5						
Heavy Vehicles (%)	2%	2%	1%	2%	2%	7%	6%	7%	3%	5%	7%	2%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	48.0	30.2		66.9	45.1		58.7	50.7	50.7	51.1	46.9	46.9
Effective Green, g (s)	50.0	31.2		67.9	46.1		59.9	51.7	51.7	53.1	47.9	47.9
Actuated g/C Ratio	0.36	0.22		0.49	0.33		0.43	0.37	0.37	0.38	0.34	0.34
Clearance Time (s)	4.0	7.0		3.0	7.0		4.0	7.2	7.2	4.0	7.2	7.2
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	397	759		514	1128		228	1245	579	185	1154	541
v/s Ratio Prot	0.09	c0.21		c0.23	0.19		c0.03	c0.25		0.01	0.23	
v/s Ratio Perm	0.15			0.22			0.17		0.10	0.12		0.02
v/c Ratio	0.68	0.92		0.93	0.57		0.48	0.69	0.27	0.35	0.68	0.06
Uniform Delay, d1	34.2	53.2		41.2	38.8		27.1	37.3	30.9	29.5	39.6	30.9
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.7	16.5		24.2	0.7		1.6	3.1	1.1	1.2	3.3	0.2
Delay (s)	38.9	69.7		65.4	39.5		28.7	40.4	32.1	30.7	42.9	31.1
Level of Service	D	E		E	D		C	D	C	C	D	C
Approach Delay (s)		61.4			50.4			37.3			40.9	
Approach LOS		E			D			D			D	

Intersection Summary				
HCM 2000 Control Delay	47.0	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.82			
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.2	
Intersection Capacity Utilization	92.2%	ICU Level of Service	F	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	145	50	50	35	95	45	1065	10	50	1610	100
Future Volume (vph)	145	50	50	35	95	45	1065	10	50	1610	100
Turn Type	Perm	NA	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		8		5	2		1	6	
Permitted Phases	4		8		8	2		2	6		6
Detector Phase	4	4	8	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	7.0	20.0	20.0	7.0	20.0	20.0
Minimum Split (s)	37.5	37.5	37.5	37.5	37.5	11.0	35.5	35.5	11.0	35.5	35.5
Total Split (s)	38.0	38.0	38.0	38.0	38.0	11.0	81.0	81.0	11.0	81.0	81.0
Total Split (%)	29.2%	29.2%	29.2%	29.2%	29.2%	8.5%	62.3%	62.3%	8.5%	62.3%	62.3%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.0	4.2	4.2	3.0	4.2	4.2
All-Red Time (s)	3.2	3.2	3.2	3.2	3.2	1.0	2.3	2.3	1.0	2.3	2.3
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	3.0	5.5	5.5	3.0	5.5	5.5
Lead/Lag						Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	20.4	20.4	20.4	20.4	20.4	98.7	89.7	89.7	98.7	89.7	89.7
Actuated g/C Ratio	0.16	0.16	0.16	0.16	0.16	0.76	0.69	0.69	0.76	0.69	0.69
v/c Ratio	0.69	0.49	0.33	0.13	0.31	0.20	0.45	0.01	0.12	0.68	0.09
Control Delay	68.1	30.2	52.5	45.3	10.9	5.2	7.7	0.1	4.9	15.3	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.1	30.2	52.5	45.3	10.9	5.2	7.7	0.1	4.9	15.3	4.1
LOS	E	C	D	D	B	A	A	A	A	B	A
Approach Delay		49.2		29.2			7.5			14.3	
Approach LOS		D		C			A			B	

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 64 (49%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 95			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.69			
Intersection Signal Delay: 15.9		Intersection LOS: B	
Intersection Capacity Utilization 78.0%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 2: Regional Rd 25 & Whitlock Ave

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	145	145	50	35	95	45	1065	10	50	1610	100
v/c Ratio	0.69	0.49	0.33	0.13	0.31	0.20	0.45	0.01	0.12	0.68	0.09
Control Delay	68.1	30.2	52.5	45.3	10.9	5.2	7.7	0.1	4.9	15.3	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.1	30.2	52.5	45.3	10.9	5.2	7.7	0.1	4.9	15.3	4.1
Queue Length 50th (m)	37.5	18.2	12.1	8.2	0.0	0.9	68.0	0.0	2.6	129.1	3.1
Queue Length 95th (m)	57.3	37.4	23.8	17.1	14.7	m3.2	145.4	m0.0	7.2	189.0	11.2
Internal Link Dist (m)		62.9		68.1			696.9			481.0	
Turn Bay Length (m)	35.0		65.0		65.0	100.0		25.0	100.0		25.0
Base Capacity (vph)	333	431	241	439	435	228	2349	910	415	2371	1060
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.44	0.34	0.21	0.08	0.22	0.20	0.45	0.01	0.12	0.68	0.09

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	145	50	95	50	35	95	45	1065	10	50	1610	100
Future Volume (vph)	145	50	95	50	35	95	45	1065	10	50	1610	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5		5.5	5.5	5.5	3.0	5.5	5.5	3.0	5.5	5.5
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.90		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1725	1516		1727	1759	1455	1671	3406	1292	1805	3438	1509
Flt Permitted	0.73	1.00		0.53	1.00	1.00	0.10	1.00	1.00	0.23	1.00	1.00
Satd. Flow (perm)	1333	1516		965	1759	1455	177	3406	1292	435	3438	1509
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	145	50	95	50	35	95	45	1065	10	50	1610	100
RTOR Reduction (vph)	0	59	0	0	0	80	0	0	3	0	0	20
Lane Group Flow (vph)	145	86	0	50	35	15	45	1065	7	50	1610	80
Confl. Peds. (#/hr)	5		5	5		5						
Heavy Vehicles (%)	4%	32%	1%	4%	8%	9%	8%	6%	25%	0%	5%	7%
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8	2		2	6		6
Actuated Green, G (s)	19.4	19.4		19.4	19.4	19.4	93.6	87.9	87.9	93.6	87.9	87.9
Effective Green, g (s)	20.4	20.4		20.4	20.4	20.4	95.6	88.9	88.9	95.6	88.9	88.9
Actuated g/C Ratio	0.16	0.16		0.16	0.16	0.16	0.74	0.68	0.68	0.74	0.68	0.68
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.5	6.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	209	237		151	276	228	207	2329	883	390	2351	1031
v/s Ratio Prot		0.06			0.02		c0.01	0.31		0.01	c0.47	
v/s Ratio Perm	c0.11			0.05		0.01	0.15		0.01	0.09		0.05
v/c Ratio	0.69	0.36		0.33	0.13	0.07	0.22	0.46	0.01	0.13	0.68	0.08
Uniform Delay, d1	51.8	49.0		48.7	47.1	46.7	9.1	9.5	6.5	5.4	12.2	6.9
Progression Factor	1.00	1.00		1.00	1.00	1.00	0.78	0.68	1.00	1.00	1.00	1.00
Incremental Delay, d2	9.6	0.9		1.3	0.2	0.1	0.5	0.6	0.0	0.1	1.6	0.1
Delay (s)	61.4	49.9		50.0	47.3	46.8	7.6	7.0	6.5	5.6	13.9	7.0
Level of Service	E	D		D	D	D	A	A	A	A	B	A
Approach Delay (s)		55.7			47.8			7.0			13.2	
Approach LOS		E			D			A			B	

Intersection Summary				
HCM 2000 Control Delay	16.7	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.66			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	14.0	
Intersection Capacity Utilization	78.0%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	145	0	65	0	50	920	30	1665
Future Volume (vph)	145	0	65	0	50	920	30	1665
Turn Type	pm+pt	NA	Perm	NA	pm+pt	NA	Perm	NA
Protected Phases	7	4		8	5	2		6
Permitted Phases	4		8		2		6	
Detector Phase	7	4	8	8	5	2	6	6
Switch Phase								
Minimum Initial (s)	7.0	10.0	10.0	10.0	7.0	20.0	20.0	20.0
Minimum Split (s)	11.0	36.2	36.2	36.2	11.0	38.4	38.4	38.4
Total Split (s)	12.0	49.0	37.0	37.0	11.0	81.0	70.0	70.0
Total Split (%)	9.2%	37.7%	28.5%	28.5%	8.5%	62.3%	53.8%	53.8%
Yellow Time (s)	3.0	3.3	3.3	3.3	3.0	4.2	4.2	4.2
All-Red Time (s)	1.0	2.9	2.9	2.9	1.0	2.2	2.2	2.2
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	5.2	5.2	5.2	3.0	5.4	5.4	5.4
Lead/Lag	Lead		Lag	Lag	Lead		Lag	Lag
Lead-Lag Optimize?	Yes		Yes	Yes	Yes		Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max
Act Effct Green (s)	25.3	23.1	13.5	13.5	98.7	96.3	87.4	87.4
Actuated g/C Ratio	0.19	0.18	0.10	0.10	0.76	0.74	0.67	0.67
v/c Ratio	0.55	0.21	0.47	0.17	0.25	0.37	0.08	0.75
Control Delay	52.9	3.4	65.4	1.1	17.6	2.3	3.4	10.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.9	3.4	65.4	1.1	17.6	2.3	3.4	10.9
LOS	D	A	E	A	B	A	A	B
Approach Delay		35.3		36.0		3.0		10.8
Approach LOS		D		D		A		B

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 130			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 11.0		Intersection LOS: B	
Intersection Capacity Utilization 71.5%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 5: Regional Rd 25 & Etheridge Ave/Collector Road

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	145	80	65	55	50	940	30	1725
v/c Ratio	0.55	0.21	0.47	0.17	0.25	0.37	0.08	0.75
Control Delay	52.9	3.4	65.4	1.1	17.6	2.3	3.4	10.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.9	3.4	65.4	1.1	17.6	2.3	3.4	10.9
Queue Length 50th (m)	34.1	0.0	16.9	0.0	2.0	9.1	0.8	186.0
Queue Length 95th (m)	52.3	4.9	31.7	0.0	m6.0	15.3	m1.0	226.0
Internal Link Dist (m)		53.9		63.1		108.9		696.9
Turn Bay Length (m)	40.0		40.0		70.0		70.0	
Base Capacity (vph)	262	622	327	525	201	2519	388	2300
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	0.55	0.13	0.20	0.10	0.25	0.37	0.08	0.75

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	145	0	80	65	0	55	50	920	20	30	1665	60
Future Volume (vph)	145	0	80	65	0	55	50	920	20	30	1665	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.2		5.2	5.2		3.0	5.4		5.4	5.4	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.85		1.00	0.85		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1787	1615		1805	1615		1752	3399		1805	3419	
Flt Permitted	0.57	1.00		0.70	1.00		0.07	1.00		0.30	1.00	
Satd. Flow (perm)	1076	1615		1339	1615		131	3399		578	3419	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	145	0	80	65	0	55	50	920	20	30	1665	60
RTOR Reduction (vph)	0	65	0	0	50	0	0	1	0	0	1	0
Lane Group Flow (vph)	145	15	0	65	5	0	50	939	0	30	1724	0
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	3%	6%	0%	0%	5%	6%
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases	7	4			8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	23.3	23.3		10.5	10.5		94.1	94.1		84.4	84.4	
Effective Green, g (s)	24.3	24.3		11.5	11.5		95.1	95.1		85.4	85.4	
Actuated g/C Ratio	0.19	0.19		0.09	0.09		0.73	0.73		0.66	0.66	
Clearance Time (s)	4.0	6.2		6.2	6.2		4.0	6.4		6.4	6.4	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	254	301		118	142		179	2486		379	2246	
v/s Ratio Prot	c0.04	0.01			0.00		0.01	c0.28			c0.50	
v/s Ratio Perm	c0.06			0.05			0.19			0.05		
v/c Ratio	0.57	0.05		0.55	0.03		0.28	0.38		0.08	0.77	
Uniform Delay, d1	46.8	43.4		56.8	54.2		13.7	6.5		8.1	15.4	
Progression Factor	1.00	1.00		1.00	1.00		3.04	0.29		0.31	0.55	
Incremental Delay, d2	3.1	0.1		5.5	0.1		0.7	0.4		0.3	2.0	
Delay (s)	49.9	43.4		62.2	54.3		42.2	2.2		2.8	10.5	
Level of Service	D	D		E	D		D	A		A	B	
Approach Delay (s)		47.6			58.6			4.2			10.4	
Approach LOS		D			E			A			B	

Intersection Summary				
HCM 2000 Control Delay	13.0	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.72			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	16.6	
Intersection Capacity Utilization	71.5%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	65	0	990	1790	20
Future Volume (Veh/h)	0	65	0	990	1790	20
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	65	0	990	1790	20
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				183	133	
pX, platoon unblocked	0.74	0.64	0.64			
vC, conflicting volume	2295	905	1810			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	818	0	1129			
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	91	100			
cM capacity (veh/h)	234	694	398			

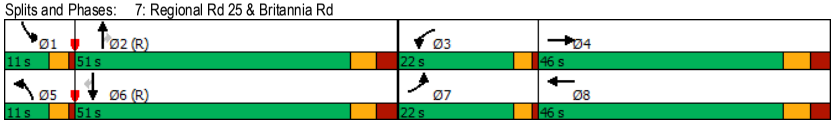
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	65	495	495	1193	617
Volume Left	0	0	0	0	0
Volume Right	65	0	0	0	20
cSH	694	1700	1700	1700	1700
Volume to Capacity	0.09	0.29	0.29	0.70	0.36
Queue Length 95th (m)	2.5	0.0	0.0	0.0	0.0
Control Delay (s)	10.7	0.0	0.0	0.0	0.0
Lane LOS	B				
Approach Delay (s)	10.7	0.0		0.0	
Approach LOS	B				

Intersection Summary				
Average Delay		0.2		
Intersection Capacity Utilization		60.8%	ICU Level of Service	B
Analysis Period (min)		15		

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	60	390	410	325	50	805	210	330	1505	20
Future Volume (vph)	60	390	410	325	50	805	210	330	1505	20
Turn Type	Prot	NA	Prot	NA	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4	3	8	5	2		1	6	
Permitted Phases							2			6
Detector Phase	7	4	3	8	5	2	2	1	6	6
Switch Phase										
Minimum Initial (s)	7.0	10.0	7.0	10.0	7.0	20.0	20.0	7.0	20.0	20.0
Minimum Split (s)	11.0	45.5	11.0	45.5	11.0	49.7	49.7	11.0	49.7	49.7
Total Split (s)	22.0	46.0	22.0	46.0	11.0	51.0	51.0	11.0	51.0	51.0
Total Split (%)	16.9%	35.4%	16.9%	35.4%	8.5%	39.2%	39.2%	8.5%	39.2%	39.2%
Yellow Time (s)	3.0	4.2	3.0	4.2	3.0	4.2	4.2	3.0	4.2	4.2
All-Red Time (s)	1.0	3.3	1.0	3.3	1.0	3.5	3.5	1.0	3.5	3.5
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.5	3.0	6.5	3.0	6.7	6.7	3.0	6.7	6.7
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	9.0	23.8	18.6	35.5	8.7	44.5	44.5	23.9	61.9	61.9
Actuated g/C Ratio	0.07	0.18	0.14	0.27	0.07	0.34	0.34	0.18	0.48	0.48
v/c Ratio	0.26	0.76	0.83	0.36	0.22	0.68	0.31	0.51	0.92	0.03
Control Delay	59.9	46.5	65.8	29.5	59.6	40.3	5.2	50.2	51.8	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.9	46.5	65.8	29.5	59.6	40.3	5.2	50.2	51.8	0.1
LOS	E	D	E	C	E	D	A	D	D	A
Approach Delay		47.6		46.8		34.3			51.0	
Approach LOS		D		D		C			D	

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 104 (80%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay: 45.7		Intersection LOS: D	
Intersection Capacity Utilization 90.4%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 7: Regional Rd 25 & Britannia Rd



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	60	660	410	450	50	805	210	330	1505	20
v/c Ratio	0.26	0.76	0.83	0.36	0.22	0.68	0.31	0.51	0.92	0.03
Control Delay	59.9	46.5	65.8	29.5	59.6	40.3	5.2	50.2	51.8	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.9	46.5	65.8	29.5	59.6	40.3	5.2	50.2	51.8	0.1
Queue Length 50th (m)	8.0	58.7	56.0	34.4	6.7	97.0	0.0	48.2	180.7	0.0
Queue Length 95th (m)	15.3	71.6	#79.8	47.4	13.4	121.6	17.3	64.7	#282.8	m0.0
Internal Link Dist (m)		377.9		182.4		165.3			159.1	
Turn Bay Length (m)	60.0		120.0		90.0		90.0	90.0		90.0
Base Capacity (vph)	482	1371	503	1363	225	1176	669	644	1637	660
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	0.12	0.48	0.82	0.33	0.22	0.68	0.31	0.51	0.92	0.03

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	390	270	410	325	125	50	805	210	330	1505	20
Future Volume (vph)	60	390	270	410	325	125	50	805	210	330	1505	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.5		3.0	6.5		3.0	6.7	6.7	3.0	6.7	6.7
Lane Util. Factor	0.97	*0.80		0.97	*0.80		0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	0.94		1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		1.00	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3303	4238		3445	4315		3367	3438	1553	3502	3438	1272
Flt Permitted	0.95	1.00		1.00	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3303	4238		3445	4315		3367	3438	1553	3502	3438	1272
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	60	390	270	410	325	125	50	805	210	330	1505	20
RTOR Reduction (vph)	0	97	0	0	55	0	0	0	139	0	0	11
Lane Group Flow (vph)	60	563	0	410	395	0	50	805	71	330	1505	9
Heavy Vehicles (%)	6%	1%	1%	7%	1%	2%	4%	5%	4%	0%	5%	27%
Turn Type	Prot	NA		Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			6
Actuated Green, G (s)	6.6	23.5		17.6	34.5		6.3	42.8	42.8	22.9	59.4	59.4
Effective Green, g (s)	7.6	24.5		18.6	35.5		7.3	43.8	43.8	23.9	60.4	60.4
Actuated g/C Ratio	0.06	0.19		0.14	0.27		0.06	0.34	0.34	0.18	0.46	0.46
Clearance Time (s)	4.0	7.5		4.0	7.5		4.0	7.7	7.7	4.0	7.7	7.7
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	193	798		492	1178		189	1158	523	643	1597	590
v/s Ratio Prot	0.02	c0.13		c0.12	0.09		0.01	0.23		c0.09	c0.44	
v/s Ratio Perm									0.05			0.01
v/c Ratio	0.31	0.71		0.83	0.34		0.26	0.70	0.14	0.51	0.94	0.02
Uniform Delay, d1	58.7	49.4		54.2	37.8		58.8	37.3	29.9	47.8	33.1	18.8
Progression Factor	1.00	1.00		0.93	0.91		1.00	1.00	1.00	0.97	1.38	1.00
Incremental Delay, d2	0.9	2.9		11.4	0.2		0.8	3.5	0.5	0.5	9.7	0.0
Delay (s)	59.6	52.2		61.9	34.7		59.5	40.8	30.5	47.0	55.4	18.8
Level of Service	E	D		E	C		E	D	C	D	E	B
Approach Delay (s)		52.8			47.7			39.6			53.5	
Approach LOS		D			D			D			D	

Intersection Summary

HCM 2000 Control Delay	49.0	HCM 2000 Level of Service		D	
HCM 2000 Volume to Capacity ratio	0.85				
Actuated Cycle Length (s)	130.0	Sum of lost time (s)		19.2	
Intersection Capacity Utilization	90.4%	ICU Level of Service		E	
Analysis Period (min)	15				

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	165	5	25	85	20	60
Future Volume (Veh/h)	165	5	25	85	20	60
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	165	5	25	85	20	60
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				78		
pX, platoon unblocked						
vC, conflicting volume			170		302	168
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			170		302	168
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		97	93
cM capacity (veh/h)			1420		681	882

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	170	110	80
Volume Left	0	25	20
Volume Right	5	0	60
cSH	1700	1420	821
Volume to Capacity	0.10	0.02	0.10
Queue Length 95th (m)	0.0	0.4	2.6
Control Delay (s)	0.0	1.8	9.9
Lane LOS		A	A
Approach Delay (s)	0.0	1.8	9.9
Approach LOS			A

Intersection Summary				
Average Delay			2.7	
Intersection Capacity Utilization			29.6%	ICU Level of Service A
Analysis Period (min)			15	

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	20	630	370	90	25
Future Volume (vph)	20	630	370	90	25
Turn Type	pm+pt	NA	NA	Prot	Perm
Protected Phases	5	2	6	8	
Permitted Phases	2				8
Detector Phase	5	2	6	8	8
Switch Phase					
Minimum Initial (s)	7.0	20.0	20.0	10.0	10.0
Minimum Split (s)	11.0	29.4	29.4	15.3	15.3
Total Split (s)	11.0	64.0	53.0	41.0	41.0
Total Split (%)	10.5%	61.0%	50.5%	39.0%	39.0%
Yellow Time (s)	3.0	4.2	4.2	3.3	3.3
All-Red Time (s)	1.0	2.2	2.2	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	5.4	5.4	4.3	4.3
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	None	None
Act Effct Green (s)	88.0	86.7	82.3	12.8	12.8
Actuated g/C Ratio	0.84	0.83	0.78	0.12	0.12
v/c Ratio	0.03	0.17	0.12	0.43	0.12
Control Delay	2.4	2.7	4.3	49.0	16.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	2.4	2.7	4.3	49.0	16.1
LOS	A	A	A	D	B
Approach Delay		2.7	4.3	41.9	
Approach LOS		A	A	D	

Intersection Summary		
Cycle Length: 105		
Actuated Cycle Length: 105		
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green		
Natural Cycle: 60		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.43		
Intersection Signal Delay: 7.2	Intersection LOS: A	
Intersection Capacity Utilization 33.1%	ICU Level of Service A	
Analysis Period (min) 15		

Splits and Phases: 10: Britannia Rd & Farmstead Dr

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	20	630	395	90	25
v/c Ratio	0.03	0.17	0.12	0.43	0.12
Control Delay	2.4	2.7	4.3	49.0	16.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	2.4	2.7	4.3	49.0	16.1
Queue Length 50th (m)	0.6	10.5	6.1	18.4	0.0
Queue Length 95th (m)	2.3	17.7	16.9	33.1	7.7
Internal Link Dist (m)		101.0	377.9	199.3	
Turn Bay Length (m)	20.0				
Base Capacity (vph)	744	3653	3296	595	553
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.03	0.17	0.12	0.15	0.05

Intersection Summary

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	20	630	370	25	90	25
Future Volume (vph)	20	630	370	25	90	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.4	5.4		4.3	4.3
Lane Util. Factor	1.00	*0.80	*0.80		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1656	4427	4202		1703	1538
Flt Permitted	0.46	1.00	1.00		0.95	1.00
Satd. Flow (perm)	811	4427	4202		1703	1538
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	20	630	370	25	90	25
RTOR Reduction (vph)	0	0	3	0	0	22
Lane Group Flow (vph)	20	630	392	0	90	3
Heavy Vehicles (%)	9%	3%	8%	0%	6%	5%
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		8	
Permitted Phases	2					8
Actuated Green, G (s)	83.5	83.5	76.7		9.8	9.8
Effective Green, g (s)	84.5	84.5	77.7		10.8	10.8
Actuated g/C Ratio	0.80	0.80	0.74		0.10	0.10
Clearance Time (s)	4.0	6.4	6.4		5.3	5.3
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	683	3562	3109		175	158
v/s Ratio Prot	0.00	c0.14	0.09		c0.05	
v/s Ratio Perm	0.02					0.00
v/c Ratio	0.03	0.18	0.13		0.51	0.02
Uniform Delay, d1	2.1	2.3	3.9		44.6	42.3
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.0	0.1	0.1		2.5	0.0
Delay (s)	2.1	2.4	4.0		47.2	42.4
Level of Service	A	A	A		D	D
Approach Delay (s)		2.4	4.0		46.1	
Approach LOS		A	A		D	

Intersection Summary				
HCM 2000 Control Delay	7.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.22		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	12.7
Intersection Capacity Utilization	33.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	25	905	785	55	75
Future Volume (vph)	25	905	785	55	75
Turn Type	pm+pt	NA	NA	Prot	Perm
Protected Phases	5	2	6	4	
Permitted Phases	2				4
Detector Phase	5	2	6	4	4
Switch Phase					
Minimum Initial (s)	7.0	20.0	20.0	10.0	10.0
Minimum Split (s)	11.0	29.0	29.0	43.0	43.0
Total Split (s)	15.0	80.0	65.0	50.0	50.0
Total Split (%)	11.5%	61.5%	50.0%	38.5%	38.5%
Yellow Time (s)	3.0	4.0	4.0	3.0	3.0
All-Red Time (s)	1.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.0	6.0	5.0	5.0
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	None	None
Act Effct Green (s)	110.2	107.2	100.6	11.8	11.8
Actuated g/C Ratio	0.85	0.82	0.77	0.09	0.09
v/c Ratio	0.05	0.24	0.23	0.34	0.35
Control Delay	4.5	7.0	4.6	61.1	16.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	4.5	7.0	4.6	61.1	16.3
LOS	A	A	A	E	B
Approach Delay		6.9	4.6	35.2	
Approach LOS		A	A	D	

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.35			
Intersection Signal Delay: 7.9		Intersection LOS: A	
Intersection Capacity Utilization 38.3%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 11: Britannia Rd & Rose Way

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	25	905	795	55	75
v/c Ratio	0.05	0.24	0.23	0.34	0.35
Control Delay	4.5	7.0	4.6	61.1	16.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	4.5	7.0	4.6	61.1	16.3
Queue Length 50th (m)	2.2	44.0	24.0	14.3	0.0
Queue Length 95th (m)	m4.7	51.3	32.6	27.8	15.3
Internal Link Dist (m)		182.4	155.7	76.0	
Turn Bay Length (m)	50.0			50.0	
Base Capacity (vph)	584	3761	3523	624	608
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.04	0.24	0.23	0.09	0.12

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

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	25	905	785	10	55	75
Future Volume (vph)	25	905	785	10	55	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0		5.0	5.0
Lane Util. Factor	1.00	*0.80	*0.80		1.00	1.00
Frt	1.00	1.00	1.00		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1805	4560	4551		1805	1615
Flt Permitted	0.29	1.00	1.00		0.95	1.00
Satd. Flow (perm)	553	4560	4551		1805	1615
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	25	905	785	10	55	75
RTOR Reduction (vph)	0	0	0	0	0	68
Lane Group Flow (vph)	25	905	795	0	55	7
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)	106.2	106.2	98.0		10.8	10.8
Effective Green, g (s)	107.2	107.2	99.0		11.8	11.8
Actuated g/C Ratio	0.82	0.82	0.76		0.09	0.09
Clearance Time (s)	4.0	7.0	7.0		6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	506	3760	3465		163	146
v/s Ratio Prot	0.00	c0.20	0.17		c0.03	
v/s Ratio Perm	0.04					0.00
v/c Ratio	0.05	0.24	0.23		0.34	0.05
Uniform Delay, d1	2.1	2.5	4.5		55.4	54.0
Progression Factor	2.61	2.68	1.00		1.00	1.00
Incremental Delay, d2	0.0	0.1	0.2		1.2	0.1
Delay (s)	5.5	6.8	4.6		56.7	54.1
Level of Service	A	A	A		E	D
Approach Delay (s)		6.8	4.6		55.2	
Approach LOS		A	A		E	

Intersection Summary				
HCM 2000 Control Delay	9.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.26		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	38.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	205	375	345	545	210	870	430	95	845	195
Future Volume (vph)	205	375	345	545	210	870	430	95	845	195
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4	3	8	5	2		1	6	
Permitted Phases	4		8		2		2	6		6
Detector Phase	7	4	3	8	5	2	2	1	6	6
Switch Phase										
Minimum Initial (s)	5.0	10.0	10.0	10.0	5.0	20.0	20.0	5.0	20.0	20.0
Minimum Split (s)	9.0	30.0	14.0	30.0	9.0	32.2	32.2	9.0	32.2	32.2
Total Split (s)	22.0	30.0	32.0	40.0	22.0	68.0	68.0	10.0	56.0	56.0
Total Split (%)	15.7%	21.4%	22.9%	28.6%	15.7%	48.6%	48.6%	7.1%	40.0%	40.0%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	4.2	4.2	3.0	4.2	4.2
All-Red Time (s)	1.0	3.0	0.0	3.0	1.0	3.0	3.0	1.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.0	2.0	6.0	3.0	6.2	6.2	3.0	6.2	6.2
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	43.5	23.7	54.9	31.0	80.0	65.9	65.9	70.5	59.3	59.3
Actuated g/C Ratio	0.31	0.17	0.39	0.22	0.57	0.47	0.47	0.50	0.42	0.42
v/c Ratio	0.69	0.82	0.83	0.77	0.57	0.54	0.45	0.30	0.57	0.25
Control Delay	42.7	65.1	50.9	57.4	21.9	28.7	5.0	17.9	34.3	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.7	65.1	50.9	57.4	21.9	28.7	5.0	17.9	34.3	4.7
LOS	D	E	D	E	C	C	A	B	C	A
Approach Delay		58.5		55.0		21.0			27.8	
Approach LOS		E		E		C			C	

Intersection Summary
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.83
Intersection Signal Delay: 36.5 — Intersection LOS: D
Intersection Capacity Utilization 86.0% — ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 1: Regional Rd 25 & Louis St Laurent Ave

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	205	495	345	610	210	870	430	95	845	195
v/c Ratio	0.69	0.82	0.83	0.77	0.57	0.54	0.45	0.30	0.57	0.25
Control Delay	42.7	65.1	50.9	57.4	21.9	28.7	5.0	17.9	34.3	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.7	65.1	50.9	57.4	21.9	28.7	5.0	17.9	34.3	4.7
Queue Length 50th (m)	40.3	69.2	72.4	86.4	29.5	98.0	5.9	12.4	100.0	0.0
Queue Length 95th (m)	58.3	#92.2	105.9	106.9	46.9	120.2	28.6	22.7	134.1	16.8
Internal Link Dist (m)		126.1		117.1		481.0			113.5	
Turn Bay Length (m)	90.0		35.0		65.0		65.0	80.0		90.0
Base Capacity (vph)	324	626	468	865	413	1604	946	320	1470	782
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	0.63	0.79	0.74	0.71	0.51	0.54	0.45	0.30	0.57	0.25

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	205	375	120	345	545	65	210	870	430	95	845	195
Future Volume (vph)	205	375	120	345	545	65	210	870	430	95	845	195
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0		2.0	6.0		3.0	6.2	6.2	3.0	6.2	6.2
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.96		1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		1.00	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1769	3435		1899	3537		1787	3406	1567	1804	3471	1582
Flt Permitted	0.24	1.00		0.18	1.00		0.21	1.00	1.00	0.26	1.00	1.00
Satd. Flow (perm)	445	3435		349	3537		394	3406	1567	489	3471	1582
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	205	375	120	345	545	65	210	870	430	95	845	195
RTOR Reduction (vph)	0	22	0	0	7	0	0	0	209	0	0	112
Lane Group Flow (vph)	205	473	0	345	603	0	210	870	221	95	845	83
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Heavy Vehicles (%)	2%	1%	0%	0%	0%	2%	1%	6%	1%	0%	4%	0%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	38.5	22.7		49.9	30.1		75.9	64.9	64.9	65.3	58.3	58.3
Effective Green, g (s)	40.5	23.7		50.9	31.1		76.9	65.9	65.9	67.3	59.3	59.3
Actuated g/C Ratio	0.29	0.17		0.36	0.22		0.55	0.47	0.47	0.48	0.42	0.42
Clearance Time (s)	4.0	7.0		3.0	7.0		4.0	7.2	7.2	4.0	7.2	7.2
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	287	581		405	785		361	1603	737	310	1470	670
v/s Ratio Prot	0.09	0.14		c0.15	c0.17		c0.06	0.26		0.02	0.24	
v/s Ratio Perm	0.12			0.16			c0.26		0.14	0.13		0.05
v/c Ratio	0.71	0.81		0.85	0.77		0.58	0.54	0.30	0.31	0.57	0.12
Uniform Delay, d1	40.5	56.0		36.1	51.1		19.0	26.3	22.8	20.6	30.7	24.5
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	8.2	8.6		15.7	4.5		2.4	1.3	1.0	0.6	1.6	0.4
Delay (s)	48.7	64.6		51.8	55.6		21.4	27.7	23.9	21.1	32.4	24.9
Level of Service	D	E		D	E		C	C	C	C	C	C
Approach Delay (s)		60.0			54.2			25.7			30.2	
Approach LOS		E			D			C			C	

Intersection Summary				
HCM 2000 Control Delay	38.8	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.70			
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.2	
Intersection Capacity Utilization	86.0%	ICU Level of Service	E	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	105	40	25	40	75	90	1510	40	60	1055	135
Future Volume (vph)	105	40	25	40	75	90	1510	40	60	1055	135
Turn Type	Perm	NA	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		8		5	2		1	6	
Permitted Phases	4		8		8	2		2	6		6
Detector Phase	4	4	8	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	7.0	20.0	20.0	7.0	20.0	20.0
Minimum Split (s)	37.5	37.5	37.5	37.5	37.5	11.0	35.5	35.5	11.0	35.5	35.5
Total Split (s)	38.0	38.0	38.0	38.0	38.0	11.0	81.0	81.0	11.0	81.0	81.0
Total Split (%)	29.2%	29.2%	29.2%	29.2%	29.2%	8.5%	62.3%	62.3%	8.5%	62.3%	62.3%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.0	4.2	4.2	3.0	4.2	4.2
All-Red Time (s)	3.2	3.2	3.2	3.2	3.2	1.0	2.3	2.3	1.0	2.3	2.3
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	3.0	5.5	5.5	3.0	5.5	5.5
Lead/Lag						Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	16.6	16.6	16.6	16.6	16.6	102.8	93.5	93.5	101.7	91.1	91.1
Actuated g/C Ratio	0.13	0.13	0.13	0.13	0.13	0.79	0.72	0.72	0.78	0.70	0.70
v/c Ratio	0.60	0.32	0.15	0.17	0.29	0.21	0.61	0.03	0.21	0.44	0.12
Control Delay	67.4	31.8	50.2	50.0	13.0	1.8	7.0	1.3	4.8	9.7	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.4	31.8	50.2	50.0	13.0	1.8	7.0	1.3	4.8	9.7	4.1
LOS	E	C	D	D	B	A	A	A	A	A	A
Approach Delay		52.0		30.2			6.6			8.8	
Approach LOS		D		C			A			A	

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 40 (31%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 95			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.61			
Intersection Signal Delay: 11.1		Intersection LOS: B	
Intersection Capacity Utilization 74.8%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 2: Regional Rd 25 & Whitlock Ave

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	105	80	25	40	75	90	1510	40	60	1055	135
v/c Ratio	0.60	0.32	0.15	0.17	0.29	0.21	0.61	0.03	0.21	0.44	0.12
Control Delay	67.4	31.8	50.2	50.0	13.0	1.8	7.0	1.3	4.8	9.7	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.4	31.8	50.2	50.0	13.0	1.8	7.0	1.3	4.8	9.7	4.1
Queue Length 50th (m)	27.2	10.6	6.1	9.8	0.0	1.4	53.6	0.3	2.6	57.7	5.2
Queue Length 95th (m)	45.1	25.0	14.4	20.3	14.0	m3.1	112.5	m1.7	6.9	87.3	14.4
Internal Link Dist (m)		62.9		68.1			696.9			481.0	
Turn Bay Length (m)	35.0		65.0		65.0	100.0		25.0	100.0		25.0
Base Capacity (vph)	341	452	333	475	441	431	2473	1143	284	2386	1151
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.18	0.08	0.08	0.17	0.21	0.61	0.03	0.21	0.44	0.12

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	40	40	25	40	75	90	1510	40	60	1055	135
Future Volume (vph)	105	40	40	25	40	75	90	1510	40	60	1055	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5		5.5	5.5	5.5	3.0	5.5	5.5	3.0	5.5	5.5
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	1.00
Flpb, ped/bikes	0.99	1.00		0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.93		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1776	1699		1795	1900	1539	1787	3438	1565	1769	3406	1615
Flt Permitted	0.73	1.00		0.70	1.00	1.00	0.23	1.00	1.00	0.13	1.00	1.00
Satd. Flow (perm)	1367	1699		1332	1900	1539	436	3438	1565	241	3406	1615
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	105	40	40	25	40	75	90	1510	40	60	1055	135
RTOR Reduction (vph)	0	32	0	0	0	65	0	0	11	0	0	20
Lane Group Flow (vph)	105	48	0	25	40	10	90	1510	29	60	1055	115
Confl. Peds. (#/hr)	5		5	5		5			5	5		
Heavy Vehicles (%)	1%	5%	0%	0%	0%	3%	1%	5%	0%	2%	6%	0%
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8	2		2	6		6
Actuated Green, G (s)	15.6	15.6		15.6	15.6	15.6	99.1	91.7	91.7	95.7	90.0	90.0
Effective Green, g (s)	16.6	16.6		16.6	16.6	16.6	101.1	92.7	92.7	97.7	91.0	91.0
Actuated g/C Ratio	0.13	0.13		0.13	0.13	0.13	0.78	0.71	0.71	0.75	0.70	0.70
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.5	6.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	174	216		170	242	196	426	2451	1115	259	2384	1130
v/s Ratio Prot		0.03			0.02		c0.01	c0.44		c0.01	0.31	
v/s Ratio Perm	c0.08			0.02		0.01	0.15		0.02	0.16		0.07
v/c Ratio	0.60	0.22		0.15	0.17	0.05	0.21	0.62	0.03	0.23	0.44	0.10
Uniform Delay, d1	53.6	50.9		50.4	50.5	49.8	4.2	9.5	5.5	6.5	8.5	6.3
Progression Factor	1.00	1.00		1.00	1.00	1.00	0.30	0.59	1.56	1.00	1.00	1.00
Incremental Delay, d2	5.8	0.5		0.4	0.3	0.1	0.2	0.9	0.0	0.5	0.6	0.2
Delay (s)	59.4	51.4		50.8	50.9	49.9	1.5	6.5	8.6	7.0	9.1	6.5
Level of Service	E	D		D	D	D	A	A	A	A	A	A
Approach Delay (s)		55.9			50.3			6.3			8.7	
Approach LOS		E			D			A			A	

Intersection Summary				
HCM 2000 Control Delay	12.0	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.59			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	14.0	
Intersection Capacity Utilization	74.8%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	100	0	40	0	130	1500	55	935
Future Volume (vph)	100	0	40	0	130	1500	55	935
Turn Type	pm+pt	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases	7	4		8	5	2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	7	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	7.0	10.0	10.0	10.0	7.0	20.0	7.0	20.0
Minimum Split (s)	11.0	36.2	36.2	36.2	11.0	38.4	11.0	38.4
Total Split (s)	12.0	49.0	37.0	37.0	11.0	70.0	11.0	70.0
Total Split (%)	9.2%	37.7%	28.5%	28.5%	8.5%	53.8%	8.5%	53.8%
Yellow Time (s)	3.0	3.3	3.3	3.3	3.0	4.2	3.0	4.2
All-Red Time (s)	1.0	2.9	2.9	2.9	1.0	2.2	1.0	2.2
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	5.2	5.2	5.2	3.0	5.4	3.0	5.4
Lead/Lag	Lead		Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	23.6	21.4	11.8	11.8	98.9	88.9	96.6	85.9
Actuated g/C Ratio	0.18	0.16	0.09	0.09	0.76	0.68	0.74	0.66
v/c Ratio	0.41	0.08	0.32	0.13	0.32	0.66	0.22	0.47
Control Delay	50.2	0.4	62.0	0.9	3.7	7.8	6.1	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.2	0.4	62.0	0.9	3.7	7.8	6.1	5.3
LOS	D	A	E	A	A	A	A	A
Approach Delay		37.3		31.4		7.5		5.3
Approach LOS		D		C		A		A

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 103 (79%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.66			
Intersection Signal Delay: 8.7		Intersection LOS: A	
Intersection Capacity Utilization 73.7%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 5: Regional Rd 25 & Etheridge Ave/Collector Road

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	100	35	40	40	130	1565	55	1065
v/c Ratio	0.41	0.08	0.32	0.13	0.32	0.66	0.22	0.47
Control Delay	50.2	0.4	62.0	0.9	3.7	7.8	6.1	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.2	0.4	62.0	0.9	3.7	7.8	6.1	5.3
Queue Length 50th (m)	23.3	0.0	10.4	0.0	3.5	56.7	0.7	75.9
Queue Length 95th (m)	39.5	0.0	22.4	0.0	m7.4	78.4	5.4	37.1
Internal Link Dist (m)		53.9		63.5		106.2		696.9
Turn Bay Length (m)	40.0		40.0		70.0		70.0	
Base Capacity (vph)	241	669	341	528	408	2366	252	2263
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	0.41	0.05	0.12	0.08	0.32	0.66	0.22	0.47

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	100	0	35	40	0	40	130	1500	65	55	935	130
Future Volume (vph)	100	0	35	40	0	40	130	1500	65	55	935	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.2		5.2	5.2		3.0	5.4		3.0	5.4	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.85		1.00	0.85		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1752	1615		1805	1615		1805	3455		1805	3416	
Flt Permitted	0.56	1.00		0.73	1.00		0.22	1.00		0.11	1.00	
Satd. Flow (perm)	1032	1615		1395	1615		409	3455		204	3416	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	100	0	35	40	0	40	130	1500	65	55	935	130
RTOR Reduction (vph)	0	29	0	0	37	0	0	2	0	0	6	0
Lane Group Flow (vph)	100	6	0	40	3	0	130	1563	0	55	1059	0
Heavy Vehicles (%)	3%	0%	0%	0%	0%	0%	0%	4%	0%	0%	4%	2%
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	21.6	21.6		8.8	8.8		94.0	85.9		89.6	83.7	
Effective Green, g (s)	22.6	22.6		9.8	9.8		96.0	86.9		91.6	84.7	
Actuated g/C Ratio	0.17	0.17		0.08	0.08		0.74	0.67		0.70	0.65	
Clearance Time (s)	4.0	6.2		6.2	6.2		4.0	6.4		4.0	6.4	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	233	280		105	121		399	2309		228	2225	
v/s Ratio Prot	c0.03	0.00			0.00		c0.02	c0.45		0.01	0.31	
v/s Ratio Perm	c0.04			0.03			0.22			0.16		
v/c Ratio	0.43	0.02		0.38	0.02		0.33	0.68		0.24	0.48	
Uniform Delay, d1	47.1	44.5		57.2	55.7		6.3	13.1		9.7	11.4	
Progression Factor	1.00	1.00		1.00	1.00		0.53	0.50		1.00	0.40	
Incremental Delay, d2	1.3	0.0		2.3	0.1		0.3	1.1		0.5	0.7	
Delay (s)	48.4	44.6		59.5	55.8		3.7	7.7		10.2	5.3	
Level of Service	D	D		E	E		A	A		B	A	
Approach Delay (s)		47.4			57.6			7.4			5.5	
Approach LOS		D			E			A			A	

Intersection Summary				
HCM 2000 Control Delay	9.8	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.63			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	16.6	
Intersection Capacity Utilization	73.7%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	40	0	1695	960	50
Future Volume (Veh/h)	0	40	0	1695	960	50
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	40	0	1695	960	50
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				186	130	
pX, platoon unblocked	0.68					
vC, conflicting volume	1832	345	1010			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1281	345	1010			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	94	100			
cM capacity (veh/h)	109	657	694			

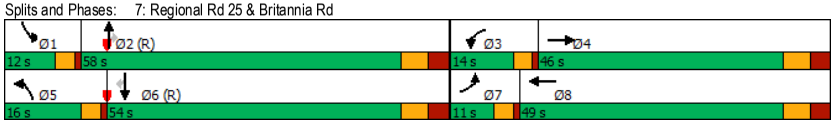
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	40	848	848	384	384	242
Volume Left	0	0	0	0	0	0
Volume Right	40	0	0	0	0	50
cSH	657	1700	1700	1700	1700	1700
Volume to Capacity	0.06	0.50	0.50	0.23	0.23	0.14
Queue Length 95th (m)	1.6	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	10.8	0.0	0.0	0.0	0.0	0.0
Lane LOS	B					
Approach Delay (s)	10.8	0.0		0.0		
Approach LOS	B					

Intersection Summary				
Average Delay		0.2		
Intersection Capacity Utilization		50.2%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	45	305	285	470	235	1320	445	150	800	50
Future Volume (vph)	45	305	285	470	235	1320	445	150	800	50
Turn Type	Prot	NA	Prot	NA	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4	3	8	5	2		1	6	
Permitted Phases							2			6
Detector Phase	7	4	3	8	5	2	2	1	6	6
Switch Phase										
Minimum Initial (s)	7.0	10.0	7.0	10.0	7.0	20.0	20.0	7.0	20.0	20.0
Minimum Split (s)	11.0	45.5	11.0	45.5	11.0	49.7	49.7	11.0	49.7	49.7
Total Split (s)	11.0	46.0	14.0	49.0	16.0	58.0	58.0	12.0	54.0	54.0
Total Split (%)	8.5%	35.4%	10.8%	37.7%	12.3%	44.6%	44.6%	9.2%	41.5%	41.5%
Yellow Time (s)	3.0	4.2	3.0	4.2	3.0	4.2	4.2	3.0	4.2	4.2
All-Red Time (s)	1.0	3.3	1.0	3.3	1.0	3.5	3.5	1.0	3.5	3.5
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.5	3.0	6.5	3.0	6.7	6.7	3.0	6.7	6.7
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	8.0	24.0	11.0	29.2	14.9	63.9	63.9	11.9	60.9	60.9
Actuated g/C Ratio	0.06	0.18	0.08	0.22	0.11	0.49	0.49	0.09	0.47	0.47
v/c Ratio	0.22	0.41	0.93	0.75	0.58	0.77	0.46	0.47	0.49	0.06
Control Delay	60.9	45.1	113.3	38.3	60.3	32.3	6.8	71.8	18.0	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.9	45.1	113.3	38.3	60.3	32.3	6.8	71.8	18.0	0.1
LOS	E	D	F	D	E	C	A	E	B	A
Approach Delay		46.9		58.0		29.9			25.1	
Approach LOS		D		E		C			C	

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 104 (80%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 120			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.93			
Intersection Signal Delay: 37.1		Intersection LOS: D	
Intersection Capacity Utilization 82.3%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 7: Regional Rd 25 & Britannia Rd



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	45	345	285	800	235	1320	445	150	800	50
v/c Ratio	0.22	0.41	0.93	0.75	0.58	0.77	0.46	0.47	0.49	0.06
Control Delay	60.9	45.1	113.3	38.3	60.3	32.3	6.8	71.8	18.0	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.9	45.1	113.3	38.3	60.3	32.3	6.8	71.8	18.0	0.1
Queue Length 50th (m)	6.0	32.6	42.2	44.2	31.4	151.8	12.4	21.3	41.4	0.0
Queue Length 95th (m)	12.7	41.6	#69.8	47.3	44.1	#223.7	43.3	33.6	49.3	0.0
Internal Link Dist (m)		377.9		190.1		165.3			161.9	
Turn Bay Length (m)	60.0		120.0		90.0		90.0	90.0		90.0
Base Capacity (vph)	203	1372	305	1481	412	1723	960	319	1626	812
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	0.22	0.25	0.93	0.54	0.57	0.77	0.46	0.47	0.49	0.06

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	305	40	285	470	330	235	1320	445	150	800	50
Future Volume (vph)	45	305	40	285	470	330	235	1320	445	150	800	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.5		3.0	6.5		3.0	6.7	6.7	3.0	6.7	6.7
Lane Util. Factor	0.97	*0.80		0.97	*0.80		0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	0.98		1.00	0.94		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		1.00	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3303	4481		3614	4235		3502	3505	1583	3467	3471	1615
Flt Permitted	0.95	1.00		1.00	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3303	4481		3614	4235		3502	3505	1583	3467	3471	1615
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	45	305	40	285	470	330	235	1320	445	150	800	50
RTOR Reduction (vph)	0	12	0	0	112	0	0	0	185	0	0	27
Lane Group Flow (vph)	45	333	0	285	688	0	235	1320	260	150	800	23
Heavy Vehicles (%)	6%	0%	0%	2%	1%	1%	0%	3%	2%	1%	4%	0%
Turn Type	Prot	NA		Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			6
Actuated Green, G (s)	5.6	23.8		10.0	28.2		13.9	62.1	62.1	10.9	59.1	59.1
Effective Green, g (s)	6.6	24.8		11.0	29.2		14.9	63.1	63.1	11.9	60.1	60.1
Actuated g/C Ratio	0.05	0.19		0.08	0.22		0.11	0.49	0.49	0.09	0.46	0.46
Clearance Time (s)	4.0	7.5		4.0	7.5		4.0	7.7	7.7	4.0	7.7	7.7
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	167	854		305	951		401	1701	768	317	1604	746
v/s Ratio Prot	0.01	0.07		c0.08	c0.16		c0.07	c0.38		0.04	0.23	
v/s Ratio Perm									0.16			0.01
v/c Ratio	0.27	0.39		0.93	0.72		0.59	0.78	0.34	0.47	0.50	0.03
Uniform Delay, d1	59.4	46.0		59.1	46.7		54.6	27.6	20.6	56.1	24.4	19.1
Progression Factor	1.00	1.00		1.33	0.88		1.00	1.00	1.00	1.21	0.66	1.00
Incremental Delay, d2	0.9	0.3		33.8	2.7		2.2	3.5	1.2	1.0	1.0	0.1
Delay (s)	60.3	46.3		112.5	43.7		56.8	31.2	21.8	68.8	17.1	19.1
Level of Service	E	D		F	D		E	C	C	E	B	B
Approach Delay (s)		47.9			61.8			32.1			25.0	
Approach LOS		D			E			C			C	

Intersection Summary

HCM 2000 Control Delay	39.1	HCM 2000 Level of Service		D	
HCM 2000 Volume to Capacity ratio	0.78				
Actuated Cycle Length (s)	130.0	Sum of lost time (s)		19.2	
Intersection Capacity Utilization	82.3%	ICU Level of Service		E	
Analysis Period (min)	15				

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	100	10	85	175	15	35
Future Volume (Veh/h)	100	10	85	175	15	35
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	100	10	85	175	15	35
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				78		
pX, platoon unblocked					0.98	
vC, conflicting volume			110		450	105
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			110		429	105
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			94		97	96
cM capacity (veh/h)			1493		542	955

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	110	260	50
Volume Left	0	85	15
Volume Right	10	0	35
cSH	1700	1493	778
Volume to Capacity	0.06	0.06	0.06
Queue Length 95th (m)	0.0	1.4	1.6
Control Delay (s)	0.0	2.8	9.9
Lane LOS		A	A
Approach Delay (s)	0.0	2.8	9.9
Approach LOS			A

Intersection Summary				
Average Delay			2.9	
Intersection Capacity Utilization			30.6%	ICU Level of Service A
Analysis Period (min)			15	

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	20	335	675	55	20
Future Volume (vph)	20	335	675	55	20
Turn Type	pm+pt	NA	NA	Prot	Perm
Protected Phases	5	2	6	8	
Permitted Phases	2				8
Detector Phase	5	2	6	8	8
Switch Phase					
Minimum Initial (s)	7.0	20.0	20.0	10.0	10.0
Minimum Split (s)	11.0	29.4	29.4	15.3	15.3
Total Split (s)	11.0	64.0	53.0	41.0	41.0
Total Split (%)	10.5%	61.0%	50.5%	39.0%	39.0%
Yellow Time (s)	3.0	4.2	4.2	3.3	3.3
All-Red Time (s)	1.0	2.2	2.2	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	5.4	5.4	4.3	4.3
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	None	None
Act Effct Green (s)	89.3	88.0	83.6	11.4	11.4
Actuated g/C Ratio	0.85	0.84	0.80	0.11	0.11
v/c Ratio	0.03	0.09	0.21	0.29	0.10
Control Delay	1.9	2.1	4.0	47.2	18.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	1.9	2.1	4.0	47.2	18.6
LOS	A	A	A	D	B
Approach Delay		2.1	4.0	39.6	
Approach LOS		A	A	D	

Intersection Summary		
Cycle Length: 105		
Actuated Cycle Length: 105		
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green		
Natural Cycle: 60		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.29		
Intersection Signal Delay: 5.7	Intersection LOS: A	
Intersection Capacity Utilization 33.1%	ICU Level of Service A	
Analysis Period (min) 15		

Splits and Phases: 10: Britannia Rd & Farmstead Dr

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	20	335	755	55	20
v/c Ratio	0.03	0.09	0.21	0.29	0.10
Control Delay	1.9	2.1	4.0	47.2	18.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	1.9	2.1	4.0	47.2	18.6
Queue Length 50th (m)	0.6	4.9	12.0	11.1	0.0
Queue Length 95th (m)	1.9	7.9	28.9	23.1	7.2
Internal Link Dist (m)		101.0	377.9	199.3	
Turn Bay Length (m)	20.0				
Base Capacity (vph)	587	3822	3545	606	577
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.03	0.09	0.21	0.09	0.03

Intersection Summary

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	20	335	675	80	55	20
Future Volume (vph)	20	335	675	80	55	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.4	5.4		4.3	4.3
Lane Util. Factor	1.00	*0.80	*0.80		1.00	1.00
Frt	1.00	1.00	0.98		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1805	4560	4448		1736	1615
Flt Permitted	0.31	1.00	1.00		0.95	1.00
Satd. Flow (perm)	581	4560	4448		1736	1615
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	20	335	675	80	55	20
RTOR Reduction (vph)	0	0	5	0	0	18
Lane Group Flow (vph)	20	335	750	0	55	2
Heavy Vehicles (%)	0%	0%	1%	0%	4%	0%
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		8	
Permitted Phases	2					8
Actuated Green, G (s)	84.9	84.9	78.1		8.4	8.4
Effective Green, g (s)	85.9	85.9	79.1		9.4	9.4
Actuated g/C Ratio	0.82	0.82	0.75		0.09	0.09
Clearance Time (s)	4.0	6.4	6.4		5.3	5.3
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	519	3730	3350		155	144
v/s Ratio Prot	0.00	c0.07	c0.17		c0.03	
v/s Ratio Perm	0.03					0.00
v/c Ratio	0.04	0.09	0.22		0.35	0.01
Uniform Delay, d1	1.8	1.9	3.8		44.9	43.6
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.0	0.0	0.2		1.4	0.0
Delay (s)	1.8	1.9	4.0		46.3	43.6
Level of Service	A	A	A		D	D
Approach Delay (s)		1.9	4.0		45.6	
Approach LOS		A	A		D	

Intersection Summary				
HCM 2000 Control Delay	6.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.23		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	12.7
Intersection Capacity Utilization	33.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

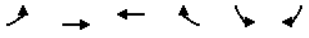
Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	80	820	1035	30	50
Future Volume (vph)	80	820	1035	30	50
Turn Type	pm+pt	NA	NA	Prot	Perm
Protected Phases	5	2	6	4	
Permitted Phases	2				4
Detector Phase	5	2	6	4	4
Switch Phase					
Minimum Initial (s)	7.0	20.0	20.0	10.0	10.0
Minimum Split (s)	11.0	29.0	29.0	43.0	43.0
Total Split (s)	15.0	80.0	65.0	50.0	50.0
Total Split (%)	11.5%	61.5%	50.0%	38.5%	38.5%
Yellow Time (s)	3.0	4.0	4.0	3.0	3.0
All-Red Time (s)	1.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.0	6.0	5.0	5.0
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	None	None
Act Effct Green (s)	114.2	112.4	103.5	11.0	11.0
Actuated g/C Ratio	0.88	0.86	0.80	0.08	0.08
v/c Ratio	0.19	0.21	0.30	0.20	0.27
Control Delay	2.1	1.3	4.9	58.7	18.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	2.1	1.3	4.9	58.7	18.8
LOS	A	A	A	E	B
Approach Delay		1.4	4.9	33.8	
Approach LOS		A	A	C	

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 65 (50%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.30			
Intersection Signal Delay: 4.5		Intersection LOS: A	
Intersection Capacity Utilization 48.0%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 11: Britannia Rd & Rose Way

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	80	820	1095	30	50
v/c Ratio	0.19	0.21	0.30	0.20	0.27
Control Delay	2.1	1.3	4.9	58.7	18.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	2.1	1.3	4.9	58.7	18.8
Queue Length 50th (m)	1.2	6.8	35.7	7.7	0.0
Queue Length 95th (m)	3.4	14.3	42.9	18.0	13.0
Internal Link Dist (m)		190.1	148.0	92.6	
Turn Bay Length (m)	50.0			50.0	
Base Capacity (vph)	461	3941	3604	624	591
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.17	0.21	0.30	0.05	0.08

Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	80	820	1035	60	30	50
Future Volume (vph)	80	820	1035	60	30	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0		5.0	5.0
Lane Util. Factor	1.00	*0.80	*0.80		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1805	4560	4523		1805	1615
Flt Permitted	0.20	1.00	1.00		0.95	1.00
Satd. Flow (perm)	376	4560	4523		1805	1615
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	80	820	1035	60	30	50
RTOR Reduction (vph)	0	0	2	0	0	47
Lane Group Flow (vph)	80	820	1093	0	30	3
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)	109.0	109.0	99.4		8.0	8.0
Effective Green, g (s)	110.0	110.0	100.4		9.0	9.0
Actuated g/C Ratio	0.85	0.85	0.77		0.07	0.07
Clearance Time (s)	4.0	7.0	7.0		6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	390	3858	3493		124	111
v/s Ratio Prot	0.01	c0.18	c0.24		c0.02	
v/s Ratio Perm	0.16					0.00
v/c Ratio	0.21	0.21	0.31		0.24	0.03
Uniform Delay, d1	1.8	1.9	4.4		57.3	56.4
Progression Factor	0.83	0.59	1.00		1.00	1.00
Incremental Delay, d2	0.2	0.1	0.2		1.0	0.1
Delay (s)	1.8	1.2	4.7		58.3	56.5
Level of Service	A	A	A		E	E
Approach Delay (s)		1.3	4.7		57.2	
Approach LOS		A	A		E	

Intersection Summary				
HCM 2000 Control Delay	5.2	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.30			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	14.0	
Intersection Capacity Utilization	48.0%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

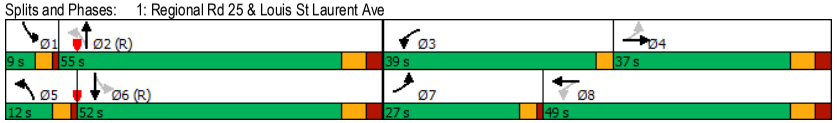
2032 (Full Build) Future Total Traffic Conditions

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	270	535	495	560	115	950	65	940
Future Volume (vph)	270	535	495	560	115	950	65	940
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	5.0	10.0	10.0	10.0	5.0	20.0	5.0	20.0
Minimum Split (s)	9.0	30.0	14.0	30.0	9.0	32.2	9.0	32.2
Total Split (s)	27.0	37.0	39.0	49.0	12.0	55.0	9.0	52.0
Total Split (%)	19.3%	26.4%	27.9%	35.0%	8.6%	39.3%	6.4%	37.1%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	4.2	3.0	4.2
All-Red Time (s)	1.0	3.0	0.0	3.0	1.0	3.0	1.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.0	2.0	6.0	3.0	6.2	3.0	6.2
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	52.7	31.0	72.4	46.6	62.6	52.2	56.9	47.5
Actuated g/C Ratio	0.38	0.22	0.52	0.33	0.45	0.37	0.41	0.34
v/c Ratio	0.65	0.94	0.93	0.57	0.62	0.81	0.50	0.72
Control Delay	29.5	70.9	64.4	40.1	39.1	43.1	36.6	43.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.5	70.9	64.4	40.1	39.1	43.1	36.6	43.8
LOS	C	E	E	D	D	D	D	D
Approach Delay		59.7		50.6		42.8		43.4
Approach LOS		E		D		D		D

Intersection Summary

Cycle Length: 140
Actuated Cycle Length: 140
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.94
Intersection Signal Delay: 48.5 — Intersection LOS: D
Intersection Capacity Utilization 95.2% — ICU Level of Service F
Analysis Period (min) 15

Splits and Phases: 1: Regional Rd 25 & Louis St Laurent Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	270	730	495	655	115	1280	65	1035
v/c Ratio	0.65	0.94	0.93	0.57	0.62	0.81	0.50	0.72
Control Delay	29.5	70.9	64.4	40.1	39.1	43.1	36.6	43.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.5	70.9	64.4	40.1	39.1	43.1	36.6	43.8
Queue Length 50th (m)	43.2	106.4	120.2	79.1	20.0	138.4	11.0	110.7
Queue Length 95th (m)	62.6	#145.4	#185.9	105.6	#33.7	162.4	20.8	131.3
Internal Link Dist (m)		126.1		117.1		481.0		113.5
Turn Bay Length (m)	90.0		35.0		65.0		80.0	
Base Capacity (vph)	481	786	548	1150	185	1582	130	1439
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	0.56	0.93	0.90	0.57	0.62	0.81	0.50	0.72

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	270	535	195	495	560	95	115	950	330	65	940	95
Future Volume (vph)	270	535	195	495	560	95	115	950	330	65	940	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0		2.0	6.0		3.0	6.2		3.0	6.2	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	*0.80		1.00	*0.80	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.98		1.00	0.96		1.00	0.99	
Flt Protected	0.95	1.00		1.00	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1767	3406		1863	3427		1703	4137		1719	4221	
Flt Permitted	0.40	1.00		0.12	1.00		0.11	1.00		0.08	1.00	
Satd. Flow (perm)	737	3406		226	3427		199	4137		152	4221	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	270	535	195	495	560	95	115	950	330	65	940	95
RTOR Reduction (vph)	0	26	0	0	9	0	0	41	0	0	7	0
Lane Group Flow (vph)	270	704	0	495	646	0	115	1239	0	65	1028	0
Confl. Peds. (#/hr)	5					5						
Heavy Vehicles (%)	2%	2%	1%	2%	2%	7%	6%	7%	3%	5%	7%	2%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	47.8	30.0		67.4	45.6		58.3	50.4		50.5	46.5	
Effective Green, g (s)	49.8	31.0		68.4	46.6		59.4	51.4		52.5	47.5	
Actuated g/C Ratio	0.36	0.22		0.49	0.33		0.42	0.37		0.38	0.34	
Clearance Time (s)	4.0	7.0		3.0	7.0		4.0	7.2		4.0	7.2	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	400	754		524	1140		180	1518		112	1432	
v/s Ratio Prot	0.09	c0.21		c0.24	0.19		c0.04	c0.30		0.02	0.24	
v/s Ratio Perm	0.15			0.22			0.23			0.19		
v/c Ratio	0.68	0.93		0.94	0.57		0.64	0.82		0.58	0.72	
Uniform Delay, d1	34.3	53.5		41.3	38.4		28.2	40.0		31.7	40.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.5	18.4		26.0	0.6		7.2	5.0		7.4	3.1	
Delay (s)	38.8	71.8		67.3	39.0		35.5	45.0		39.1	43.5	
Level of Service	D	E		E	D		D	D		D	D	
Approach Delay (s)		62.9			51.2			44.2			43.3	
Approach LOS		E			D			D			D	

Intersection Summary				
HCM 2000 Control Delay	49.7	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.89			
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.2	
Intersection Capacity Utilization	95.2%	ICU Level of Service	F	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	145	50	50	35	95	45	1180	50	1780
Future Volume (vph)	145	50	50	35	95	45	1180	50	1780
Turn Type	Perm	NA	Perm	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases		4		8		5	2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	7.0	20.0	7.0	20.0
Minimum Split (s)	37.5	37.5	37.5	37.5	37.5	11.0	35.5	11.0	35.5
Total Split (s)	38.0	38.0	38.0	38.0	38.0	11.0	81.0	11.0	81.0
Total Split (%)	29.2%	29.2%	29.2%	29.2%	29.2%	8.5%	62.3%	8.5%	62.3%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.0	4.2	3.0	4.2
All-Red Time (s)	3.2	3.2	3.2	3.2	3.2	1.0	2.3	1.0	2.3
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	3.0	5.5	3.0	5.5
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	20.4	20.4	20.4	20.4	20.4	98.7	89.7	98.7	89.6
Actuated g/C Ratio	0.16	0.16	0.16	0.16	0.16	0.76	0.69	0.76	0.69
v/c Ratio	0.69	0.49	0.33	0.13	0.31	0.26	0.40	0.15	0.63
Control Delay	68.1	30.2	52.5	45.3	10.9	13.6	6.4	5.3	13.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.1	30.2	52.5	45.3	10.9	13.6	6.4	5.3	13.7
LOS	E	C	D	D	B	B	A	A	B
Approach Delay		49.2		29.2			6.6		13.5
Approach LOS		D		C			A		B

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 64 (49%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 95			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.69			
Intersection Signal Delay: 14.8		Intersection LOS: B	
Intersection Capacity Utilization 75.1%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 2: Regional Rd 25 & Whitlock Ave

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	145	145	50	35	95	45	1190	50	1880
v/c Ratio	0.69	0.49	0.33	0.13	0.31	0.26	0.40	0.15	0.63
Control Delay	68.1	30.2	52.5	45.3	10.9	13.6	6.4	5.3	13.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.1	30.2	52.5	45.3	10.9	13.6	6.4	5.3	13.7
Queue Length 50th (m)	37.5	18.2	12.1	8.2	0.0	1.5	20.2	2.6	111.9
Queue Length 95th (m)	57.3	37.4	23.8	17.1	14.7	m6.0	114.5	7.2	159.0
Internal Link Dist (m)		62.9		68.1			497.5		481.0
Turn Bay Length (m)	35.0		65.0		65.0	100.0		100.0	
Base Capacity (vph)	333	431	241	439	435	174	2959	334	2970
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	0.44	0.34	0.21	0.08	0.22	0.26	0.40	0.15	0.63

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	145	50	95	50	35	95	45	1180	10	50	1780	100
Future Volume (vph)	145	50	95	50	35	95	45	1180	10	50	1780	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5		5.5	5.5	5.5	3.0	5.5		3.0	5.5	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	*0.80		1.00	*0.80	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.90		1.00	1.00	0.85	1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1725	1516		1727	1759	1455	1671	4290		1805	4304	
Flt Permitted	0.73	1.00		0.53	1.00	1.00	0.06	1.00		0.17	1.00	
Satd. Flow (perm)	1333	1516		965	1759	1455	101	4290		319	4304	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	145	50	95	50	35	95	45	1180	10	50	1780	100
RTOR Reduction (vph)	0	59	0	0	0	80	0	0	0	0	3	0
Lane Group Flow (vph)	145	86	0	50	35	15	45	1190	0	50	1877	0
Confl. Peds. (#/hr)	5		5	5		5						
Heavy Vehicles (%)	4%	32%	1%	4%	8%	9%	8%	6%	25%	0%	5%	7%
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	19.4	19.4		19.4	19.4	19.4	93.6	87.9		93.6	87.9	
Effective Green, g (s)	20.4	20.4		20.4	20.4	20.4	95.6	88.9		95.6	88.9	
Actuated g/C Ratio	0.16	0.16		0.16	0.16	0.16	0.74	0.68		0.74	0.68	
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	4.0	6.5		4.0	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	209	237		151	276	228	155	2933		311	2943	
v/s Ratio Prot		0.06			0.02		c0.01	0.28		0.01	c0.44	
v/s Ratio Perm	c0.11			0.05		0.01	0.20			0.11		
v/c Ratio	0.69	0.36		0.33	0.13	0.07	0.29	0.41		0.16	0.64	
Uniform Delay, d1	51.8	49.0		48.7	47.1	46.7	8.5	9.0		5.1	11.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00	2.26	0.61		1.00	1.00	
Incremental Delay, d2	9.6	0.9		1.3	0.2	0.1	1.0	0.4		0.2	1.1	
Delay (s)	61.4	49.9		50.0	47.3	46.8	20.2	5.9		5.4	12.6	
Level of Service	E	D		D	D	D	C	A		A	B	
Approach Delay (s)		55.7			47.8			6.4			12.4	
Approach LOS		E			D			A			B	

Intersection Summary				
HCM 2000 Control Delay	15.6	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.63			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	14.0	
Intersection Capacity Utilization	75.1%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	50	0	1235	1915	10
Future Volume (Veh/h)	0	50	0	1235	1915	10
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	50	0	1235	1915	10
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				199		
pX, platoon unblocked	0.94					
vC, conflicting volume	2332	643	1925			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2203	643	1925			
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	88	100			
cM capacity (veh/h)	37	421	311			

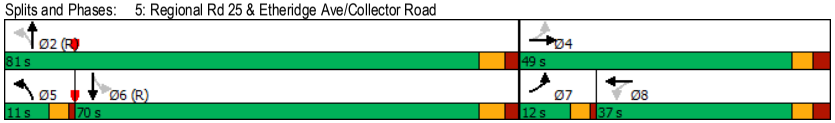
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	50	412	412	412	766	766	393
Volume Left	0	0	0	0	0	0	0
Volume Right	50	0	0	0	0	0	10
cSH	421	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.12	0.24	0.24	0.24	0.45	0.45	0.23
Queue Length 95th (m)	3.2	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	14.7	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B						
Approach Delay (s)	14.7	0.0			0.0		
Approach LOS	B						

Intersection Summary				
Average Delay		0.2		
Intersection Capacity Utilization		47.2%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	175	0	65	0	70	1005	30	1870
Future Volume (vph)	175	0	65	0	70	1005	30	1870
Turn Type	pm+pt	NA	Perm	NA	pm+pt	NA	Perm	NA
Protected Phases	7	4		8	5	2		6
Permitted Phases	4		8		2		6	
Detector Phase	7	4	8	8	5	2	6	6
Switch Phase								
Minimum Initial (s)	7.0	10.0	10.0	10.0	7.0	20.0	20.0	20.0
Minimum Split (s)	11.0	36.2	36.2	36.2	11.0	38.4	38.4	38.4
Total Split (s)	12.0	49.0	37.0	37.0	11.0	81.0	70.0	70.0
Total Split (%)	9.2%	37.7%	28.5%	28.5%	8.5%	62.3%	53.8%	53.8%
Yellow Time (s)	3.0	3.3	3.3	3.3	3.0	4.2	4.2	4.2
All-Red Time (s)	1.0	2.9	2.9	2.9	1.0	2.2	2.2	2.2
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	5.2	5.2	5.2	3.0	5.4	5.4	5.4
Lead/Lag	Lead		Lag	Lag	Lead		Lag	Lag
Lead-Lag Optimize?	Yes		Yes	Yes	Yes		Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max
Act Effct Green (s)	25.3	23.1	13.5	13.5	98.7	96.3	86.9	86.9
Actuated g/C Ratio	0.19	0.18	0.10	0.10	0.76	0.74	0.67	0.67
v/c Ratio	0.67	0.25	0.47	0.19	0.40	0.32	0.10	0.67
Control Delay	58.5	6.2	65.8	1.4	43.0	2.3	4.0	9.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.5	6.2	65.8	1.4	43.0	2.3	4.0	9.0
LOS	E	A	E	A	D	A	A	A
Approach Delay		40.1		36.3		4.9		9.0
Approach LOS		D		D		A		A

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay: 11.1		Intersection LOS: B	
Intersection Capacity Utilization 71.9%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 5: Regional Rd 25 & Etheridge Ave/Collector Road



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	175	95	65	55	70	1025	30	1935
v/c Ratio	0.67	0.25	0.47	0.19	0.40	0.32	0.10	0.67
Control Delay	58.5	6.2	65.8	1.4	43.0	2.3	4.0	9.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.5	6.2	65.8	1.4	43.0	2.3	4.0	9.0
Queue Length 50th (m)	41.8	0.0	16.9	0.0	7.5	9.4	0.9	149.2
Queue Length 95th (m)	62.4	10.1	31.7	0.0	m14.6	14.5	m1.4	166.8
Internal Link Dist (m)		53.9		63.1		108.9		175.3
Turn Bay Length (m)	40.0		40.0		70.0		70.0	
Base Capacity (vph)	263	619	322	503	175	3180	293	2889
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.67	0.15	0.20	0.11	0.40	0.32	0.10	0.67

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	175	0	95	65	0	55	70	1005	20	30	1870	65
Future Volume (vph)	175	0	95	65	0	55	70	1005	20	30	1870	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.2		5.2	5.2		3.0	5.4		5.4	5.4	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	*0.80		1.00	*0.80	
Frt	1.00	0.85		1.00	0.85		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1787	1615		1805	1615		1752	4294		1805	4320	
Flt Permitted	0.57	1.00		0.70	1.00		0.05	1.00		0.23	1.00	
Satd. Flow (perm)	1076	1615		1321	1615		86	4294		438	4320	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	175	0	95	65	0	55	70	1005	20	30	1870	65
RTOR Reduction (vph)	0	77	0	0	50	0	0	1	0	0	2	0
Lane Group Flow (vph)	175	18	0	65	5	0	70	1024	0	30	1933	0
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	3%	6%	0%	0%	5%	6%
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases	7	4			8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	23.3	23.3		10.5	10.5		94.1	94.1		84.0	84.0	
Effective Green, g (s)	24.3	24.3		11.5	11.5		95.1	95.1		85.0	85.0	
Actuated g/C Ratio	0.19	0.19		0.09	0.09		0.73	0.73		0.65	0.65	
Clearance Time (s)	4.0	6.2		6.2	6.2		4.0	6.4		6.4	6.4	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	254	301		116	142		153	3141		286	2824	
v/s Ratio Prot	c0.05	0.01			0.00		c0.02	0.24			c0.45	
v/s Ratio Perm	c0.08			0.05			0.31			0.07		
v/c Ratio	0.69	0.06		0.56	0.03		0.46	0.33		0.10	0.68	
Uniform Delay, d1	48.1	43.5		56.8	54.2		13.8	6.2		8.4	14.1	
Progression Factor	1.00	1.00		1.00	1.00		3.27	0.34		0.31	0.54	
Incremental Delay, d2	7.6	0.1		6.1	0.1		1.6	0.2		0.6	1.1	
Delay (s)	55.7	43.5		62.9	54.3		46.7	2.3		3.2	8.7	
Level of Service	E	D		E	D		D	A		A	A	
Approach Delay (s)		51.4			58.9			5.1			8.6	
Approach LOS		D			E			A			A	

Intersection Summary				
HCM 2000 Control Delay	12.6	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.69			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	16.6	
Intersection Capacity Utilization	71.9%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	65	0	1095	2010	20
Future Volume (Veh/h)	0	65	0	1095	2010	20
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	65	0	1095	2010	20
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				183	133	
pX, platoon unblocked	0.82	0.73	0.73			
vC, conflicting volume	2385	680	2030			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	453	0	1125			
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	92	100			
cM capacity (veh/h)	444	798	460			

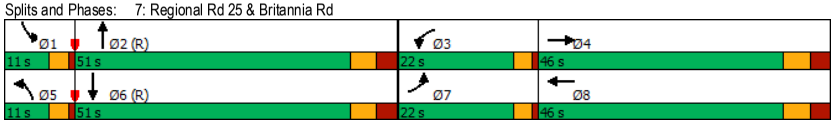
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	65	365	365	365	804	804	422
Volume Left	0	0	0	0	0	0	0
Volume Right	65	0	0	0	0	0	20
cSH	798	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.08	0.21	0.21	0.21	0.47	0.47	0.25
Queue Length 95th (m)	2.1	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	9.9	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	A						
Approach Delay (s)	9.9	0.0			0.0		
Approach LOS	A						

Intersection Summary			
Average Delay		0.2	
Intersection Capacity Utilization		50.0%	ICU Level of Service A
Analysis Period (min)		15	

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	60	415	430	345	50	895	385	1665
Future Volume (vph)	60	415	430	345	50	895	385	1665
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases								
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	7.0	10.0	7.0	10.0	7.0	20.0	7.0	20.0
Minimum Split (s)	11.0	45.5	11.0	45.5	11.0	49.7	11.0	49.7
Total Split (s)	22.0	46.0	22.0	46.0	11.0	51.0	11.0	51.0
Total Split (%)	16.9%	35.4%	16.9%	35.4%	8.5%	39.2%	8.5%	39.2%
Yellow Time (s)	3.0	4.2	3.0	4.2	3.0	4.2	3.0	4.2
All-Red Time (s)	1.0	3.3	1.0	3.3	1.0	3.5	1.0	3.5
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.5	3.0	6.5	3.0	6.7	3.0	6.7
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	9.0	25.2	18.8	37.2	8.7	44.3	22.5	60.3
Actuated g/C Ratio	0.07	0.19	0.14	0.29	0.07	0.34	0.17	0.46
v/c Ratio	0.26	0.76	0.87	0.38	0.22	0.77	0.64	0.84
Control Delay	59.9	46.4	68.6	29.3	59.6	41.0	56.0	48.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.9	46.4	68.6	29.3	59.6	41.0	56.0	48.1
LOS	E	D	E	C	E	D	E	D
Approach Delay		47.5		47.8		41.8		49.6
Approach LOS		D		D		D		D

Intersection Summary		
Cycle Length: 130		
Actuated Cycle Length: 130		
Offset: 104 (80%), Referenced to phase 2:NBT and 6:SBT, Start of Green		
Natural Cycle: 130		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.87		
Intersection Signal Delay: 47.1	Intersection LOS: D	
Intersection Capacity Utilization 82.9%	ICU Level of Service E	
Analysis Period (min) 15		

Splits and Phases: 7: Regional Rd 25 & Britannia Rd



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	60	700	430	485	50	1120	385	1690
v/c Ratio	0.26	0.76	0.87	0.38	0.22	0.77	0.64	0.84
Control Delay	59.9	46.4	68.6	29.3	59.6	41.0	56.0	48.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.9	46.4	68.6	29.3	59.6	41.0	56.0	48.1
Queue Length 50th (m)	8.0	62.7	59.0	37.4	6.7	108.3	56.8	155.1
Queue Length 95th (m)	15.3	76.0	#86.3	51.0	13.4	129.5	#83.3	#228.5
Internal Link Dist (m)		377.9		182.4		165.3		159.1
Turn Bay Length (m)	60.0		120.0		90.0		90.0	
Base Capacity (vph)	482	1370	503	1368	225	1464	605	2005
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	0.12	0.51	0.85	0.35	0.22	0.77	0.64	0.84

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	415	285	430	345	140	50	895	225	385	1665	25
Future Volume (vph)	60	415	285	430	345	140	50	895	225	385	1665	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.5		3.0	6.5		3.0	6.7		3.0	6.7	
Lane Util. Factor	0.97	*0.80		0.97	*0.80		0.97	*0.80		0.97	*0.80	
Frt	1.00	0.94		1.00	0.96		1.00	0.97		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3303	4239		3445	4307		3367	4220		3502	4320	
Flt Permitted	0.95	1.00		1.00	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3303	4239		3445	4307		3367	4220		3502	4320	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	60	415	285	430	345	140	50	895	225	385	1665	25
RTOR Reduction (vph)	0	94	0	0	58	0	0	26	0	0	1	0
Lane Group Flow (vph)	60	606	0	430	427	0	50	1094	0	385	1689	0
Heavy Vehicles (%)	6%	1%	1%	7%	1%	2%	4%	5%	4%	0%	5%	27%
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	6.6	25.0		17.8	36.2		6.3	42.5		21.5	57.7	
Effective Green, g (s)	7.6	26.0		18.8	37.2		7.3	43.5		22.5	58.7	
Actuated g/C Ratio	0.06	0.20		0.14	0.29		0.06	0.33		0.17	0.45	
Clearance Time (s)	4.0	7.5		4.0	7.5		4.0	7.7		4.0	7.7	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	193	847		498	1232		189	1412		606	1950	
v/s Ratio Prot	0.02	c0.14		c0.12	0.10		0.01	0.26		c0.11	c0.39	
v/s Ratio Perm												
v/c Ratio	0.31	0.71		0.86	0.35		0.26	0.77		0.64	0.87	
Uniform Delay, d1	58.7	48.5		54.3	36.8		58.8	38.9		49.9	32.1	
Progression Factor	1.00	1.00		0.93	0.93		1.00	1.00		1.02	1.40	
Incremental Delay, d2	0.9	2.9		14.2	0.2		0.8	4.2		1.7	4.4	
Delay (s)	59.6	51.4		64.7	34.3		59.5	43.1		52.5	49.2	
Level of Service	E	D		E	C		E	D		D	D	
Approach Delay (s)		52.1			48.6			43.8			49.9	
Approach LOS		D			D			D			D	

Intersection Summary				
HCM 2000 Control Delay	48.5	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.82			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	19.2	
Intersection Capacity Utilization	82.9%	ICU Level of Service	E	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	165	5	25	85	25	20	0	60	45	0	15
Future Volume (Veh/h)	5	165	5	25	85	25	20	0	60	45	0	15
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	5	165	5	25	85	25	20	0	60	45	0	15
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					78							
pX, platoon unblocked												
vC, conflicting volume	110			170			340	338	168	385	328	98
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	110			170			340	338	168	385	328	98
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			97	100	93	91	100	98
cM capacity (veh/h)	1493			1420			598	575	882	529	582	964

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	175	135	80	60
Volume Left	5	25	20	45
Volume Right	5	25	60	15
cSH	1493	1420	789	596
Volume to Capacity	0.00	0.02	0.10	0.10
Queue Length 95th (m)	0.1	0.4	2.7	2.7
Control Delay (s)	0.2	1.5	10.1	11.7
Lane LOS	A	A	B	B
Approach Delay (s)	0.2	1.5	10.1	11.7
Approach LOS			B	B

Intersection Summary					
Average Delay			3.9		
Intersection Capacity Utilization			34.1%	ICU Level of Service	A
Analysis Period (min)			15		

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	20	670	395	90	30
Future Volume (vph)	20	670	395	90	30
Turn Type	pm+pt	NA	NA	Prot	Perm
Protected Phases	5	2	6	8	
Permitted Phases	2				8
Detector Phase	5	2	6	8	8
Switch Phase					
Minimum Initial (s)	7.0	20.0	20.0	10.0	10.0
Minimum Split (s)	11.0	29.4	29.4	15.3	15.3
Total Split (s)	11.0	64.0	53.0	41.0	41.0
Total Split (%)	10.5%	61.0%	50.5%	39.0%	39.0%
Yellow Time (s)	3.0	4.2	4.2	3.3	3.3
All-Red Time (s)	1.0	2.2	2.2	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	5.4	5.4	4.3	4.3
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	None	None
Act Effct Green (s)	88.0	86.7	82.3	12.8	12.8
Actuated g/C Ratio	0.84	0.83	0.78	0.12	0.12
v/c Ratio	0.03	0.18	0.13	0.43	0.14
Control Delay	2.4	2.8	4.4	49.0	15.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	2.4	2.8	4.4	49.0	15.4
LOS	A	A	A	D	B
Approach Delay		2.8	4.4	40.6	
Approach LOS		A	A	D	

Intersection Summary			
Cycle Length: 105			
Actuated Cycle Length: 105			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.43			
Intersection Signal Delay: 7.0		Intersection LOS: A	
Intersection Capacity Utilization 33.1%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 10: Britannia Rd & Farmstead Dr

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	20	670	420	90	30
v/c Ratio	0.03	0.18	0.13	0.43	0.14
Control Delay	2.4	2.8	4.4	49.0	15.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	2.4	2.8	4.4	49.0	15.4
Queue Length 50th (m)	0.6	11.4	6.5	18.4	0.0
Queue Length 95th (m)	2.3	18.8	18.0	33.1	8.5
Internal Link Dist (m)		101.0	377.9	199.3	
Turn Bay Length (m)	20.0				
Base Capacity (vph)	726	3653	3295	595	557
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.03	0.18	0.13	0.15	0.05

Intersection Summary

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	20	670	395	25	90	30
Future Volume (vph)	20	670	395	25	90	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.4	5.4		4.3	4.3
Lane Util. Factor	1.00	*0.80	*0.80		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1656	4427	4203		1703	1538
Flt Permitted	0.45	1.00	1.00		0.95	1.00
Satd. Flow (perm)	787	4427	4203		1703	1538
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	20	670	395	25	90	30
RTOR Reduction (vph)	0	0	3	0	0	27
Lane Group Flow (vph)	20	670	417	0	90	3
Heavy Vehicles (%)	9%	3%	8%	0%	6%	5%
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		8	
Permitted Phases	2					8
Actuated Green, G (s)	83.5	83.5	76.7		9.8	9.8
Effective Green, g (s)	84.5	84.5	77.7		10.8	10.8
Actuated g/C Ratio	0.80	0.80	0.74		0.10	0.10
Clearance Time (s)	4.0	6.4	6.4		5.3	5.3
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	664	3562	3110		175	158
v/s Ratio Prot	0.00	c0.15	0.10		c0.05	
v/s Ratio Perm	0.02					0.00
v/c Ratio	0.03	0.19	0.13		0.51	0.02
Uniform Delay, d1	2.1	2.4	3.9		44.6	42.3
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.0	0.1	0.1		2.5	0.0
Delay (s)	2.1	2.5	4.0		47.2	42.4
Level of Service	A	A	A		D	D
Approach Delay (s)		2.5	4.0		46.0	
Approach LOS		A	A		D	

Intersection Summary				
HCM 2000 Control Delay	7.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.23		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	12.7
Intersection Capacity Utilization	33.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	25	1000	840	55	75
Future Volume (vph)	25	1000	840	55	75
Turn Type	pm+pt	NA	NA	Prot	Perm
Protected Phases	5	2	6	4	
Permitted Phases	2				4
Detector Phase	5	2	6	4	4
Switch Phase					
Minimum Initial (s)	7.0	20.0	20.0	10.0	10.0
Minimum Split (s)	11.0	29.0	29.0	43.0	43.0
Total Split (s)	15.0	80.0	65.0	50.0	50.0
Total Split (%)	11.5%	61.5%	50.0%	38.5%	38.5%
Yellow Time (s)	3.0	4.0	4.0	3.0	3.0
All-Red Time (s)	1.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.0	6.0	5.0	5.0
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	None	None
Act Effct Green (s)	110.2	107.2	100.6	11.8	11.8
Actuated g/C Ratio	0.85	0.82	0.77	0.09	0.09
v/c Ratio	0.05	0.27	0.24	0.34	0.35
Control Delay	3.9	5.7	4.7	61.1	16.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	3.9	5.7	4.7	61.1	16.3
LOS	A	A	A	E	B
Approach Delay		5.7	4.7	35.2	
Approach LOS		A	A	D	

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.35
Intersection Signal Delay: 7.2 — Intersection LOS: A
Intersection Capacity Utilization 38.3% — ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 11: Britannia Rd & Rose Way

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	25	1000	850	55	75
v/c Ratio	0.05	0.27	0.24	0.34	0.35
Control Delay	3.9	5.7	4.7	61.1	16.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	3.9	5.7	4.7	61.1	16.3
Queue Length 50th (m)	1.8	41.5	26.0	14.3	0.0
Queue Length 95th (m)	m3.1	49.1	35.2	27.8	15.3
Internal Link Dist (m)		182.4	155.7	76.0	
Turn Bay Length (m)	50.0			50.0	
Base Capacity (vph)	555	3761	3523	624	608
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.05	0.27	0.24	0.09	0.12

Intersection Summary

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

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	25	1000	840	10	55	75
Future Volume (vph)	25	1000	840	10	55	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0		5.0	5.0
Lane Util. Factor	1.00	*0.80	*0.80		1.00	1.00
Frt	1.00	1.00	1.00		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1805	4560	4552		1805	1615
Flt Permitted	0.27	1.00	1.00		0.95	1.00
Satd. Flow (perm)	515	4560	4552		1805	1615
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	25	1000	840	10	55	75
RTOR Reduction (vph)	0	0	0	0	0	68
Lane Group Flow (vph)	25	1000	850	0	55	7
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)	106.2	106.2	98.0		10.8	10.8
Effective Green, g (s)	107.2	107.2	99.0		11.8	11.8
Actuated g/C Ratio	0.82	0.82	0.76		0.09	0.09
Clearance Time (s)	4.0	7.0	7.0		6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	476	3760	3466		163	146
v/s Ratio Prot	0.00	c0.22	0.19		c0.03	
v/s Ratio Perm	0.04					0.00
v/c Ratio	0.05	0.27	0.25		0.34	0.05
Uniform Delay, d1	2.1	2.6	4.5		55.4	54.0
Progression Factor	2.26	2.14	1.00		1.00	1.00
Incremental Delay, d2	0.0	0.1	0.2		1.2	0.1
Delay (s)	4.8	5.6	4.7		56.7	54.1
Level of Service	A	A	A		E	D
Approach Delay (s)		5.6	4.7		55.2	
Approach LOS		A	A		E	

Intersection Summary				
HCM 2000 Control Delay	8.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	38.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	205	375	365	545	220	1000	95	950
Future Volume (vph)	205	375	365	545	220	1000	95	950
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	5.0	10.0	10.0	10.0	5.0	20.0	5.0	20.0
Minimum Split (s)	9.0	30.0	14.0	30.0	9.0	32.2	9.0	32.2
Total Split (s)	22.0	30.0	32.0	40.0	22.0	68.0	10.0	56.0
Total Split (%)	15.7%	21.4%	22.9%	28.6%	15.7%	48.6%	7.1%	40.0%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	4.2	3.0	4.2
All-Red Time (s)	1.0	3.0	0.0	3.0	1.0	3.0	1.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.0	2.0	6.0	3.0	6.2	3.0	6.2
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	43.2	23.4	55.7	31.9	79.3	65.3	68.2	57.2
Actuated g/C Ratio	0.31	0.17	0.40	0.23	0.57	0.47	0.49	0.41
v/c Ratio	0.68	0.84	0.86	0.75	0.74	0.73	0.56	0.65
Control Delay	41.4	66.4	54.7	55.8	37.8	31.2	33.7	36.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.4	66.4	54.7	55.8	37.8	31.2	33.7	36.0
LOS	D	E	D	E	D	C	C	D
Approach Delay		59.1		55.4		32.1		35.8
Approach LOS		E		E		C		D

Intersection Summary			
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.86			
Intersection Signal Delay: 42.2		Intersection LOS: D	
Intersection Capacity Utilization 87.2%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 1: Regional Rd 25 & Louis St Laurent Ave

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	205	500	365	610	220	1445	95	1145
v/c Ratio	0.68	0.84	0.86	0.75	0.74	0.73	0.56	0.65
Control Delay	41.4	66.4	54.7	55.8	37.8	31.2	33.7	36.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.4	66.4	54.7	55.8	37.8	31.2	33.7	36.0
Queue Length 50th (m)	39.5	69.7	79.1	84.8	33.7	137.0	12.8	114.0
Queue Length 95th (m)	58.3	#93.7	115.9	106.9	64.4	159.9	#31.6	139.6
Internal Link Dist (m)		126.1		117.1		481.0		113.5
Turn Bay Length (m)	90.0		35.0		65.0		80.0	
Base Capacity (vph)	331	620	467	865	332	1984	169	1765
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	0.62	0.81	0.78	0.71	0.66	0.73	0.56	0.65

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	205	375	125	365	545	65	220	1000	445	95	950	195
Future Volume (vph)	205	375	125	365	545	65	220	1000	445	95	950	195
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0		2.0	6.0		3.0	6.2		3.0	6.2	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	*0.80		1.00	*0.80	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.98		1.00	0.95		1.00	0.97	
Flt Protected	0.95	1.00		1.00	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1768	3431		1899	3537		1787	4138		1805	4286	
Flt Permitted	0.26	1.00		0.17	1.00		0.11	1.00		0.08	1.00	
Satd. Flow (perm)	483	3431		331	3537		209	4138		157	4286	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	205	375	125	365	545	65	220	1000	445	95	950	195
RTOR Reduction (vph)	0	23	0	0	7	0	0	54	0	0	17	0
Lane Group Flow (vph)	205	477	0	365	603	0	220	1391	0	95	1128	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Heavy Vehicles (%)	2%	1%	0%	0%	0%	2%	1%	6%	1%	0%	4%	0%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	38.1	22.4		50.6	30.9		75.2	64.3		63.1	56.2	
Effective Green, g (s)	40.1	23.4		51.6	31.9		76.2	65.3		65.1	57.2	
Actuated g/C Ratio	0.29	0.17		0.37	0.23		0.54	0.47		0.46	0.41	
Clearance Time (s)	4.0	7.0		3.0	7.0		4.0	7.2		4.0	7.2	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	291	573		415	805		294	1930		165	1751	
v/s Ratio Prot	0.08	c0.14		c0.16	0.17		c0.09	0.34		0.03	0.26	
v/s Ratio Perm	0.12			0.16			c0.32			0.23		
v/c Ratio	0.70	0.83		0.88	0.75		0.75	0.72		0.58	0.64	
Uniform Delay, d1	40.7	56.4		38.0	50.3		24.2	30.0		24.2	33.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	7.5	10.0		18.7	3.8		10.0	2.4		4.8	1.8	
Delay (s)	48.2	66.4		56.6	54.2		34.1	32.4		29.0	35.1	
Level of Service	D	E		E	D		C	C		C	D	
Approach Delay (s)		61.1			55.1			32.6			34.6	
Approach LOS		E			E			C			C	

Intersection Summary				
HCM 2000 Control Delay	42.3	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.81			
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.2	
Intersection Capacity Utilization	87.2%	ICU Level of Service	E	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	105	40	25	40	75	90	1665	60	1185
Future Volume (vph)	105	40	25	40	75	90	1665	60	1185
Turn Type	Perm	NA	Perm	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases		4		8		5	2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	7.0	20.0	7.0	20.0
Minimum Split (s)	37.5	37.5	37.5	37.5	37.5	11.0	35.5	11.0	35.5
Total Split (s)	38.0	38.0	38.0	38.0	38.0	11.0	81.0	11.0	81.0
Total Split (%)	29.2%	29.2%	29.2%	29.2%	29.2%	8.5%	62.3%	8.5%	62.3%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.0	4.2	3.0	4.2
All-Red Time (s)	3.2	3.2	3.2	3.2	3.2	1.0	2.3	1.0	2.3
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	3.0	5.5	3.0	5.5
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	16.6	16.6	16.6	16.6	16.6	102.6	93.3	101.9	91.1
Actuated g/C Ratio	0.13	0.13	0.13	0.13	0.13	0.79	0.72	0.78	0.70
v/c Ratio	0.60	0.32	0.15	0.17	0.29	0.30	0.55	0.27	0.44
Control Delay	67.4	31.8	50.2	50.0	13.0	3.4	6.2	6.2	9.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.4	31.8	50.2	50.0	13.0	3.4	6.2	6.2	9.3
LOS	E	C	D	D	B	A	A	A	A
Approach Delay		52.0		30.2			6.0		9.2
Approach LOS		D		C			A		A

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 40 (31%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.60			
Intersection Signal Delay: 10.7		Intersection LOS: B	
Intersection Capacity Utilization 66.2%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Regional Rd 25 & Whitlock Ave

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	105	80	25	40	75	90	1705	60	1320
v/c Ratio	0.60	0.32	0.15	0.17	0.29	0.30	0.55	0.27	0.44
Control Delay	67.4	31.8	50.2	50.0	13.0	3.4	6.2	6.2	9.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.4	31.8	50.2	50.0	13.0	3.4	6.2	6.2	9.3
Queue Length 50th (m)	27.2	10.6	6.1	9.8	0.0	1.6	54.9	2.6	56.1
Queue Length 95th (m)	45.1	25.0	14.4	20.3	14.0	4.3	69.4	6.9	82.4
Internal Link Dist (m)		62.9		68.1			503.8		481.0
Turn Bay Length (m)	35.0		65.0		65.0	100.0		100.0	
Base Capacity (vph)	341	452	333	475	441	304	3107	223	2992
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	0.31	0.18	0.08	0.08	0.17	0.30	0.55	0.27	0.44

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	40	40	25	40	75	90	1665	40	60	1185	135
Future Volume (vph)	105	40	40	25	40	75	90	1665	40	60	1185	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5		5.5	5.5	5.5	3.0	5.5		3.0	5.5	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	*0.80		1.00	*0.80	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		0.99	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.93		1.00	1.00	0.85	1.00	1.00		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1776	1699		1795	1900	1539	1787	4329		1770	4261	
Flt Permitted	0.73	1.00		0.70	1.00	1.00	0.14	1.00		0.08	1.00	
Satd. Flow (perm)	1367	1699		1332	1900	1539	261	4329		152	4261	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	105	40	40	25	40	75	90	1665	40	60	1185	135
RTOR Reduction (vph)	0	32	0	0	0	65	0	1	0	0	6	0
Lane Group Flow (vph)	105	48	0	25	40	10	90	1704	0	60	1314	0
Confl. Peds. (#/hr)	5		5	5		5			5	5		
Heavy Vehicles (%)	1%	5%	0%	0%	0%	3%	1%	5%	0%	2%	6%	0%
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	15.6	15.6		15.6	15.6	15.6	98.9	91.5		95.9	90.0	
Effective Green, g (s)	16.6	16.6		16.6	16.6	16.6	100.9	92.5		97.9	91.0	
Actuated g/C Ratio	0.13	0.13		0.13	0.13	0.13	0.78	0.71		0.75	0.70	
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	4.0	6.5		4.0	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	174	216		170	242	196	301	3080		200	2982	
v/s Ratio Prot		0.03			0.02		c0.02	c0.39		0.02	0.31	
v/s Ratio Perm	c0.08			0.02		0.01	0.21			0.21		
v/c Ratio	0.60	0.22		0.15	0.17	0.05	0.30	0.55		0.30	0.44	
Uniform Delay, d1	53.6	50.9		50.4	50.5	49.8	4.4	8.9		5.8	8.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00	0.42	0.58		1.00	1.00	
Incremental Delay, d2	5.8	0.5		0.4	0.3	0.1	0.5	0.6		0.8	0.5	
Delay (s)	59.4	51.4		50.8	50.9	49.9	2.3	5.8		6.7	8.9	
Level of Service	E	D		D	D	D	A	A		A	A	
Approach Delay (s)		55.9			50.3			5.6			8.8	
Approach LOS		E			D			A			A	

Intersection Summary				
HCM 2000 Control Delay	11.3	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.55			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	14.0	
Intersection Capacity Utilization	66.2%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	30	0	1795	1210	40
Future Volume (Veh/h)	0	30	0	1795	1210	40
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	30	0	1795	1210	40
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				193		
pX, platoon unblocked	0.81					
vC, conflicting volume	1828	423	1250			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1194	423	1250			
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	95	100			
cM capacity (veh/h)	147	585	564			

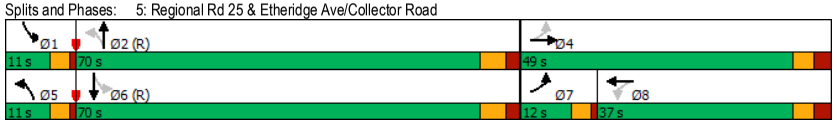
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	30	598	598	598	484	484	282
Volume Left	0	0	0	0	0	0	0
Volume Right	30	0	0	0	0	0	40
cSH	585	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.05	0.35	0.35	0.35	0.28	0.28	0.17
Queue Length 95th (m)	1.3	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	11.5	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B						
Approach Delay (s)	11.5	0.0			0.0		
Approach LOS	B						

Intersection Summary				
Average Delay	0.1			
Intersection Capacity Utilization	38.0%	ICU Level of Service		A
Analysis Period (min)	15			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	120	0	40	0	180	1635	55	1045
Future Volume (vph)	120	0	40	0	180	1635	55	1045
Turn Type	pm+pt	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases	7	4		8	5	2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	7	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	7.0	10.0	10.0	10.0	7.0	20.0	7.0	20.0
Minimum Split (s)	11.0	36.2	36.2	36.2	11.0	38.4	11.0	38.4
Total Split (s)	12.0	49.0	37.0	37.0	11.0	70.0	11.0	70.0
Total Split (%)	9.2%	37.7%	28.5%	28.5%	8.5%	53.8%	8.5%	53.8%
Yellow Time (s)	3.0	3.3	3.3	3.3	3.0	4.2	3.0	4.2
All-Red Time (s)	1.0	2.9	2.9	2.9	1.0	2.2	1.0	2.2
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	5.2	5.2	5.2	3.0	5.4	3.0	5.4
Lead/Lag	Lead		Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	23.6	21.4	11.8	11.8	100.1	88.9	95.2	84.5
Actuated g/C Ratio	0.18	0.16	0.09	0.09	0.77	0.68	0.73	0.65
v/c Ratio	0.50	0.10	0.32	0.14	0.51	0.57	0.26	0.42
Control Delay	53.0	0.5	62.1	0.9	14.5	7.5	13.3	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.0	0.5	62.1	0.9	14.5	7.5	13.3	5.3
LOS	D	A	E	A	B	A	B	A
Approach Delay		39.9		31.6		8.2		5.7
Approach LOS		D		C		A		A

Intersection Summary		
Cycle Length: 130		
Actuated Cycle Length: 130		
Offset: 103 (79%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green		
Natural Cycle: 100		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.57		
Intersection Signal Delay: 9.3	Intersection LOS: A	
Intersection Capacity Utilization 64.4%	ICU Level of Service C	
Analysis Period (min) 15		

Splits and Phases: 5: Regional Rd 25 & Etheridge Ave/Collector Road



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	120	40	40	40	180	1700	55	1185
v/c Ratio	0.50	0.10	0.32	0.14	0.51	0.57	0.26	0.42
Control Delay	53.0	0.5	62.1	0.9	14.5	7.5	13.3	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.0	0.5	62.1	0.9	14.5	7.5	13.3	5.3
Queue Length 50th (m)	28.3	0.0	10.4	0.0	7.9	55.7	2.1	65.2
Queue Length 95th (m)	46.4	0.0	22.4	0.0	m21.4	m68.8	8.4	55.2
Internal Link Dist (m)		53.9		63.5		106.2		169.0
Turn Bay Length (m)	40.0		40.0		70.0		70.0	
Base Capacity (vph)	241	654	339	519	352	2988	215	2811
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	0.50	0.06	0.12	0.08	0.51	0.57	0.26	0.42

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	120	0	40	40	0	40	180	1635	65	55	1045	140
Future Volume (vph)	120	0	40	40	0	40	180	1635	65	55	1045	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.2		5.2	5.2		3.0	5.4		3.0	5.4	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	*0.80		1.00	*0.80	
Frt	1.00	0.85		1.00	0.85		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1752	1615		1805	1615		1805	4366		1805	4317	
Flt Permitted	0.56	1.00		0.73	1.00		0.16	1.00		0.08	1.00	
Satd. Flow (perm)	1032	1615		1389	1615		298	4366		150	4317	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	120	0	40	40	0	40	180	1635	65	55	1045	140
RTOR Reduction (vph)	0	33	0	0	37	0	0	2	0	0	8	0
Lane Group Flow (vph)	120	7	0	40	3	0	180	1698	0	55	1177	0
Heavy Vehicles (%)	3%	0%	0%	0%	0%	0%	0%	4%	0%	0%	4%	2%
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	21.6	21.6		8.8	8.8		95.5	85.9		88.1	82.2	
Effective Green, g (s)	22.6	22.6		9.8	9.8		96.8	86.9		90.1	83.2	
Actuated g/C Ratio	0.17	0.17		0.08	0.08		0.74	0.67		0.69	0.64	
Clearance Time (s)	4.0	6.2		6.2	6.2		4.0	6.4		4.0	6.4	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	233	280		104	121		344	2918		191	2762	
v/s Ratio Prot	c0.04	0.00			0.00		c0.04	c0.39		0.02	0.27	
v/s Ratio Perm	c0.05			0.03			0.35			0.18		
v/c Ratio	0.52	0.02		0.38	0.02		0.52	0.58		0.29	0.43	
Uniform Delay, d1	47.7	44.6		57.2	55.7		6.5	11.7		8.2	11.6	
Progression Factor	1.00	1.00		1.00	1.00		2.77	0.60		2.32	0.42	
Incremental Delay, d2	1.9	0.0		2.4	0.1		0.7	0.4		0.8	0.4	
Delay (s)	49.6	44.6		59.6	55.8		18.7	7.4		19.8	5.3	
Level of Service	D	D		E	E		B	A		B	A	
Approach Delay (s)		48.3			57.7			8.5			6.0	
Approach LOS		D			E			A			A	

Intersection Summary				
HCM 2000 Control Delay	10.6	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.59			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	16.6	
Intersection Capacity Utilization	64.4%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	40	0	1880	1075	50
Future Volume (Veh/h)	0	40	0	1880	1075	50
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	40	0	1880	1075	50
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				186	130	
pX, platoon unblocked	0.69	0.89	0.89			
vC, conflicting volume	1727	383	1125			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0	711			
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	96	100			
cM capacity (veh/h)	711	972	800			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	40	627	627	627	430	430	265
Volume Left	0	0	0	0	0	0	0
Volume Right	40	0	0	0	0	0	50
cSH	972	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.04	0.37	0.37	0.37	0.25	0.25	0.16
Queue Length 95th (m)	1.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	8.9	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	A						
Approach Delay (s)	8.9	0.0			0.0		
Approach LOS	A						

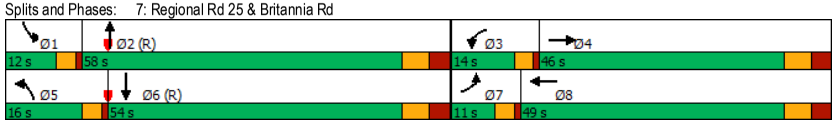
Intersection Summary				
Average Delay	0.1			
Intersection Capacity Utilization	39.7%	ICU Level of Service		A
Analysis Period (min)	15			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	50	320	300	500	250	1455	180	885
Future Volume (vph)	50	320	300	500	250	1455	180	885
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases								
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	7.0	10.0	7.0	10.0	7.0	20.0	7.0	20.0
Minimum Split (s)	11.0	45.5	11.0	45.5	11.0	49.7	11.0	49.7
Total Split (s)	11.0	46.0	14.0	49.0	16.0	58.0	12.0	54.0
Total Split (%)	8.5%	35.4%	10.8%	37.7%	12.3%	44.6%	9.2%	41.5%
Yellow Time (s)	3.0	4.2	3.0	4.2	3.0	4.2	3.0	4.2
All-Red Time (s)	1.0	3.3	1.0	3.3	1.0	3.5	1.0	3.5
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.5	3.0	6.5	3.0	6.7	3.0	6.7
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	8.0	26.0	11.0	31.2	15.3	61.0	12.9	58.5
Actuated g/C Ratio	0.06	0.20	0.08	0.24	0.12	0.47	0.10	0.45
v/c Ratio	0.25	0.40	0.98	0.89dr	0.61	0.94	0.52	0.48
Control Delay	61.4	43.5	123.0	37.7	60.6	43.1	75.0	18.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.4	43.5	123.0	37.7	60.6	43.1	75.0	18.3
LOS	E	D	F	D	E	D	E	B
Approach Delay		45.7		59.5		45.2		27.4
Approach LOS		D		E		D		C

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 104 (80%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 140
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.98
Intersection Signal Delay: 44.6 Intersection LOS: D
Intersection Capacity Utilization 85.9% ICU Level of Service E
Analysis Period (min) 15
dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Splits and Phases: 7: Regional Rd 25 & Britannia Rd



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	50	360	300	875	250	1920	180	935
v/c Ratio	0.25	0.40	0.98	0.89dr	0.61	0.94	0.52	0.48
Control Delay	61.4	43.5	123.0	37.7	60.6	43.1	75.0	18.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.4	43.5	123.0	37.7	60.6	43.1	75.0	18.3
Queue Length 50th (m)	6.7	33.5	44.6	47.0	33.4	201.8	25.6	37.8
Queue Length 95th (m)	13.7	42.5	#75.1	50.0	46.8	#278.1	39.3	44.2
Internal Link Dist (m)		377.9		190.1		165.3		161.9
Turn Bay Length (m)	60.0		120.0		90.0		90.0	
Base Capacity (vph)	203	1371	305	1485	420	2040	343	1964
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	0.25	0.26	0.98	0.59	0.60	0.94	0.52	0.48

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
dr Defacto Right Lane. Recode with 1 though lane as a right lane.

HCM Signalized Intersection Capacity Analysis
7: Regional Rd 25 & Britannia Rd

2032 Future Total PM
01-12-2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	320	40	300	500	375	250	1455	465	180	885	50
Future Volume (vph)	50	320	40	300	500	375	250	1455	465	180	885	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.5		3.0	6.5		3.0	6.7		3.0	6.7	
Lane Util. Factor	0.97	*0.80		0.97	*0.80		0.97	*0.80		0.97	*0.80	
Frt	1.00	0.98		1.00	0.94		1.00	0.96		1.00	0.99	
Flt Protected	0.95	1.00		1.00	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3303	4484		3614	4225		3502	4276		3467	4358	
Flt Permitted	0.95	1.00		1.00	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3303	4484		3614	4225		3502	4276		3467	4358	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	50	320	40	300	500	375	250	1455	465	180	885	50
RTOR Reduction (vph)	0	11	0	0	117	0	0	34	0	0	3	0
Lane Group Flow (vph)	50	349	0	300	758	0	250	1886	0	180	932	0
Heavy Vehicles (%)	6%	0%	0%	2%	1%	1%	0%	3%	2%	1%	4%	0%
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	5.6	25.8		10.0	30.2		14.3	59.1		11.9	56.7	
Effective Green, g (s)	6.6	26.8		11.0	31.2		15.3	60.1		12.9	57.7	
Actuated g/C Ratio	0.05	0.21		0.08	0.24		0.12	0.46		0.10	0.44	
Clearance Time (s)	4.0	7.5		4.0	7.5		4.0	7.7		4.0	7.7	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	167	924		305	1014		412	1976		344	1934	
v/s Ratio Prot	0.02	0.08		c0.08	c0.18		c0.07	c0.44		0.05	0.21	
v/s Ratio Perm												
v/c Ratio	0.30	0.38		0.98	0.89dr		0.61	0.95		0.52	0.48	
Uniform Delay, d1	59.5	44.4		59.4	45.8		54.5	33.6		55.6	25.6	
Progression Factor	1.00	1.00		1.33	0.87		1.00	1.00		1.26	0.66	
Incremental Delay, d2	1.0	0.3		45.8	2.9		2.5	12.0		1.4	0.8	
Delay (s)	60.5	44.7		124.7	42.9		57.0	45.7		71.2	17.6	
Level of Service	E	D		F	D		E	D		E	B	
Approach Delay (s)		46.6			63.8			47.0			26.2	
Approach LOS		D			E			D			C	

Intersection Summary				
HCM 2000 Control Delay	46.3	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.89			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	19.2	
Intersection Capacity Utilization	85.9%	ICU Level of Service	E	
Analysis Period (min)	15			

dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
8: Site Dwy (South)/Site Dwy (North) & Etheridge Ave

2032 Future Total PM
01-12-2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	100	10	85	175	60	15	0	35	25	0	10
Future Volume (Veh/h)	10	100	10	85	175	60	15	0	35	25	0	10
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	10	100	10	85	175	60	15	0	35	25	0	10
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					78							
pX, platoon unblocked	0.97						0.97	0.97		0.97	0.97	0.97
vC, conflicting volume	235			110			510	530	105	535	505	205
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	192			110			476	497	105	502	471	161
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			94			97	100	96	94	100	99
cM capacity (veh/h)	1348			1493			457	432	955	428	447	860

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	120	320	50	35
Volume Left	10	85	15	25
Volume Right	10	60	35	10
cSH	1348	1493	719	500
Volume to Capacity	0.01	0.06	0.07	0.07
Queue Length 95th (m)	0.2	1.4	1.8	1.8
Control Delay (s)	0.7	2.4	10.4	12.7
Lane LOS	A	A	B	B
Approach Delay (s)	0.7	2.4	10.4	12.7
Approach LOS			B	B

Intersection Summary			
Average Delay	3.4		
Intersection Capacity Utilization	35.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	25	355	720	55	20
Future Volume (vph)	25	355	720	55	20
Turn Type	pm+pt	NA	NA	Prot	Perm
Protected Phases	5	2	6	8	
Permitted Phases	2				8
Detector Phase	5	2	6	8	8
Switch Phase					
Minimum Initial (s)	7.0	20.0	20.0	10.0	10.0
Minimum Split (s)	11.0	29.4	29.4	15.3	15.3
Total Split (s)	11.0	64.0	53.0	41.0	41.0
Total Split (%)	10.5%	61.0%	50.5%	39.0%	39.0%
Yellow Time (s)	3.0	4.2	4.2	3.3	3.3
All-Red Time (s)	1.0	2.2	2.2	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	5.4	5.4	4.3	4.3
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	None	None
Act Effct Green (s)	89.3	88.0	83.6	11.4	11.4
Actuated g/C Ratio	0.85	0.84	0.80	0.11	0.11
v/c Ratio	0.04	0.09	0.23	0.29	0.10
Control Delay	2.0	2.1	4.1	47.2	18.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	2.0	2.1	4.1	47.2	18.6
LOS	A	A	A	D	B
Approach Delay		2.1	4.1	39.6	
Approach LOS		A	A	D	

Intersection Summary			
Cycle Length: 105			
Actuated Cycle Length: 105			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.29			
Intersection Signal Delay: 5.6		Intersection LOS: A	
Intersection Capacity Utilization 37.2%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 10: Britannia Rd & Farmstead Dr

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	25	355	800	55	20
v/c Ratio	0.04	0.09	0.23	0.29	0.10
Control Delay	2.0	2.1	4.1	47.2	18.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	2.0	2.1	4.1	47.2	18.6
Queue Length 50th (m)	0.7	5.2	12.8	11.1	0.0
Queue Length 95th (m)	2.2	8.3	30.9	23.1	7.2
Internal Link Dist (m)		101.0	377.9	199.3	
Turn Bay Length (m)	20.0				
Base Capacity (vph)	561	3822	3549	606	577
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.04	0.09	0.23	0.09	0.03

Intersection Summary

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	25	355	720	80	55	20
Future Volume (vph)	25	355	720	80	55	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.4	5.4		4.3	4.3
Lane Util. Factor	1.00	*0.80	*0.80		1.00	1.00
Frt	1.00	1.00	0.98		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1805	4560	4452		1736	1615
Flt Permitted	0.29	1.00	1.00		0.95	1.00
Satd. Flow (perm)	548	4560	4452		1736	1615
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	25	355	720	80	55	20
RTOR Reduction (vph)	0	0	5	0	0	18
Lane Group Flow (vph)	25	355	795	0	55	2
Heavy Vehicles (%)	0%	0%	1%	0%	4%	0%
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		8	
Permitted Phases	2					8
Actuated Green, G (s)	84.9	84.9	78.1		8.4	8.4
Effective Green, g (s)	85.9	85.9	79.1		9.4	9.4
Actuated g/C Ratio	0.82	0.82	0.75		0.09	0.09
Clearance Time (s)	4.0	6.4	6.4		5.3	5.3
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	493	3730	3353		155	144
v/s Ratio Prot	0.00	c0.08	c0.18		c0.03	
v/s Ratio Perm	0.04					0.00
v/c Ratio	0.05	0.10	0.24		0.35	0.01
Uniform Delay, d1	1.8	1.9	3.9		44.9	43.6
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.0	0.1	0.2		1.4	0.0
Delay (s)	1.9	1.9	4.1		46.3	43.6
Level of Service	A	A	A		D	D
Approach Delay (s)		1.9	4.1		45.6	
Approach LOS		A	A		D	

Intersection Summary				
HCM 2000 Control Delay	5.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.24		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	12.7
Intersection Capacity Utilization	37.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	80	885	1125	30	50
Future Volume (vph)	80	885	1125	30	50
Turn Type	pm+pt	NA	NA	Prot	Perm
Protected Phases	5	2	6	4	
Permitted Phases	2				4
Detector Phase	5	2	6	4	4
Switch Phase					
Minimum Initial (s)	7.0	20.0	20.0	10.0	10.0
Minimum Split (s)	11.0	29.0	29.0	43.0	43.0
Total Split (s)	15.0	80.0	65.0	50.0	50.0
Total Split (%)	11.5%	61.5%	50.0%	38.5%	38.5%
Yellow Time (s)	3.0	4.0	4.0	3.0	3.0
All-Red Time (s)	1.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.0	6.0	5.0	5.0
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	None	None
Act Effct Green (s)	114.2	112.4	103.5	11.0	11.0
Actuated g/C Ratio	0.88	0.86	0.80	0.08	0.08
v/c Ratio	0.21	0.22	0.33	0.20	0.27
Control Delay	2.8	2.5	5.1	58.7	18.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	2.8	2.5	5.1	58.7	18.8
LOS	A	A	A	E	B
Approach Delay		2.5	5.1	33.8	
Approach LOS		A	A	C	

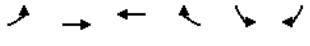
Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 65 (50%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.33
Intersection Signal Delay: 5.0 — Intersection LOS: A
Intersection Capacity Utilization 49.7% — ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 11: Britannia Rd & Rose Way

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	80	885	1185	30	50
v/c Ratio	0.21	0.22	0.33	0.20	0.27
Control Delay	2.8	2.5	5.1	58.7	18.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	2.8	2.5	5.1	58.7	18.8
Queue Length 50th (m)	2.6	18.0	39.9	7.7	0.0
Queue Length 95th (m)	m4.3	m24.1	47.5	18.0	13.0
Internal Link Dist (m)		190.1	148.0	92.6	
Turn Bay Length (m)	50.0			50.0	
Base Capacity (vph)	427	3941	3604	624	591
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.19	0.22	0.33	0.05	0.08

Intersection Summary

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



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	80	885	1125	60	30	50
Future Volume (vph)	80	885	1125	60	30	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0		5.0	5.0
Lane Util. Factor	1.00	*0.80	*0.80		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1805	4560	4525		1805	1615
Flt Permitted	0.18	1.00	1.00		0.95	1.00
Satd. Flow (perm)	333	4560	4525		1805	1615
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	80	885	1125	60	30	50
RTOR Reduction (vph)	0	0	2	0	0	47
Lane Group Flow (vph)	80	885	1183	0	30	3
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)	109.0	109.0	99.4		8.0	8.0
Effective Green, g (s)	110.0	110.0	100.4		9.0	9.0
Actuated g/C Ratio	0.85	0.85	0.77		0.07	0.07
Clearance Time (s)	4.0	7.0	7.0		6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	356	3858	3494		124	111
v/s Ratio Prot	0.01	c0.19	c0.26		c0.02	
v/s Ratio Perm	0.18					0.00
v/c Ratio	0.22	0.23	0.34		0.24	0.03
Uniform Delay, d1	1.9	1.9	4.6		57.3	56.4
Progression Factor	1.34	1.21	1.00		1.00	1.00
Incremental Delay, d2	0.2	0.1	0.3		1.0	0.1
Delay (s)	2.8	2.4	4.8		58.3	56.5
Level of Service	A	A	A		E	E
Approach Delay (s)		2.4	4.8		57.2	
Approach LOS		A	A		E	

Intersection Summary				
HCM 2000 Control Delay	5.7	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.33			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	14.0	
Intersection Capacity Utilization	49.7%	ICU Level of Service	A	
Analysis Period (min)	15			

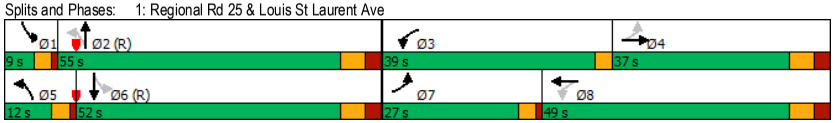
c Critical Lane Group

2037 Future Total Traffic Conditions

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	270	535	495	560	115	1140	65	1280
Future Volume (vph)	270	535	495	560	115	1140	65	1280
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	5.0	10.0	10.0	10.0	5.0	20.0	5.0	20.0
Minimum Split (s)	9.0	30.0	14.0	30.0	9.0	32.2	9.0	32.2
Total Split (s)	27.0	37.0	39.0	49.0	12.0	55.0	9.0	52.0
Total Split (%)	19.3%	26.4%	27.9%	35.0%	8.6%	39.3%	6.4%	37.1%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	4.2	3.0	4.2
All-Red Time (s)	1.0	3.0	0.0	3.0	1.0	3.0	1.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.0	2.0	6.0	3.0	6.2	3.0	6.2
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	52.7	31.0	72.4	46.6	62.6	52.2	56.9	47.5
Actuated g/C Ratio	0.38	0.22	0.52	0.33	0.45	0.37	0.41	0.34
v/c Ratio	0.65	0.94	0.93	0.57	0.71	0.93	0.50	0.95
Control Delay	29.5	70.9	64.4	40.1	49.3	53.0	36.6	60.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.5	70.9	64.4	40.1	49.3	53.0	36.6	60.3
LOS	C	E	E	D	D	D	D	E
Approach Delay		59.7		50.6		52.7		59.2
Approach LOS		E		D		D		E

Intersection Summary	
Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 100	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.95	
Intersection Signal Delay: 55.4	Intersection LOS: E
Intersection Capacity Utilization 98.8%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 1: Regional Rd 25 & Louis St Laurent Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	270	730	495	655	115	1470	65	1375
v/c Ratio	0.65	0.94	0.93	0.57	0.71	0.93	0.50	0.95
Control Delay	29.5	70.9	64.4	40.1	49.3	53.0	36.6	60.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.5	70.9	64.4	40.1	49.3	53.0	36.6	60.3
Queue Length 50th (m)	43.2	106.4	120.2	79.1	20.0	173.5	11.0	165.3
Queue Length 95th (m)	62.6	#145.4	#185.9	105.6	#46.0	#216.4	20.8	#206.5
Internal Link Dist (m)		126.1		117.1		481.0		113.5
Turn Bay Length (m)	90.0		35.0		65.0		80.0	
Base Capacity (vph)	481	786	548	1150	164	1577	130	1440
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	0.56	0.93	0.90	0.57	0.70	0.93	0.50	0.95

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	270	535	195	495	560	95	115	1140	330	65	1280	95
Future Volume (vph)	270	535	195	495	560	95	115	1140	330	65	1280	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0		2.0	6.0		3.0	6.2		3.0	6.2	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	*0.80		1.00	*0.80	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.98		1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00		1.00	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1767	3406		1863	3427		1703	4153		1719	4231	
Flt Permitted	0.40	1.00		0.12	1.00		0.08	1.00		0.08	1.00	
Satd. Flow (perm)	737	3406		226	3427		142	4153		153	4231	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	270	535	195	495	560	95	115	1140	330	65	1280	95
RTOR Reduction (vph)	0	26	0	0	9	0	0	29	0	0	5	0
Lane Group Flow (vph)	270	704	0	495	646	0	115	1441	0	65	1370	0
Confl. Peds. (#/hr)	5					5						
Heavy Vehicles (%)	2%	2%	1%	2%	2%	7%	6%	7%	3%	5%	7%	2%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	47.8	30.0		67.4	45.6		58.4	50.4		50.4	46.4	
Effective Green, g (s)	49.8	31.0		68.4	46.6		59.4	51.4		52.4	47.4	
Actuated g/C Ratio	0.36	0.22		0.49	0.33		0.42	0.37		0.37	0.34	
Clearance Time (s)	4.0	7.0		3.0	7.0		4.0	7.2		4.0	7.2	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	400	754		524	1140		160	1524		113	1432	
v/s Ratio Prot	0.09	c0.21		c0.24	0.19		c0.05	c0.35		0.02	0.32	
v/s Ratio Perm	0.15			0.22			0.26			0.19		
v/c Ratio	0.68	0.93		0.94	0.57		0.72	0.95		0.58	0.96	
Uniform Delay, d1	34.3	53.5		41.3	38.4		31.7	42.9		33.5	45.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.5	18.4		26.0	0.6		14.3	13.3		6.9	15.4	
Delay (s)	38.8	71.8		67.3	39.0		46.1	56.2		40.4	60.7	
Level of Service	D	E		E	D		D	E		D	E	
Approach Delay (s)		62.9			51.2			55.5			59.8	
Approach LOS		E			D			E			E	

Intersection Summary				
HCM 2000 Control Delay	57.2	HCM 2000 Level of Service	E	
HCM 2000 Volume to Capacity ratio	0.95			
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.2	
Intersection Capacity Utilization	98.8%	ICU Level of Service	F	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	145	50	50	35	95	45	1370	50	2120
Future Volume (vph)	145	50	50	35	95	45	1370	50	2120
Turn Type	Perm	NA	Perm	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases		4		8		5	2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	7.0	20.0	7.0	20.0
Minimum Split (s)	37.5	37.5	37.5	37.5	37.5	11.0	35.5	11.0	35.5
Total Split (s)	38.0	38.0	38.0	38.0	38.0	11.0	81.0	11.0	81.0
Total Split (%)	29.2%	29.2%	29.2%	29.2%	29.2%	8.5%	62.3%	8.5%	62.3%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.0	4.2	3.0	4.2
All-Red Time (s)	3.2	3.2	3.2	3.2	3.2	1.0	2.3	1.0	2.3
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	3.0	5.5	3.0	5.5
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	20.4	20.4	20.4	20.4	20.4	98.7	89.7	98.7	89.6
Actuated g/C Ratio	0.16	0.16	0.16	0.16	0.16	0.76	0.69	0.76	0.69
v/c Ratio	0.69	0.49	0.33	0.13	0.31	0.28	0.47	0.18	0.75
Control Delay	68.1	30.2	52.5	45.3	10.9	22.0	6.7	5.7	16.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.1	30.2	52.5	45.3	10.9	22.0	6.7	5.7	16.6
LOS	E	C	D	D	B	C	A	A	B
Approach Delay		49.2		29.2			7.2		16.4
Approach LOS		D		C			A		B

Intersection Summary		
Cycle Length: 130		
Actuated Cycle Length: 130		
Offset: 64 (49%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green		
Natural Cycle: 105		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.75		
Intersection Signal Delay: 16.1	Intersection LOS: B	
Intersection Capacity Utilization 76.7%	ICU Level of Service D	
Analysis Period (min) 15		

Splits and Phases: 2: Regional Rd 25 & Whitlock Ave

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	145	145	50	35	95	45	1380	50	2220
v/c Ratio	0.69	0.49	0.33	0.13	0.31	0.28	0.47	0.18	0.75
Control Delay	68.1	30.2	52.5	45.3	10.9	22.0	6.7	5.7	16.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.1	30.2	52.5	45.3	10.9	22.0	6.7	5.7	16.6
Queue Length 50th (m)	37.5	18.2	12.1	8.2	0.0	2.3	26.6	2.6	153.7
Queue Length 95th (m)	57.3	37.4	23.8	17.1	14.7	m8.1	153.8	7.2	217.4
Internal Link Dist (m)		62.9		68.1			497.5		481.0
Turn Bay Length (m)	35.0		65.0		65.0	100.0		100.0	
Base Capacity (vph)	333	431	241	439	435	159	2960	280	2973
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	0.44	0.34	0.21	0.08	0.22	0.28	0.47	0.18	0.75

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	145	50	95	50	35	95	45	1370	10	50	2120	100
Future Volume (vph)	145	50	95	50	35	95	45	1370	10	50	2120	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5		5.5	5.5	5.5	3.0	5.5		3.0	5.5	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	*0.80		1.00	*0.80	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.90		1.00	1.00	0.85	1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1725	1516		1727	1759	1455	1671	4292		1805	4310	
Flt Permitted	0.73	1.00		0.53	1.00	1.00	0.04	1.00		0.13	1.00	
Satd. Flow (perm)	1333	1516		965	1759	1455	79	4292		242	4310	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	145	50	95	50	35	95	45	1370	10	50	2120	100
RTOR Reduction (vph)	0	59	0	0	0	80	0	0	0	0	3	0
Lane Group Flow (vph)	145	86	0	50	35	15	45	1380	0	50	2217	0
Confl. Peds. (#/hr)	5		5	5		5						
Heavy Vehicles (%)	4%	32%	1%	4%	8%	9%	8%	6%	25%	0%	5%	7%
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	19.4	19.4		19.4	19.4	19.4	93.6	87.9		93.6	87.9	
Effective Green, g (s)	20.4	20.4		20.4	20.4	20.4	95.6	88.9		95.6	88.9	
Actuated g/C Ratio	0.16	0.16		0.16	0.16	0.16	0.74	0.68		0.74	0.68	
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	4.0	6.5		4.0	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	209	237		151	276	228	140	2935		258	2947	
v/s Ratio Prot		0.06			0.02		c0.02	0.32		0.01	c0.51	
v/s Ratio Perm	c0.11			0.05		0.01	0.22			0.13		
v/c Ratio	0.69	0.36		0.33	0.13	0.07	0.32	0.47		0.19	0.75	
Uniform Delay, d1	51.8	49.0		48.7	47.1	46.7	12.9	9.6		5.6	13.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00	2.26	0.60		1.00	1.00	
Incremental Delay, d2	9.6	0.9		1.3	0.2	0.1	1.2	0.5		0.4	1.8	
Delay (s)	61.4	49.9		50.0	47.3	46.8	30.4	6.2		5.9	15.2	
Level of Service	E	D		D	D	D	C	A		A	B	
Approach Delay (s)		55.7			47.8			7.0			15.0	
Approach LOS		E			D			A			B	

Intersection Summary				
HCM 2000 Control Delay	16.5	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.72			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	14.0	
Intersection Capacity Utilization	76.7%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	50	0	1425	2255	10
Future Volume (Veh/h)	0	50	0	1425	2255	10
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	50	0	1425	2255	10
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				199		
pX, platoon unblocked	0.92					
vC, conflicting volume	2735	757	2265			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2580	757	2265			
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	86	100			
cM capacity (veh/h)	20	355	229			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	50	475	475	475	902	902	461
Volume Left	0	0	0	0	0	0	0
Volume Right	50	0	0	0	0	0	10
cSH	355	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.14	0.28	0.28	0.28	0.53	0.53	0.27
Queue Length 95th (m)	3.9	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	16.8	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	C						
Approach Delay (s)	16.8	0.0			0.0		
Approach LOS	C						

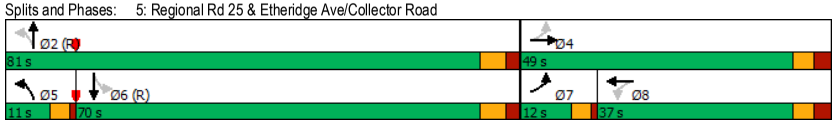
Intersection Summary				
Average Delay	0.2			
Intersection Capacity Utilization	53.8%	ICU Level of Service		A
Analysis Period (min)	15			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	175	0	65	0	70	1195	30	2210
Future Volume (vph)	175	0	65	0	70	1195	30	2210
Turn Type	pm+pt	NA	Perm	NA	pm+pt	NA	Perm	NA
Protected Phases	7	4		8	5	2		6
Permitted Phases	4		8		2		6	
Detector Phase	7	4	8	8	5	2	6	6
Switch Phase								
Minimum Initial (s)	7.0	10.0	10.0	10.0	7.0	20.0	20.0	20.0
Minimum Split (s)	11.0	36.2	36.2	36.2	11.0	38.4	38.4	38.4
Total Split (s)	12.0	49.0	37.0	37.0	11.0	81.0	70.0	70.0
Total Split (%)	9.2%	37.7%	28.5%	28.5%	8.5%	62.3%	53.8%	53.8%
Yellow Time (s)	3.0	3.3	3.3	3.3	3.0	4.2	4.2	4.2
All-Red Time (s)	1.0	2.9	2.9	2.9	1.0	2.2	2.2	2.2
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	5.2	5.2	5.2	3.0	5.4	5.4	5.4
Lead/Lag	Lead		Lag	Lag	Lead		Lag	Lag
Lead-Lag Optimize?	Yes		Yes	Yes	Yes		Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max
Act Effct Green (s)	25.3	23.1	13.5	13.5	98.7	96.3	86.9	86.9
Actuated g/C Ratio	0.19	0.18	0.10	0.10	0.76	0.74	0.67	0.67
v/c Ratio	0.67	0.25	0.47	0.21	0.41	0.38	0.13	0.79
Control Delay	58.5	6.9	65.8	1.8	42.9	2.3	3.7	10.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.5	6.9	65.8	1.8	42.9	2.3	3.7	10.2
LOS	E	A	E	A	D	A	A	B
Approach Delay		40.4		36.5		4.5		10.1
Approach LOS		D		D		A		B

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 130
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.79
Intersection Signal Delay: 11.2 — Intersection LOS: B
Intersection Capacity Utilization 78.5% — ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 5: Regional Rd 25 & Etheridge Ave/Collector Road



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	175	95	65	55	70	1215	30	2275
v/c Ratio	0.67	0.25	0.47	0.21	0.41	0.38	0.13	0.79
Control Delay	58.5	6.9	65.8	1.8	42.9	2.3	3.7	10.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.5	6.9	65.8	1.8	42.9	2.3	3.7	10.2
Queue Length 50th (m)	41.8	0.0	16.9	0.0	7.9	11.1	0.8	200.3
Queue Length 95th (m)	62.4	11.0	31.7	0.2	m11.8	m15.6	m1.1	176.9
Internal Link Dist (m)		53.9		63.1		108.9		175.3
Turn Bay Length (m)	40.0		40.0		70.0		70.0	
Base Capacity (vph)	263	617	322	475	172	3182	233	2892
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.67	0.15	0.20	0.12	0.41	0.38	0.13	0.79

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	175	0	95	65	0	55	70	1195	20	30	2210	65
Future Volume (vph)	175	0	95	65	0	55	70	1195	20	30	2210	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.2		5.2	5.2		3.0	5.4		5.4	5.4	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	*0.80		1.00	*0.80	
Frt	1.00	0.85		1.00	0.85		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1787	1615		1805	1615		1752	4295		1805	4323	
Flt Permitted	0.57	1.00		0.70	1.00		0.05	1.00		0.18	1.00	
Satd. Flow (perm)	1076	1615		1321	1615		84	4295		349	4323	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	175	0	95	65	0	55	70	1195	20	30	2210	65
RTOR Reduction (vph)	0	77	0	0	50	0	0	1	0	0	1	0
Lane Group Flow (vph)	175	18	0	65	5	0	70	1214	0	30	2274	0
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	3%	6%	0%	0%	5%	6%
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases	7	4			8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	23.3	23.3		10.5	10.5		94.1	94.1		84.0	84.0	
Effective Green, g (s)	24.3	24.3		11.5	11.5		95.1	95.1		85.0	85.0	
Actuated g/C Ratio	0.19	0.19		0.09	0.09		0.73	0.73		0.65	0.65	
Clearance Time (s)	4.0	6.2		6.2	6.2		4.0	6.4		6.4	6.4	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	254	301		116	142		152	3141		228	2826	
v/s Ratio Prot	c0.05	0.01			0.00		c0.03	0.28			c0.53	
v/s Ratio Perm	c0.08			0.05			0.31			0.09		
v/c Ratio	0.69	0.06		0.56	0.03		0.46	0.39		0.13	0.80	
Uniform Delay, d1	48.1	43.5		56.8	54.2		19.0	6.5		8.5	16.4	
Progression Factor	1.00	1.00		1.00	1.00		3.01	0.30		0.26	0.48	
Incremental Delay, d2	7.6	0.1		6.1	0.1		1.3	0.2		0.8	1.8	
Delay (s)	55.7	43.5		62.9	54.3		58.6	2.2		3.0	9.7	
Level of Service	E	D		E	D		E	A		A	A	
Approach Delay (s)		51.4			58.9			5.3			9.6	
Approach LOS		D			E			A			A	

Intersection Summary				
HCM 2000 Control Delay	12.5	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.78			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	16.6	
Intersection Capacity Utilization	78.5%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	65	0	1285	2350	20
Future Volume (Veh/h)	0	65	0	1285	2350	20
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	65	0	1285	2350	20
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				183	133	
pX, platoon unblocked	0.75	0.62	0.62			
vC, conflicting volume	2788	793	2370			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0	1082			
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	90	100			
cM capacity (veh/h)	767	680	406			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	65	428	428	428	940	940	490
Volume Left	0	0	0	0	0	0	0
Volume Right	65	0	0	0	0	0	20
cSH	680	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.10	0.25	0.25	0.25	0.55	0.55	0.29
Queue Length 95th (m)	2.5	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	10.9	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B						
Approach Delay (s)	10.9	0.0			0.0		
Approach LOS	B						

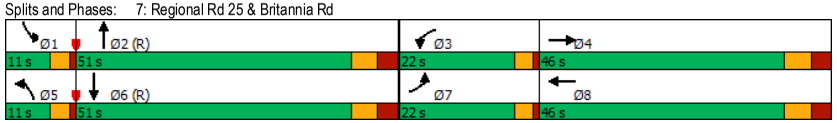
Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	56.5%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	65	455	465	380	55	1070	415	1975
Future Volume (vph)	65	455	465	380	55	1070	415	1975
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases								
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	7.0	10.0	7.0	10.0	7.0	20.0	7.0	20.0
Minimum Split (s)	11.0	45.5	11.0	45.5	11.0	49.7	11.0	49.7
Total Split (s)	22.0	46.0	22.0	46.0	11.0	51.0	11.0	51.0
Total Split (%)	16.9%	35.4%	16.9%	35.4%	8.5%	39.2%	8.5%	39.2%
Yellow Time (s)	3.0	4.2	3.0	4.2	3.0	4.2	3.0	4.2
All-Red Time (s)	1.0	3.3	1.0	3.3	1.0	3.5	1.0	3.5
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.5	3.0	6.5	3.0	6.7	3.0	6.7
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	9.2	27.8	19.0	39.8	8.8	44.3	19.7	57.3
Actuated g/C Ratio	0.07	0.21	0.15	0.31	0.07	0.34	0.15	0.44
v/c Ratio	0.28	0.87dr	0.92	0.39	0.24	0.90	0.78	1.05
Control Delay	60.0	45.9	75.9	29.5	59.7	49.0	60.1	77.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.0	45.9	75.9	29.5	59.7	49.0	60.1	77.3
LOS	E	D	E	C	E	D	E	E
Approach Delay		47.0		51.2		49.5		74.3
Approach LOS		D		D		D		E

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 104 (80%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.05
Intersection Signal Delay: 60.1 — Intersection LOS: E
Intersection Capacity Utilization 91.3% — ICU Level of Service F
Analysis Period (min) 15
dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Splits and Phases: 7: Regional Rd 25 & Britannia Rd



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	65	770	465	530	55	1315	415	2000
v/c Ratio	0.28	0.87dr	0.92	0.39	0.24	0.90	0.78	1.05
Control Delay	60.0	45.9	75.9	29.5	59.7	49.0	60.1	77.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.0	45.9	75.9	29.5	59.7	49.0	60.1	77.3
Queue Length 50th (m)	8.7	70.3	64.6	42.3	7.4	136.9	61.4	~246.7
Queue Length 95th (m)	16.3	83.0	#97.3	55.8	14.3	#162.0 m	#104.1	#316.1
Internal Link Dist (m)		377.9		182.4		165.3		159.1
Turn Bay Length (m)	60.0		120.0		90.0		90.0	
Base Capacity (vph)	482	1368	503	1407	229	1463	530	1907
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	0.13	0.56	0.92	0.38	0.24	0.90	0.78	1.05

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.
dr Defacto Right Lane. Recode with 1 though lane as a right lane.

HCM Signalized Intersection Capacity Analysis — 2037 Future Total AM
7: Regional Rd 25 & Britannia Rd — 01-12-2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	455	315	465	380	150	55	1070	245	415	1975	25
Future Volume (vph)	65	455	315	465	380	150	55	1070	245	415	1975	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.5		3.0	6.5		3.0	6.7		3.0	6.7	
Lane Util. Factor	0.97	*0.80		0.97	*0.80		0.97	*0.80		0.97	*0.80	
Frt	1.00	0.94		1.00	0.96		1.00	0.97		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3303	4238		3445	4311		3367	4229		3502	4323	
Flt Permitted	0.95	1.00		1.00	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3303	4238		3445	4311		3367	4229		3502	4323	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	65	455	315	465	380	150	55	1070	245	415	1975	25
RTOR Reduction (vph)	0	90	0	0	55	0	0	23	0	0	1	0
Lane Group Flow (vph)	65	680	0	465	475	0	55	1292	0	415	1999	0
Heavy Vehicles (%)	6%	1%	1%	7%	1%	2%	4%	5%	4%	0%	5%	27%
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	6.8	27.6		18.0	38.8		6.4	42.5		18.7	54.8	
Effective Green, g (s)	7.8	28.6		19.0	39.8		7.4	43.5		19.7	55.8	
Actuated g/C Ratio	0.06	0.22		0.15	0.31		0.06	0.33		0.15	0.43	
Clearance Time (s)	4.0	7.5		4.0	7.5		4.0	7.7		4.0	7.7	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	198	932		503	1319		191	1415		530	1855	
v/s Ratio Prot	0.02	c0.16		c0.13	0.11		0.02	0.31		c0.12	c0.46	
v/s Ratio Perm												
v/c Ratio	0.33	0.87dr		0.92	0.36		0.29	0.91		0.78	1.08	
Uniform Delay, d1	58.6	47.1		54.8	35.2		58.8	41.4		53.1	37.1	
Progression Factor	1.00	1.00		0.93	0.96		1.00	1.00		0.97	1.34	
Incremental Delay, d2	1.0	2.9		22.5	0.2		0.8	10.6		5.1	42.5	
Delay (s)	59.6	50.0		73.3	33.8		59.6	52.0		56.8	92.3	
Level of Service	E	D		E	C		E	D		E	F	
Approach Delay (s)		50.7			52.3			52.3			86.2	
Approach LOS		D			D			D			F	

Intersection Summary				
HCM 2000 Control Delay	66.6	HCM 2000 Level of Service	E	
HCM 2000 Volume to Capacity ratio	0.94			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	19.2	
Intersection Capacity Utilization	91.3%	ICU Level of Service	F	
Analysis Period (min)	15			

dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis — 2037 Future Total AM
8: Site Dwy (South)/Site Dwy (North) & Etheridge Ave — 01-12-2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	165	5	25	85	25	20	0	60	45	0	15
Future Volume (Veh/h)	5	165	5	25	85	25	20	0	60	45	0	15
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	5	165	5	25	85	25	20	0	60	45	0	15
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					78							
pX, platoon unblocked												
vC, conflicting volume	110			170			340	338	168	385	328	98
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	110			170			340	338	168	385	328	98
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			97	100	93	91	100	98
cM capacity (veh/h)	1493			1420			598	575	882	529	582	964

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	175	135	80	60
Volume Left	5	25	20	45
Volume Right	5	25	60	15
cSH	1493	1420	789	596
Volume to Capacity	0.00	0.02	0.10	0.10
Queue Length 95th (m)	0.1	0.4	2.7	2.7
Control Delay (s)	0.2	1.5	10.1	11.7
Lane LOS	A	A	B	B
Approach Delay (s)	0.2	1.5	10.1	11.7
Approach LOS			B	B

Intersection Summary				
Average Delay	3.9			
Intersection Capacity Utilization	34.1%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	20	745	435	90	30
Future Volume (vph)	20	745	435	90	30
Turn Type	pm+pt	NA	NA	Prot	Perm
Protected Phases	5	2	6	8	
Permitted Phases	2				8
Detector Phase	5	2	6	8	8
Switch Phase					
Minimum Initial (s)	7.0	20.0	20.0	10.0	10.0
Minimum Split (s)	11.0	29.4	29.4	15.3	15.3
Total Split (s)	11.0	64.0	53.0	41.0	41.0
Total Split (%)	10.5%	61.0%	50.5%	39.0%	39.0%
Yellow Time (s)	3.0	4.2	4.2	3.3	3.3
All-Red Time (s)	1.0	2.2	2.2	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	5.4	5.4	4.3	4.3
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	None	None
Act Effct Green (s)	88.0	86.7	82.3	12.8	12.8
Actuated g/C Ratio	0.84	0.83	0.78	0.12	0.12
v/c Ratio	0.03	0.20	0.14	0.43	0.14
Control Delay	2.4	2.8	4.4	49.0	15.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	2.4	2.8	4.4	49.0	15.4
LOS	A	A	A	D	B
Approach Delay		2.8	4.4	40.6	
Approach LOS		A	A	D	

Intersection Summary			
Cycle Length: 105			
Actuated Cycle Length: 105			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.43			
Intersection Signal Delay: 6.7		Intersection LOS: A	
Intersection Capacity Utilization 33.1%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 10: Britannia Rd & Farmstead Dr

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	20	745	460	90	30
v/c Ratio	0.03	0.20	0.14	0.43	0.14
Control Delay	2.4	2.8	4.4	49.0	15.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	2.4	2.8	4.4	49.0	15.4
Queue Length 50th (m)	0.6	12.9	7.3	18.4	0.0
Queue Length 95th (m)	2.3	21.1	19.7	33.1	8.5
Internal Link Dist (m)		101.0	377.9	199.3	
Turn Bay Length (m)	20.0				
Base Capacity (vph)	698	3653	3296	595	557
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.03	0.20	0.14	0.15	0.05

Intersection Summary

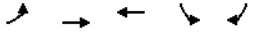
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	20	745	435	25	90	30
Future Volume (vph)	20	745	435	25	90	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.4	5.4		4.3	4.3
Lane Util. Factor	1.00	*0.80	*0.80		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1656	4427	4205		1703	1538
Flt Permitted	0.43	1.00	1.00		0.95	1.00
Satd. Flow (perm)	752	4427	4205		1703	1538
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	20	745	435	25	90	30
RTOR Reduction (vph)	0	0	2	0	0	27
Lane Group Flow (vph)	20	745	458	0	90	3
Heavy Vehicles (%)	9%	3%	8%	0%	6%	5%
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		8	
Permitted Phases	2					8
Actuated Green, G (s)	83.5	83.5	76.7		9.8	9.8
Effective Green, g (s)	84.5	84.5	77.7		10.8	10.8
Actuated g/C Ratio	0.80	0.80	0.74		0.10	0.10
Clearance Time (s)	4.0	6.4	6.4		5.3	5.3
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	637	3562	3111		175	158
v/s Ratio Prot	0.00	c0.17	0.11		c0.05	
v/s Ratio Perm	0.02					0.00
v/c Ratio	0.03	0.21	0.15		0.51	0.02
Uniform Delay, d1	2.1	2.4	4.0		44.6	42.3
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.0	0.1	0.1		2.5	0.0
Delay (s)	2.1	2.5	4.1		47.2	42.4
Level of Service	A	A	A		D	D
Approach Delay (s)		2.5	4.1		46.0	
Approach LOS		A	A		D	

Intersection Summary				
HCM 2000 Control Delay	6.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.25		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	12.7
Intersection Capacity Utilization	33.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	25	1090	920	55	75
Future Volume (vph)	25	1090	920	55	75
Turn Type	pm+pt	NA	NA	Prot	Perm
Protected Phases	5	2	6	4	
Permitted Phases	2				4
Detector Phase	5	2	6	4	4
Switch Phase					
Minimum Initial (s)	7.0	20.0	20.0	10.0	10.0
Minimum Split (s)	11.0	29.0	29.0	43.0	43.0
Total Split (s)	15.0	80.0	65.0	50.0	50.0
Total Split (%)	11.5%	61.5%	50.0%	38.5%	38.5%
Yellow Time (s)	3.0	4.0	4.0	3.0	3.0
All-Red Time (s)	1.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.0	6.0	5.0	5.0
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	None	None
Act Effct Green (s)	110.2	107.2	100.6	11.8	11.8
Actuated g/C Ratio	0.85	0.82	0.77	0.09	0.09
v/c Ratio	0.05	0.29	0.26	0.34	0.35
Control Delay	3.6	5.6	4.8	61.1	16.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	3.6	5.6	4.8	61.1	16.3
LOS	A	A	A	E	B
Approach Delay		5.5	4.8	35.2	
Approach LOS		A	A	D	

Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.35
Intersection Signal Delay: 7.0 — Intersection LOS: A
Intersection Capacity Utilization 38.6% — ICU Level of Service A
Analysis Period (min) 15

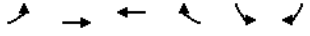
Splits and Phases: 11: Britannia Rd & Rose Way



Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	25	1090	930	55	75
v/c Ratio	0.05	0.29	0.26	0.34	0.35
Control Delay	3.6	5.6	4.8	61.1	16.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	3.6	5.6	4.8	61.1	16.3
Queue Length 50th (m)	1.7	45.9	29.2	14.3	0.0
Queue Length 95th (m)	m2.4	m52.8	39.1	27.8	15.3
Internal Link Dist (m)		182.4	155.7	76.0	
Turn Bay Length (m)	50.0			50.0	
Base Capacity (vph)	517	3761	3523	624	608
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.05	0.29	0.26	0.09	0.12

Intersection Summary

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



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	25	1090	920	10	55	75
Future Volume (vph)	25	1090	920	10	55	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0		5.0	5.0
Lane Util. Factor	1.00	*0.80	*0.80		1.00	1.00
Frt	1.00	1.00	1.00		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1805	4560	4553		1805	1615
Flt Permitted	0.24	1.00	1.00		0.95	1.00
Satd. Flow (perm)	464	4560	4553		1805	1615
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	25	1090	920	10	55	75
RTOR Reduction (vph)	0	0	0	0	0	68
Lane Group Flow (vph)	25	1090	930	0	55	7
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)	106.2	106.2	98.0		10.8	10.8
Effective Green, g (s)	107.2	107.2	99.0		11.8	11.8
Actuated g/C Ratio	0.82	0.82	0.76		0.09	0.09
Clearance Time (s)	4.0	7.0	7.0		6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	436	3760	3467		163	146
v/s Ratio Prot	0.00	c0.24	0.20		c0.03	
v/s Ratio Perm	0.04					0.00
v/c Ratio	0.06	0.29	0.27		0.34	0.05
Uniform Delay, d1	2.2	2.6	4.6		55.4	54.0
Progression Factor	2.08	2.02	1.00		1.00	1.00
Incremental Delay, d2	0.0	0.1	0.2		1.2	0.1
Delay (s)	4.5	5.4	4.8		56.7	54.1
Level of Service	A	A	A		E	D
Approach Delay (s)		5.4	4.8		55.2	
Approach LOS		A	A		E	

Intersection Summary				
HCM 2000 Control Delay	8.1	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.30			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	14.0	
Intersection Capacity Utilization	38.6%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	205	375	365	545	220	1305	95	1130
Future Volume (vph)	205	375	365	545	220	1305	95	1130
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	5.0	10.0	10.0	10.0	5.0	20.0	5.0	20.0
Minimum Split (s)	9.0	30.0	14.0	30.0	9.0	32.2	9.0	32.2
Total Split (s)	22.0	30.0	32.0	40.0	22.0	68.0	10.0	56.0
Total Split (%)	15.7%	21.4%	22.9%	28.6%	15.7%	48.6%	7.1%	40.0%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	4.2	3.0	4.2
All-Red Time (s)	1.0	3.0	0.0	3.0	1.0	3.0	1.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.0	2.0	6.0	3.0	6.2	3.0	6.2
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	43.2	23.4	55.7	31.9	79.3	65.3	67.7	56.6
Actuated g/C Ratio	0.31	0.17	0.40	0.23	0.57	0.47	0.48	0.40
v/c Ratio	0.68	0.84	0.86	0.75	0.82	0.88	0.60	0.76
Control Delay	41.4	66.4	54.7	55.8	56.9	39.6	39.8	40.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.4	66.4	54.7	55.8	56.9	39.6	39.8	40.0
LOS	D	E	D	E	E	D	D	D
Approach Delay		59.1		55.4		41.5		39.9
Approach LOS		E		E		D		D

Intersection Summary		
Cycle Length: 140		
Actuated Cycle Length: 140		
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green		
Natural Cycle: 100		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.88		
Intersection Signal Delay: 46.2	Intersection LOS: D	
Intersection Capacity Utilization 92.8%	ICU Level of Service F	
Analysis Period (min) 15		

Splits and Phases: 1: Regional Rd 25 & Louis St Laurent Ave

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	205	500	365	610	220	1750	95	1325
v/c Ratio	0.68	0.84	0.86	0.75	0.82	0.88	0.60	0.76
Control Delay	41.4	66.4	54.7	55.8	56.9	39.6	39.8	40.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.4	66.4	54.7	55.8	56.9	39.6	39.8	40.0
Queue Length 50th (m)	39.5	69.7	79.1	84.8	44.9	192.7	12.8	143.2
Queue Length 95th (m)	58.3	#93.7	115.9	106.9	#81.9	#223.8	#37.1	170.6
Internal Link Dist (m)		126.1		117.1		481.0		113.5
Turn Bay Length (m)	90.0		35.0		65.0		80.0	
Base Capacity (vph)	331	620	467	865	299	1980	159	1751
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	0.62	0.81	0.78	0.71	0.74	0.88	0.60	0.76

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	205	375	125	365	545	65	220	1305	445	95	1130	195
Future Volume (vph)	205	375	125	365	545	65	220	1305	445	95	1130	195
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0		2.0	6.0		3.0	6.2		3.0	6.2	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	*0.80		1.00	*0.80	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.98		1.00	0.96		1.00	0.98	
Flt Protected	0.95	1.00		1.00	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1768	3431		1899	3537		1787	4166		1805	4299	
Flt Permitted	0.26	1.00		0.17	1.00		0.07	1.00		0.07	1.00	
Satd. Flow (perm)	483	3431		331	3537		132	4166		134	4299	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	205	375	125	365	545	65	220	1305	445	95	1130	195
RTOR Reduction (vph)	0	23	0	0	7	0	0	38	0	0	13	0
Lane Group Flow (vph)	205	477	0	365	603	0	220	1712	0	95	1312	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Heavy Vehicles (%)	2%	1%	0%	0%	0%	2%	1%	6%	1%	0%	4%	0%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	38.1	22.4		50.6	30.9		75.2	64.3		62.6	55.7	
Effective Green, g (s)	40.1	23.4		51.6	31.9		76.2	65.3		64.6	56.7	
Actuated g/C Ratio	0.29	0.17		0.37	0.23		0.54	0.47		0.46	0.41	
Clearance Time (s)	4.0	7.0		3.0	7.0		4.0	7.2		4.0	7.2	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	291	573		415	805		266	1943		156	1741	
v/s Ratio Prot	0.08	c0.14		c0.16	0.17		c0.10	c0.41		0.03	0.31	
v/s Ratio Perm	0.12			0.16			0.35			0.25		
v/c Ratio	0.70	0.83		0.88	0.75		0.83	0.88		0.61	0.75	
Uniform Delay, d1	40.7	56.4		38.0	50.3		38.7	33.8		27.7	35.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	7.5	10.0		18.7	3.8		18.6	6.1		6.6	3.1	
Delay (s)	48.2	66.4		56.6	54.2		57.3	40.0		34.3	38.7	
Level of Service	D	E		E	D		E	D		C	D	
Approach Delay (s)		61.1			55.1			41.9			38.4	
Approach LOS		E			E			D			D	

Intersection Summary				
HCM 2000 Control Delay	46.1	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.89			
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.2	
Intersection Capacity Utilization	92.8%	ICU Level of Service	F	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	105	40	25	40	75	90	1970	60	1365
Future Volume (vph)	105	40	25	40	75	90	1970	60	1365
Turn Type	Perm	NA	Perm	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases		4		8		5	2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	7.0	20.0	7.0	20.0
Minimum Split (s)	37.5	37.5	37.5	37.5	37.5	11.0	35.5	11.0	35.5
Total Split (s)	38.0	38.0	38.0	38.0	38.0	11.0	81.0	11.0	81.0
Total Split (%)	29.2%	29.2%	29.2%	29.2%	29.2%	8.5%	62.3%	8.5%	62.3%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.0	4.2	3.0	4.2
All-Red Time (s)	3.2	3.2	3.2	3.2	3.2	1.0	2.3	1.0	2.3
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	3.0	5.5	3.0	5.5
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	16.6	16.6	16.6	16.6	16.6	102.5	93.2	102.0	91.1
Actuated g/C Ratio	0.13	0.13	0.13	0.13	0.13	0.79	0.72	0.78	0.70
v/c Ratio	0.60	0.32	0.15	0.17	0.29	0.35	0.65	0.33	0.50
Control Delay	67.4	31.8	50.2	50.0	13.0	5.8	7.9	12.1	10.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.4	31.8	50.2	50.0	13.0	5.8	7.9	12.1	10.1
LOS	E	C	D	D	B	A	A	B	B
Approach Delay		52.0		30.2			7.8		10.1
Approach LOS		D		C			A		B

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 40 (31%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 95			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.65			
Intersection Signal Delay: 11.5		Intersection LOS: B	
Intersection Capacity Utilization 72.1%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Regional Rd 25 & Whitlock Ave

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	105	80	25	40	75	90	2010	60	1500
v/c Ratio	0.60	0.32	0.15	0.17	0.29	0.35	0.65	0.33	0.50
Control Delay	67.4	31.8	50.2	50.0	13.0	5.8	7.9	12.1	10.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.4	31.8	50.2	50.0	13.0	5.8	7.9	12.1	10.1
Queue Length 50th (m)	27.2	10.6	6.1	9.8	0.0	1.3	69.3	2.6	68.3
Queue Length 95th (m)	45.1	25.0	14.4	20.3	14.0	m3.5	183.3	11.8	99.2
Internal Link Dist (m)		62.9		68.1			503.8		481.0
Turn Bay Length (m)	35.0		65.0		65.0	100.0		100.0	
Base Capacity (vph)	341	452	333	475	441	260	3106	181	2992
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	0.31	0.18	0.08	0.08	0.17	0.35	0.65	0.33	0.50

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	40	40	25	40	75	90	1970	40	60	1365	135
Future Volume (vph)	105	40	40	25	40	75	90	1970	40	60	1365	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5		5.5	5.5	5.5	3.0	5.5		3.0	5.5	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	*0.80		1.00	*0.80	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		0.99	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.93		1.00	1.00	0.85	1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1776	1699		1795	1900	1539	1787	4331		1770	4266	
Flt Permitted	0.73	1.00		0.70	1.00	1.00	0.11	1.00		0.05	1.00	
Satd. Flow (perm)	1367	1699		1332	1900	1539	201	4331		92	4266	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	105	40	40	25	40	75	90	1970	40	60	1365	135
RTOR Reduction (vph)	0	32	0	0	0	65	0	1	0	0	5	0
Lane Group Flow (vph)	105	48	0	25	40	10	90	2009	0	60	1495	0
Confl. Peds. (#/hr)	5		5	5		5			5	5		
Heavy Vehicles (%)	1%	5%	0%	0%	0%	3%	1%	5%	0%	2%	6%	0%
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	15.6	15.6		15.6	15.6	15.6	98.8	91.4		96.0	90.0	
Effective Green, g (s)	16.6	16.6		16.6	16.6	16.6	100.8	92.4		98.0	91.0	
Actuated g/C Ratio	0.13	0.13		0.13	0.13	0.13	0.78	0.71		0.75	0.70	
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	4.0	6.5		4.0	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	174	216		170	242	196	258	3078		159	2986	
v/s Ratio Prot		0.03			0.02		c0.02	c0.46		c0.02	0.35	
v/s Ratio Perm	c0.08			0.02		0.01	0.25			0.26		
v/c Ratio	0.60	0.22		0.15	0.17	0.05	0.35	0.65		0.38	0.50	
Uniform Delay, d1	53.6	50.9		50.4	50.5	49.8	5.1	10.1		8.9	9.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	0.96	0.64		1.00	1.00	
Incremental Delay, d2	5.8	0.5		0.4	0.3	0.1	0.6	0.8		1.5	0.6	
Delay (s)	59.4	51.4		50.8	50.9	49.9	5.6	7.3		10.4	9.6	
Level of Service	E	D		D	D	D	A	A		B	A	
Approach Delay (s)		55.9			50.3			7.2			9.6	
Approach LOS		E			D			A			A	

Intersection Summary					
HCM 2000 Control Delay	11.9	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio	0.63				
Actuated Cycle Length (s)	130.0	Sum of lost time (s)		14.0	
Intersection Capacity Utilization	72.1%	ICU Level of Service		C	
Analysis Period (min)	15				

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	30	0	2100	1390	40
Future Volume (Veh/h)	0	30	0	2100	1390	40
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	30	0	2100	1390	40
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				193		
pX, platoon unblocked	0.73					
vC, conflicting volume	2110	483	1430			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1241	483	1430			
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	94	100			
cM capacity (veh/h)	125	535	482			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	30	700	700	700	556	556	318
Volume Left	0	0	0	0	0	0	0
Volume Right	30	0	0	0	0	0	40
cSH	535	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.06	0.41	0.41	0.41	0.33	0.33	0.19
Queue Length 95th (m)	1.4	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	12.1	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B						
Approach Delay (s)	12.1	0.0			0.0		
Approach LOS	B						

Intersection Summary				
Average Delay		0.1		
Intersection Capacity Utilization		43.9%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	120	0	40	0	180	1940	55	1225
Future Volume (vph)	120	0	40	0	180	1940	55	1225
Turn Type	pm+pt	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases	7	4		8	5	2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	7	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	7.0	10.0	10.0	10.0	7.0	20.0	7.0	20.0
Minimum Split (s)	11.0	36.2	36.2	36.2	11.0	38.4	11.0	38.4
Total Split (s)	12.0	49.0	37.0	37.0	11.0	70.0	11.0	70.0
Total Split (%)	9.2%	37.7%	28.5%	28.5%	8.5%	53.8%	8.5%	53.8%
Yellow Time (s)	3.0	3.3	3.3	3.3	3.0	4.2	3.0	4.2
All-Red Time (s)	1.0	2.9	2.9	2.9	1.0	2.2	1.0	2.2
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	5.2	5.2	5.2	3.0	5.4	3.0	5.4
Lead/Lag	Lead		Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	23.6	21.4	11.8	11.8	100.4	88.9	92.8	82.1
Actuated g/C Ratio	0.18	0.16	0.09	0.09	0.77	0.68	0.71	0.63
v/c Ratio	0.50	0.10	0.32	0.14	0.55	0.67	0.31	0.50
Control Delay	53.0	0.6	62.1	1.0	21.0	8.7	32.1	6.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.0	0.6	62.1	1.0	21.0	8.7	32.1	6.9
LOS	D	A	E	A	C	A	C	A
Approach Delay		39.9		31.6		9.7		7.8
Approach LOS		D		C		A		A

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 103 (79%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay: 10.8		Intersection LOS: B	
Intersection Capacity Utilization 70.2%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 5: Regional Rd 25 & Etheridge Ave/Collector Road

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	120	40	40	40	180	2005	55	1365
v/c Ratio	0.50	0.10	0.32	0.14	0.55	0.67	0.31	0.50
Control Delay	53.0	0.6	62.1	1.0	21.0	8.7	32.1	6.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.0	0.6	62.1	1.0	21.0	8.7	32.1	6.9
Queue Length 50th (m)	28.3	0.0	10.4	0.0	20.6	70.0	2.9	81.9
Queue Length 95th (m)	46.4	0.0	22.4	0.0	m23.0	m66.3	15.1	113.1
Internal Link Dist (m)		53.9		63.5		106.2		169.0
Turn Bay Length (m)	40.0		40.0		70.0		70.0	
Base Capacity (vph)	241	639	339	515	327	2990	175	2739
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	0.50	0.06	0.12	0.08	0.55	0.67	0.31	0.50

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	120	0	40	40	0	40	180	1940	65	55	1225	140
Future Volume (vph)	120	0	40	40	0	40	180	1940	65	55	1225	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.2		5.2	5.2		3.0	5.4		3.0	5.4	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	*0.80		1.00	*0.80	
Frt	1.00	0.85		1.00	0.85		1.00	1.00		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1752	1615		1805	1615		1805	4369		1805	4326	
Flt Permitted	0.56	1.00		0.73	1.00		0.12	1.00		0.05	1.00	
Satd. Flow (perm)	1032	1615		1389	1615		221	4369		94	4326	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	120	0	40	40	0	40	180	1940	65	55	1225	140
RTOR Reduction (vph)	0	33	0	0	37	0	0	2	0	0	7	0
Lane Group Flow (vph)	120	7	0	40	3	0	180	2003	0	55	1358	0
Heavy Vehicles (%)	3%	0%	0%	0%	0%	0%	0%	4%	0%	0%	4%	2%
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	21.6	21.6		8.8	8.8		95.8	85.9		85.8	79.9	
Effective Green, g (s)	22.6	22.6		9.8	9.8		96.8	86.9		87.8	80.9	
Actuated g/C Ratio	0.17	0.17		0.08	0.08		0.74	0.67		0.68	0.62	
Clearance Time (s)	4.0	6.2		6.2	6.2		4.0	6.4		4.0	6.4	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	233	280		104	121		321	2920		154	2692	
v/s Ratio Prot	c0.04	0.00			0.00		c0.06	c0.46		0.02	0.31	
v/s Ratio Perm	c0.05			0.03			0.36			0.22		
v/c Ratio	0.52	0.02		0.38	0.02		0.56	0.69		0.36	0.50	
Uniform Delay, d1	47.7	44.6		57.2	55.7		8.9	13.2		11.4	13.5	
Progression Factor	1.00	1.00		1.00	1.00		2.89	0.63		2.69	0.46	
Incremental Delay, d2	1.9	0.0		2.4	0.1		0.2	0.1		1.3	0.6	
Delay (s)	49.6	44.6		59.6	55.8		25.8	8.5		31.8	6.8	
Level of Service	D	D		E	E		C	A		C	A	
Approach Delay (s)		48.3			57.7			9.9			7.8	
Approach LOS		D			E			A			A	

Intersection Summary

HCM 2000 Control Delay	11.7	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio	0.67				
Actuated Cycle Length (s)	130.0	Sum of lost time (s)		16.6	
Intersection Capacity Utilization	70.2%	ICU Level of Service		C	
Analysis Period (min)	15				

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	40	0	2185	1255	50
Future Volume (Veh/h)	0	40	0	2185	1255	50
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	40	0	2185	1255	50
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				186	130	
pX, platoon unblocked	0.67	0.85	0.85			
vC, conflicting volume	2008	443	1305			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0	741			
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	96	100			
cM capacity (veh/h)	686	927	744			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	40	728	728	728	502	502	301
Volume Left	0	0	0	0	0	0	0
Volume Right	40	0	0	0	0	0	50
cSH	927	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.04	0.43	0.43	0.43	0.30	0.30	0.18
Queue Length 95th (m)	1.1	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	9.1	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	A						
Approach Delay (s)	9.1	0.0			0.0		
Approach LOS	A						

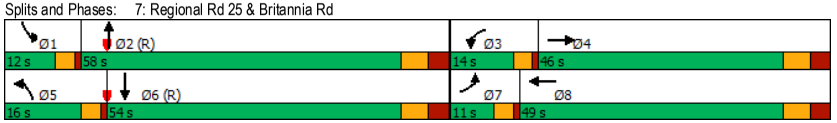
Intersection Summary				
Average Delay		0.1		
Intersection Capacity Utilization		45.6%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	55	350	325	550	275	1725	190	1050
Future Volume (vph)	55	350	325	550	275	1725	190	1050
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases								
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	7.0	10.0	7.0	10.0	7.0	20.0	7.0	20.0
Minimum Split (s)	11.0	45.5	11.0	45.5	11.0	49.7	11.0	49.7
Total Split (s)	11.0	46.0	14.0	49.0	16.0	58.0	12.0	54.0
Total Split (%)	8.5%	35.4%	10.8%	37.7%	12.3%	44.6%	9.2%	41.5%
Yellow Time (s)	3.0	4.2	3.0	4.2	3.0	4.2	3.0	4.2
All-Red Time (s)	1.0	3.3	1.0	3.3	1.0	3.5	1.0	3.5
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.5	3.0	6.5	3.0	6.7	3.0	6.7
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	8.0	28.5	11.0	33.7	15.6	58.8	12.6	55.8
Actuated g/C Ratio	0.06	0.22	0.08	0.26	0.12	0.45	0.10	0.43
v/c Ratio	0.27	0.40	1.07	0.92dr	0.66	1.13	0.57	0.59
Control Delay	61.9	41.7	139.7	37.4	62.5	100.3	76.8	20.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.9	41.7	139.7	37.4	62.5	100.3	76.8	20.0
LOS	E	D	F	D	E	F	E	B
Approach Delay		44.2		63.4		96.1		28.3
Approach LOS		D		E		F		C

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 104 (80%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.13			
Intersection Signal Delay: 68.4		Intersection LOS: E	
Intersection Capacity Utilization 93.6%		ICU Level of Service F	
Analysis Period (min) 15			

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Splits and Phases: 7: Regional Rd 25 & Britannia Rd



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	55	395	325	955	275	2230	190	1105
v/c Ratio	0.27	0.40	1.07	0.92dr	0.66	1.13	0.57	0.59
Control Delay	61.9	41.7	139.7	37.4	62.5	100.3	76.8	20.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.9	41.7	139.7	37.4	62.5	100.3	76.8	20.0
Queue Length 50th (m)	7.4	35.9	~51.3	50.0	36.7	~301.7	27.8	44.4
Queue Length 95th (m)	14.6	44.6	#83.6	52.7	52.7	#351.6	41.2	51.2
Internal Link Dist (m)		377.9		190.1		165.3		161.9
Turn Bay Length (m)	60.0		120.0		90.0		90.0	
Base Capacity (vph)	203	1372	305	1483	421	1967	335	1874
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	0.27	0.29	1.07	0.64	0.65	1.13	0.57	0.59

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	350	45	325	550	405	275	1725	505	190	1050	55
Future Volume (vph)	55	350	45	325	550	405	275	1725	505	190	1050	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.5		3.0	6.5		3.0	6.7		3.0	6.7	
Lane Util. Factor	0.97	*0.80		0.97	*0.80		0.97	*0.80		0.97	*0.80	
Frt	1.00	0.98		1.00	0.94		1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00		1.00	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3303	4482		3614	4228		3502	4286		3467	4360	
Flt Permitted	0.95	1.00		1.00	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3303	4482		3614	4228		3502	4286		3467	4360	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	55	350	45	325	550	405	275	1725	505	190	1050	55
RTOR Reduction (vph)	0	12	0	0	112	0	0	30	0	0	3	0
Lane Group Flow (vph)	55	383	0	325	843	0	275	2200	0	190	1102	0
Heavy Vehicles (%)	6%	0%	0%	2%	1%	1%	0%	3%	2%	1%	4%	0%
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	5.6	28.3		10.0	32.7		14.6	56.9		11.6	53.9	
Effective Green, g (s)	6.6	29.3		11.0	33.7		15.6	57.9		12.6	54.9	
Actuated g/C Ratio	0.05	0.23		0.08	0.26		0.12	0.45		0.10	0.42	
Clearance Time (s)	4.0	7.5		4.0	7.5		4.0	7.7		4.0	7.7	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	167	1010		305	1096		420	1908		336	1841	
v/s Ratio Prot	0.02	0.09		c0.09	c0.20		c0.08	c0.51		0.05	0.25	
v/s Ratio Perm												
v/c Ratio	0.33	0.38		1.07	0.92dr		0.65	1.15		0.57	0.60	
Uniform Delay, d1	59.6	42.7		59.5	44.6		54.6	36.0		56.1	29.0	
Progression Factor	1.00	1.00		1.32	0.87		1.00	1.00		1.25	0.62	
Incremental Delay, d2	1.2	0.2		68.8	3.2		3.7	75.4		2.0	1.3	
Delay (s)	60.7	42.9		147.5	41.9		58.3	111.4		72.3	19.4	
Level of Service	E	D		F	D		E	F		E	B	
Approach Delay (s)		45.1			68.7			105.6			27.2	
Approach LOS		D			E			F			C	

Intersection Summary				
HCM 2000 Control Delay	73.8	HCM 2000 Level of Service	E	
HCM 2000 Volume to Capacity ratio	1.01			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	19.2	
Intersection Capacity Utilization	93.6%	ICU Level of Service	F	
Analysis Period (min)	15			

dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	100	10	85	175	60	15	0	35	25	0	10
Future Volume (Veh/h)	10	100	10	85	175	60	15	0	35	25	0	10
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	10	100	10	85	175	60	15	0	35	25	0	10
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					78							
pX, platoon unblocked	0.97						0.97	0.97		0.97	0.97	0.97
vC, conflicting volume	235			110			510	530	105	535	505	205
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	192			110			476	497	105	502	471	161
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			94			97	100	96	94	100	99
cM capacity (veh/h)	1348			1493			457	432	955	428	447	860

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	120	320	50	35
Volume Left	10	85	15	25
Volume Right	10	60	35	10
cSH	1348	1493	719	500
Volume to Capacity	0.01	0.06	0.07	0.07
Queue Length 95th (m)	0.2	1.4	1.8	1.8
Control Delay (s)	0.7	2.4	10.4	12.7
Lane LOS	A	A	B	B
Approach Delay (s)	0.7	2.4	10.4	12.7
Approach LOS			B	B

Intersection Summary					
Average Delay			3.4		
Intersection Capacity Utilization			35.1%	ICU Level of Service	A
Analysis Period (min)			15		

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	25	395	800	55	20
Future Volume (vph)	25	395	800	55	20
Turn Type	pm+pt	NA	NA	Prot	Perm
Protected Phases	5	2	6	8	
Permitted Phases	2				8
Detector Phase	5	2	6	8	8
Switch Phase					
Minimum Initial (s)	7.0	20.0	20.0	10.0	10.0
Minimum Split (s)	11.0	29.4	29.4	15.3	15.3
Total Split (s)	11.0	64.0	53.0	41.0	41.0
Total Split (%)	10.5%	61.0%	50.5%	39.0%	39.0%
Yellow Time (s)	3.0	4.2	4.2	3.3	3.3
All-Red Time (s)	1.0	2.2	2.2	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	5.4	5.4	4.3	4.3
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	None	None
Act Effct Green (s)	89.3	88.0	83.6	11.4	11.4
Actuated g/C Ratio	0.85	0.84	0.80	0.11	0.11
v/c Ratio	0.05	0.10	0.25	0.29	0.10
Control Delay	2.0	2.2	4.2	47.2	18.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	2.0	2.2	4.2	47.2	18.6
LOS	A	A	A	D	B
Approach Delay		2.2	4.2	39.6	
Approach LOS		A	A	D	

Intersection Summary			
Cycle Length: 105			
Actuated Cycle Length: 105			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.29			
Intersection Signal Delay: 5.5		Intersection LOS: A	
Intersection Capacity Utilization 37.2%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 10: Britannia Rd & Farmstead Dr

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	25	395	880	55	20
v/c Ratio	0.05	0.10	0.25	0.29	0.10
Control Delay	2.0	2.2	4.2	47.2	18.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	2.0	2.2	4.2	47.2	18.6
Queue Length 50th (m)	0.7	5.9	14.5	11.1	0.0
Queue Length 95th (m)	2.2	9.2	34.6	23.1	7.2
Internal Link Dist (m)		101.0	377.9	199.3	
Turn Bay Length (m)	20.0				
Base Capacity (vph)	519	3822	3552	606	577
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.05	0.10	0.25	0.09	0.03

Intersection Summary

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	25	395	800	80	55	20
Future Volume (vph)	25	395	800	80	55	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.4	5.4		4.3	4.3
Lane Util. Factor	1.00	*0.80	*0.80		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1805	4560	4457		1736	1615
Flt Permitted	0.26	1.00	1.00		0.95	1.00
Satd. Flow (perm)	494	4560	4457		1736	1615
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	25	395	800	80	55	20
RTOR Reduction (vph)	0	0	4	0	0	18
Lane Group Flow (vph)	25	395	876	0	55	2
Heavy Vehicles (%)	0%	0%	1%	0%	4%	0%
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		8	
Permitted Phases	2					8
Actuated Green, G (s)	84.9	84.9	78.1		8.4	8.4
Effective Green, g (s)	85.9	85.9	79.1		9.4	9.4
Actuated g/C Ratio	0.82	0.82	0.75		0.09	0.09
Clearance Time (s)	4.0	6.4	6.4		5.3	5.3
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	451	3730	3357		155	144
v/s Ratio Prot	0.00	c0.09	c0.20		c0.03	
v/s Ratio Perm	0.04					0.00
v/c Ratio	0.06	0.11	0.26		0.35	0.01
Uniform Delay, d1	1.9	1.9	4.0		44.9	43.6
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.1	0.1	0.2		1.4	0.0
Delay (s)	1.9	2.0	4.2		46.3	43.6
Level of Service	A	A	A		D	D
Approach Delay (s)		2.0	4.2		45.6	
Approach LOS		A	A		D	

Intersection Summary				
HCM 2000 Control Delay	5.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.26		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	12.7
Intersection Capacity Utilization	37.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	80	965	1230	30	50
Future Volume (vph)	80	965	1230	30	50
Turn Type	pm+pt	NA	NA	Prot	Perm
Protected Phases	5	2	6	4	
Permitted Phases	2				4
Detector Phase	5	2	6	4	4
Switch Phase					
Minimum Initial (s)	7.0	20.0	20.0	10.0	10.0
Minimum Split (s)	11.0	29.0	29.0	43.0	43.0
Total Split (s)	15.0	80.0	65.0	50.0	50.0
Total Split (%)	11.5%	61.5%	50.0%	38.5%	38.5%
Yellow Time (s)	3.0	4.0	4.0	3.0	3.0
All-Red Time (s)	1.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.0	6.0	5.0	5.0
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	None	None
Act Effct Green (s)	114.2	112.4	103.5	11.0	11.0
Actuated g/C Ratio	0.88	0.86	0.80	0.08	0.08
v/c Ratio	0.23	0.24	0.36	0.20	0.27
Control Delay	3.0	2.6	5.3	58.7	18.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	3.0	2.6	5.3	58.7	18.8
LOS	A	A	A	E	B
Approach Delay		2.6	5.3	33.8	
Approach LOS		A	A	C	

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 65 (50%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.36			
Intersection Signal Delay: 5.1		Intersection LOS: A	
Intersection Capacity Utilization 51.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 11: Britannia Rd & Rose Way

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	80	965	1290	30	50
v/c Ratio	0.23	0.24	0.36	0.20	0.27
Control Delay	3.0	2.6	5.3	58.7	18.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	3.0	2.6	5.3	58.7	18.8
Queue Length 50th (m)	2.7	21.2	44.9	7.7	0.0
Queue Length 95th (m)	m4.1	m24.2	53.1	18.0	13.0
Internal Link Dist (m)		190.1	148.0	92.6	
Turn Bay Length (m)	50.0			50.0	
Base Capacity (vph)	393	3941	3607	624	591
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.20	0.24	0.36	0.05	0.08

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

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	80	965	1230	60	30	50
Future Volume (vph)	80	965	1230	60	30	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0		5.0	5.0
Lane Util. Factor	1.00	*0.80	*0.80		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1805	4560	4528		1805	1615
Flt Permitted	0.15	1.00	1.00		0.95	1.00
Satd. Flow (perm)	289	4560	4528		1805	1615
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	80	965	1230	60	30	50
RTOR Reduction (vph)	0	0	1	0	0	47
Lane Group Flow (vph)	80	965	1289	0	30	3
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)	109.0	109.0	99.4		8.0	8.0
Effective Green, g (s)	110.0	110.0	100.4		9.0	9.0
Actuated g/C Ratio	0.85	0.85	0.77		0.07	0.07
Clearance Time (s)	4.0	7.0	7.0		6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	321	3858	3497		124	111
v/s Ratio Prot	0.01	c0.21	c0.28		c0.02	
v/s Ratio Perm	0.20					0.00
v/c Ratio	0.25	0.25	0.37		0.24	0.03
Uniform Delay, d1	2.1	2.0	4.7		57.3	56.4
Progression Factor	1.45	1.22	1.00		1.00	1.00
Incremental Delay, d2	0.3	0.1	0.3		1.0	0.1
Delay (s)	3.3	2.5	5.0		58.3	56.5
Level of Service	A	A	A		E	E
Approach Delay (s)		2.5	5.0		57.2	
Approach LOS		A	A		E	

Intersection Summary			
HCM 2000 Control Delay	5.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	51.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

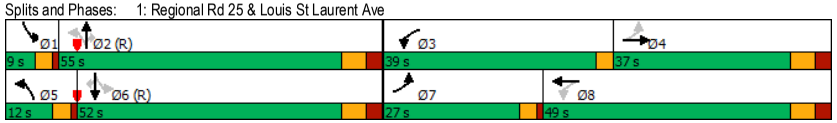
2029 (South Parcel Only) Future Total Traffic Conditions – NO RIRO Accesses

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	270	535	480	560	110	860	320	65	790	95
Future Volume (vph)	270	535	480	560	110	860	320	65	790	95
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4	3	8	5	2		1	6	
Permitted Phases	4		8		2		2	6		6
Detector Phase	7	4	3	8	5	2	2	1	6	6
Switch Phase										
Minimum Initial (s)	5.0	10.0	10.0	10.0	5.0	20.0	20.0	5.0	20.0	20.0
Minimum Split (s)	9.0	30.0	14.0	30.0	9.0	32.2	32.2	9.0	32.2	32.2
Total Split (s)	27.0	37.0	39.0	49.0	12.0	55.0	55.0	9.0	52.0	52.0
Total Split (%)	19.3%	26.4%	27.9%	35.0%	8.6%	39.3%	39.3%	6.4%	37.1%	37.1%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	4.2	4.2	3.0	4.2	4.2
All-Red Time (s)	1.0	3.0	0.0	3.0	1.0	3.0	3.0	1.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.0	2.0	6.0	3.0	6.2	6.2	3.0	6.2	6.2
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	52.9	31.1	71.8	46.0	63.2	52.6	52.6	57.6	48.0	48.0
Actuated g/C Ratio	0.38	0.22	0.51	0.33	0.45	0.38	0.38	0.41	0.34	0.34
v/c Ratio	0.66	0.92	0.92	0.58	0.46	0.68	0.43	0.31	0.68	0.15
Control Delay	29.8	68.9	62.3	40.6	30.0	41.0	9.7	27.2	43.8	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.8	68.9	62.3	40.6	30.0	41.0	9.7	27.2	43.8	3.6
LOS	C	E	E	D	C	D	A	C	D	A
Approach Delay		58.3		49.8		32.3			38.6	
Approach LOS		E		D		C			D	

Intersection Summary

Cycle Length: 140
Actuated Cycle Length: 140
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.92
Intersection Signal Delay: 44.1 — Intersection LOS: D
Intersection Capacity Utilization 92.1% — ICU Level of Service F
Analysis Period (min) 15

Splits and Phases: 1: Regional Rd 25 & Louis St Laurent Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	270	720	480	655	110	860	320	65	790	95
v/c Ratio	0.66	0.92	0.92	0.58	0.46	0.68	0.43	0.31	0.68	0.15
Control Delay	29.8	68.9	62.3	40.6	30.0	41.0	9.7	27.2	43.8	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.8	68.9	62.3	40.6	30.0	41.0	9.7	27.2	43.8	3.6
Queue Length 50th (m)	43.2	105.0	114.5	79.1	19.1	115.0	13.1	11.0	106.4	0.0
Queue Length 95th (m)	62.6	#142.8	#176.1	105.6	32.1	140.6	38.9	20.8	130.8	8.3
Internal Link Dist (m)		126.1		117.1		481.0			113.5	
Turn Bay Length (m)	90.0		35.0		65.0		65.0	80.0		90.0
Base Capacity (vph)	477	790	548	1136	239	1268	748	207	1156	619
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	0.57	0.91	0.88	0.58	0.46	0.68	0.43	0.31	0.68	0.15

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	270	535	185	480	560	95	110	860	320	65	790	95
Future Volume (vph)	270	535	185	480	560	95	110	860	320	65	790	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0		2.0	6.0		3.0	6.2	6.2	3.0	6.2	6.2
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.96		1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		1.00	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1767	3411		1863	3427		1703	3374	1568	1719	3374	1583
Flt Permitted	0.39	1.00		0.12	1.00		0.18	1.00	1.00	0.19	1.00	1.00
Satd. Flow (perm)	717	3411		225	3427		329	3374	1568	352	3374	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	270	535	185	480	560	95	110	860	320	65	790	95
RTOR Reduction (vph)	0	24	0	0	9	0	0	0	160	0	0	62
Lane Group Flow (vph)	270	696	0	480	646	0	110	860	160	65	790	33
Confl. Peds. (#/hr)	5					5						
Heavy Vehicles (%)	2%	2%	1%	2%	2%	7%	6%	7%	3%	5%	7%	2%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	47.9	30.1		66.8	45.0		58.8	50.8	50.8	51.2	47.0	47.0
Effective Green, g (s)	49.9	31.1		67.8	46.0		60.0	51.8	51.8	53.2	48.0	48.0
Actuated g/C Ratio	0.36	0.22		0.48	0.33		0.43	0.37	0.37	0.38	0.34	0.34
Clearance Time (s)	4.0	7.0		3.0	7.0		4.0	7.2	7.2	4.0	7.2	7.2
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	396	757		514	1126		229	1248	580	184	1156	542
v/s Ratio Prot	0.09	c0.20		c0.23	0.19		c0.03	c0.25		0.01	0.23	
v/s Ratio Perm	0.15			0.22			0.17		0.10	0.12		0.02
v/c Ratio	0.68	0.92		0.93	0.57		0.48	0.69	0.28	0.35	0.68	0.06
Uniform Delay, d1	34.2	53.2		41.1	38.9		27.0	37.3	30.9	29.5	39.5	30.9
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.8	16.1		24.2	0.7		1.6	3.1	1.2	1.2	3.3	0.2
Delay (s)	39.0	69.3		65.4	39.6		28.6	40.4	32.1	30.7	42.8	31.1
Level of Service	D	E		E	D		C	D	C	C	D	C
Approach Delay (s)		61.0			50.5			37.4			40.8	
Approach LOS		E			D			D			D	

Intersection Summary				
HCM 2000 Control Delay	46.9	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.82			
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.2	
Intersection Capacity Utilization	92.1%	ICU Level of Service	F	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	145	50	50	35	95	45	1075	10	50	1605	100
Future Volume (vph)	145	50	50	35	95	45	1075	10	50	1605	100
Turn Type	Perm	NA	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		8		5	2		1	6	
Permitted Phases	4		8		8	2		2	6		6
Detector Phase	4	4	8	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	7.0	20.0	20.0	7.0	20.0	20.0
Minimum Split (s)	37.5	37.5	37.5	37.5	37.5	11.0	35.5	35.5	11.0	35.5	35.5
Total Split (s)	38.0	38.0	38.0	38.0	38.0	11.0	81.0	81.0	11.0	81.0	81.0
Total Split (%)	29.2%	29.2%	29.2%	29.2%	29.2%	8.5%	62.3%	62.3%	8.5%	62.3%	62.3%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.0	4.2	4.2	3.0	4.2	4.2
All-Red Time (s)	3.2	3.2	3.2	3.2	3.2	1.0	2.3	2.3	1.0	2.3	2.3
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	3.0	5.5	5.5	3.0	5.5	5.5
Lead/Lag						Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	20.4	20.4	20.4	20.4	20.4	98.7	89.7	89.7	98.7	89.7	89.7
Actuated g/C Ratio	0.16	0.16	0.16	0.16	0.16	0.76	0.69	0.69	0.76	0.69	0.69
v/c Ratio	0.69	0.49	0.33	0.13	0.31	0.20	0.46	0.01	0.12	0.68	0.09
Control Delay	68.1	30.2	52.5	45.3	10.9	5.1	8.0	0.1	4.9	15.2	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.1	30.2	52.5	45.3	10.9	5.1	8.0	0.1	4.9	15.2	4.1
LOS	E	C	D	D	B	A	A	A	A	B	A
Approach Delay		49.2		29.2			7.8			14.3	
Approach LOS		D		C			A			B	

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 64 (49%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 95			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.69			
Intersection Signal Delay: 15.9		Intersection LOS: B	
Intersection Capacity Utilization 77.9%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 2: Regional Rd 25 & Whitlock Ave

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	145	145	50	35	95	45	1075	10	50	1605	100
v/c Ratio	0.69	0.49	0.33	0.13	0.31	0.20	0.46	0.01	0.12	0.68	0.09
Control Delay	68.1	30.2	52.5	45.3	10.9	5.1	8.0	0.1	4.9	15.2	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.1	30.2	52.5	45.3	10.9	5.1	8.0	0.1	4.9	15.2	4.1
Queue Length 50th (m)	37.5	18.2	12.1	8.2	0.0	0.9	104.2	0.0	2.6	128.3	3.1
Queue Length 95th (m)	57.3	37.4	23.8	17.1	14.7	m3.0	147.4	m0.0	7.2	187.9	11.2
Internal Link Dist (m)		62.9		68.1			696.9			481.0	
Turn Bay Length (m)	35.0		65.0		65.0	100.0		25.0	100.0		25.0
Base Capacity (vph)	333	431	241	439	435	228	2349	910	411	2371	1060
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.44	0.34	0.21	0.08	0.22	0.20	0.46	0.01	0.12	0.68	0.09

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	145	50	95	50	35	95	45	1075	10	50	1605	100
Future Volume (vph)	145	50	95	50	35	95	45	1075	10	50	1605	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5		5.5	5.5	5.5	3.0	5.5	5.5	3.0	5.5	5.5
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.90		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1725	1516		1727	1759	1455	1671	3406	1292	1805	3438	1509
Flt Permitted	0.73	1.00		0.53	1.00	1.00	0.10	1.00	1.00	0.23	1.00	1.00
Satd. Flow (perm)	1333	1516		965	1759	1455	179	3406	1292	430	3438	1509
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	145	50	95	50	35	95	45	1075	10	50	1605	100
RTOR Reduction (vph)	0	59	0	0	0	80	0	0	3	0	0	20
Lane Group Flow (vph)	145	86	0	50	35	15	45	1075	7	50	1605	80
Confl. Peds. (#/hr)	5		5	5		5						
Heavy Vehicles (%)	4%	32%	1%	4%	8%	9%	8%	6%	25%	0%	5%	7%
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8	2		2	6		6
Actuated Green, G (s)	19.4	19.4		19.4	19.4	19.4	93.6	87.9	87.9	93.6	87.9	87.9
Effective Green, g (s)	20.4	20.4		20.4	20.4	20.4	95.6	88.9	88.9	95.6	88.9	88.9
Actuated g/C Ratio	0.16	0.16		0.16	0.16	0.16	0.74	0.68	0.68	0.74	0.68	0.68
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.5	6.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	209	237		151	276	228	208	2329	883	387	2351	1031
v/s Ratio Prot		0.06			0.02		c0.01	0.32		0.01	c0.47	
v/s Ratio Perm	c0.11			0.05		0.01	0.15		0.01	0.09		0.05
v/c Ratio	0.69	0.36		0.33	0.13	0.07	0.22	0.46	0.01	0.13	0.68	0.08
Uniform Delay, d1	51.8	49.0		48.7	47.1	46.7	9.1	9.5	6.5	5.4	12.2	6.9
Progression Factor	1.00	1.00		1.00	1.00	1.00	0.74	0.70	1.00	1.00	1.00	1.00
Incremental Delay, d2	9.6	0.9		1.3	0.2	0.1	0.5	0.6	0.0	0.2	1.6	0.1
Delay (s)	61.4	49.9		50.0	47.3	46.8	7.2	7.3	6.5	5.6	13.8	7.0
Level of Service	E	D		D	D	D	A	A	A	A	B	A
Approach Delay (s)		55.7			47.8			7.3			13.2	
Approach LOS		E			D			A			B	

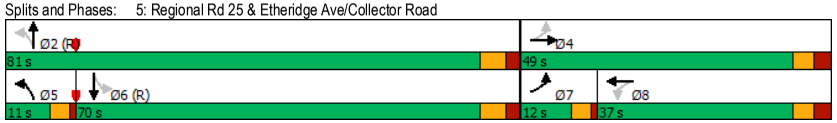
Intersection Summary				
HCM 2000 Control Delay	16.7	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.66			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	14.0	
Intersection Capacity Utilization	77.9%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	155	0	65	0	55	920	30	1645
Future Volume (vph)	155	0	65	0	55	920	30	1645
Turn Type	pm+pt	NA	Perm	NA	pm+pt	NA	Perm	NA
Protected Phases	7	4		8	5	2		6
Permitted Phases	4		8		2		6	
Detector Phase	7	4	8	8	5	2	6	6
Switch Phase								
Minimum Initial (s)	7.0	10.0	10.0	10.0	7.0	20.0	20.0	20.0
Minimum Split (s)	11.0	36.2	36.2	36.2	11.0	38.4	38.4	38.4
Total Split (s)	12.0	49.0	37.0	37.0	11.0	81.0	70.0	70.0
Total Split (%)	9.2%	37.7%	28.5%	28.5%	8.5%	62.3%	53.8%	53.8%
Yellow Time (s)	3.0	3.3	3.3	3.3	3.0	4.2	4.2	4.2
All-Red Time (s)	1.0	2.9	2.9	2.9	1.0	2.2	2.2	2.2
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	5.2	5.2	5.2	3.0	5.4	5.4	5.4
Lead/Lag	Lead		Lag	Lag	Lead		Lag	Lag
Lead-Lag Optimize?	Yes		Yes	Yes	Yes		Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max
Act Effct Green (s)	25.5	23.3	13.7	13.7	98.5	96.1	87.1	87.1
Actuated g/C Ratio	0.20	0.18	0.11	0.11	0.76	0.74	0.67	0.67
v/c Ratio	0.58	0.35	0.49	0.17	0.27	0.37	0.08	0.75
Control Delay	53.9	12.1	66.2	1.1	19.8	2.3	3.6	11.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.9	12.1	66.2	1.1	19.8	2.3	3.6	11.2
LOS	D	B	E	A	B	A	A	B
Approach Delay		34.5		36.4		3.2		11.1
Approach LOS		C		D		A		B

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 120			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 11.7		Intersection LOS: B	
Intersection Capacity Utilization 77.7%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 5: Regional Rd 25 & Etheridge Ave/Collector Road



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	155	135	65	55	55	940	30	1720
v/c Ratio	0.58	0.35	0.49	0.17	0.27	0.37	0.08	0.75
Control Delay	53.9	12.1	66.2	1.1	19.8	2.3	3.6	11.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.9	12.1	66.2	1.1	19.8	2.3	3.6	11.2
Queue Length 50th (m)	36.5	3.6	16.9	0.0	2.8	9.0	0.9	186.2
Queue Length 95th (m)	55.4	20.5	31.6	0.0	m7.5	15.2	m1.1	248.8
Internal Link Dist (m)		53.9		63.1		292.1		696.9
Turn Bay Length (m)	40.0		40.0		70.0		70.0	
Base Capacity (vph)	265	623	311	523	201	2513	387	2287
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	0.58	0.22	0.21	0.11	0.27	0.37	0.08	0.75

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

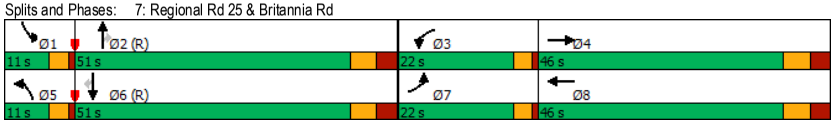
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	155	0	135	65	0	55	55	920	20	30	1645	75
Future Volume (vph)	155	0	135	65	0	55	55	920	20	30	1645	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.2		5.2	5.2		3.0	5.4		5.4	5.4	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.85		1.00	0.85		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1787	1615		1805	1615		1752	3399		1805	3414	
Flt Permitted	0.57	1.00		0.67	1.00		0.07	1.00		0.30	1.00	
Satd. Flow (perm)	1080	1615		1274	1615		131	3399		578	3414	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	155	0	135	65	0	55	55	920	20	30	1645	75
RTOR Reduction (vph)	0	97	0	0	50	0	0	1	0	0	2	0
Lane Group Flow (vph)	155	38	0	65	5	0	55	939	0	30	1718	0
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	3%	6%	0%	0%	5%	6%
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases	7	4			8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	23.5	23.5		10.7	10.7		93.9	93.9		84.1	84.1	
Effective Green, g (s)	24.5	24.5		11.7	11.7		94.9	94.9		85.1	85.1	
Actuated g/C Ratio	0.19	0.19		0.09	0.09		0.73	0.73		0.65	0.65	
Clearance Time (s)	4.0	6.2		6.2	6.2		4.0	6.4		6.4	6.4	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	256	304		114	145		180	2481		378	2234	
v/s Ratio Prot	c0.05	0.02			0.00		0.02	c0.28			c0.50	
v/s Ratio Perm	c0.07			0.05			0.21			0.05		
v/c Ratio	0.61	0.13		0.57	0.03		0.31	0.38		0.08	0.77	
Uniform Delay, d1	47.0	43.9		56.7	54.0		14.0	6.5		8.2	15.6	
Progression Factor	1.00	1.00		1.00	1.00		3.35	0.28		0.31	0.56	
Incremental Delay, d2	4.0	0.2		6.7	0.1		0.8	0.4		0.3	2.0	
Delay (s)	51.0	44.0		63.5	54.1		47.6	2.2		2.9	10.8	
Level of Service	D	D		E	D		D	A		A	B	
Approach Delay (s)		47.8			59.2			4.7			10.7	
Approach LOS		D			E			A			B	

Intersection Summary				
HCM 2000 Control Delay	14.0	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.73			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	16.6	
Intersection Capacity Utilization	77.7%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	60	390	410	325	50	810	210	315	1510	20
Future Volume (vph)	60	390	410	325	50	810	210	315	1510	20
Turn Type	Prot	NA	Prot	NA	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4	3	8	5	2		1	6	
Permitted Phases							2			6
Detector Phase	7	4	3	8	5	2	2	1	6	6
Switch Phase										
Minimum Initial (s)	7.0	10.0	7.0	10.0	7.0	20.0	20.0	7.0	20.0	20.0
Minimum Split (s)	11.0	45.5	11.0	45.5	11.0	49.7	49.7	11.0	49.7	49.7
Total Split (s)	22.0	46.0	22.0	46.0	11.0	51.0	51.0	11.0	51.0	51.0
Total Split (%)	16.9%	35.4%	16.9%	35.4%	8.5%	39.2%	39.2%	8.5%	39.2%	39.2%
Yellow Time (s)	3.0	4.2	3.0	4.2	3.0	4.2	4.2	3.0	4.2	4.2
All-Red Time (s)	1.0	3.3	1.0	3.3	1.0	3.5	3.5	1.0	3.5	3.5
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.5	3.0	6.5	3.0	6.7	6.7	3.0	6.7	6.7
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	9.0	23.8	18.6	35.5	8.7	45.0	45.0	23.5	61.9	61.9
Actuated g/C Ratio	0.07	0.18	0.14	0.27	0.07	0.35	0.35	0.18	0.48	0.48
v/c Ratio	0.26	0.76	0.83	0.36	0.22	0.68	0.31	0.50	0.92	0.03
Control Delay	59.9	46.5	65.8	29.5	59.6	40.0	5.2	48.9	52.0	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.9	46.5	65.8	29.5	59.6	40.0	5.2	48.9	52.0	0.1
LOS	E	D	E	C	E	D	A	D	D	A
Approach Delay		47.6		46.8		34.1			50.9	
Approach LOS		D		D		C			D	

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 104 (80%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay: 45.6		Intersection LOS: D	
Intersection Capacity Utilization 90.5%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 7: Regional Rd 25 & Britannia Rd



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	60	660	410	450	50	810	210	315	1510	20
v/c Ratio	0.26	0.76	0.83	0.36	0.22	0.68	0.31	0.50	0.92	0.03
Control Delay	59.9	46.5	65.8	29.5	59.6	40.0	5.2	48.9	52.0	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.9	46.5	65.8	29.5	59.6	40.0	5.2	48.9	52.0	0.1
Queue Length 50th (m)	8.0	58.7	56.0	34.4	6.7	96.6	0.0	45.5	182.6	0.0
Queue Length 95th (m)	15.3	71.6	#79.8	47.4	13.4	122.4	17.3	m60.6	#284.0	m0.0
Internal Link Dist (m)		377.9		182.4		165.3			292.1	
Turn Bay Length (m)	60.0		120.0		90.0		90.0	90.0		90.0
Base Capacity (vph)	482	1371	503	1363	225	1188	674	632	1637	660
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	0.12	0.48	0.82	0.33	0.22	0.68	0.31	0.50	0.92	0.03

Intersection Summary

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	390	270	410	325	125	50	810	210	315	1510	20
Future Volume (vph)	60	390	270	410	325	125	50	810	210	315	1510	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.5		3.0	6.5		3.0	6.7	6.7	3.0	6.7	6.7
Lane Util. Factor	0.97	*0.80		0.97	*0.80		0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	0.94		1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		1.00	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3303	4238		3445	4315		3367	3438	1553	3502	3438	1272
Flt Permitted	0.95	1.00		1.00	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3303	4238		3445	4315		3367	3438	1553	3502	3438	1272
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	60	390	270	410	325	125	50	810	210	315	1510	20
RTOR Reduction (vph)	0	97	0	0	55	0	0	0	139	0	0	11
Lane Group Flow (vph)	60	563	0	410	395	0	50	810	71	315	1510	9
Heavy Vehicles (%)	6%	1%	1%	7%	1%	2%	4%	5%	4%	0%	5%	27%
Turn Type	Prot	NA		Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			6
Actuated Green, G (s)	6.6	23.5		17.6	34.5		6.3	43.2	43.2	22.5	59.4	59.4
Effective Green, g (s)	7.6	24.5		18.6	35.5		7.3	44.2	44.2	23.5	60.4	60.4
Actuated g/C Ratio	0.06	0.19		0.14	0.27		0.06	0.34	0.34	0.18	0.46	0.46
Clearance Time (s)	4.0	7.5		4.0	7.5		4.0	7.7	7.7	4.0	7.7	7.7
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	193	798		492	1178		189	1168	528	633	1597	590
v/s Ratio Prot	0.02	c0.13		c0.12	0.09		0.01	0.24		c0.09	c0.44	
v/s Ratio Perm									0.05			0.01
v/c Ratio	0.31	0.71		0.83	0.34		0.26	0.69	0.14	0.50	0.95	0.02
Uniform Delay, d1	58.7	49.4		54.2	37.8		58.8	37.0	29.7	47.9	33.2	18.8
Progression Factor	1.00	1.00		0.93	0.91		1.00	1.00	1.00	0.95	1.38	1.00
Incremental Delay, d2	0.9	2.9		11.4	0.2		0.8	3.4	0.5	0.4	9.9	0.0
Delay (s)	59.6	52.2		61.9	34.7		59.5	40.5	30.2	45.8	55.7	18.8
Level of Service	E	D		E	C		E	D	C	D	E	B
Approach Delay (s)		52.8			47.7			39.3			53.6	
Approach LOS		D			D			D			D	

Intersection Summary				
HCM 2000 Control Delay	48.9	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.85			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	19.2	
Intersection Capacity Utilization	90.5%	ICU Level of Service	E	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	165	5	45	85	20	125
Future Volume (Veh/h)	165	5	45	85	20	125
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	165	5	45	85	20	125
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				78		
pX, platoon unblocked						
vC, conflicting volume			170		342	168
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			170		342	168
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		97	86
cM capacity (veh/h)			1420		637	882

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	170	130	145
Volume Left	0	45	20
Volume Right	5	0	125
cSH	1700	1420	837
Volume to Capacity	0.10	0.03	0.17
Queue Length 95th (m)	0.0	0.8	5.0
Control Delay (s)	0.0	2.8	10.2
Lane LOS		A	B
Approach Delay (s)	0.0	2.8	10.2
Approach LOS			B

Intersection Summary				
Average Delay			4.1	
Intersection Capacity Utilization			34.8%	ICU Level of Service A
Analysis Period (min)			15	

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	20	630	370	90	25
Future Volume (vph)	20	630	370	90	25
Turn Type	pm+pt	NA	NA	Prot	Perm
Protected Phases	5	2	6	8	
Permitted Phases	2				8
Detector Phase	5	2	6	8	8
Switch Phase					
Minimum Initial (s)	7.0	20.0	20.0	10.0	10.0
Minimum Split (s)	11.0	29.4	29.4	15.3	15.3
Total Split (s)	11.0	64.0	53.0	41.0	41.0
Total Split (%)	10.5%	61.0%	50.5%	39.0%	39.0%
Yellow Time (s)	3.0	4.2	4.2	3.3	3.3
All-Red Time (s)	1.0	2.2	2.2	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	5.4	5.4	4.3	4.3
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	None	None
Act Effct Green (s)	88.0	86.7	82.3	12.8	12.8
Actuated g/C Ratio	0.84	0.83	0.78	0.12	0.12
v/c Ratio	0.03	0.17	0.12	0.43	0.12
Control Delay	2.4	2.7	4.3	49.0	16.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	2.4	2.7	4.3	49.0	16.1
LOS	A	A	A	D	B
Approach Delay		2.7	4.3	41.9	
Approach LOS		A	A	D	

Intersection Summary		
Cycle Length: 105		
Actuated Cycle Length: 105		
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green		
Natural Cycle: 60		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.43		
Intersection Signal Delay: 7.2	Intersection LOS: A	
Intersection Capacity Utilization 33.1%	ICU Level of Service A	
Analysis Period (min) 15		

Splits and Phases: 10: Britannia Rd & Farmstead Dr

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	20	630	395	90	25
v/c Ratio	0.03	0.17	0.12	0.43	0.12
Control Delay	2.4	2.7	4.3	49.0	16.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	2.4	2.7	4.3	49.0	16.1
Queue Length 50th (m)	0.6	10.5	6.1	18.4	0.0
Queue Length 95th (m)	2.3	17.7	16.9	33.1	7.7
Internal Link Dist (m)		101.0	377.9	199.3	
Turn Bay Length (m)	20.0				
Base Capacity (vph)	744	3653	3296	595	553
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.03	0.17	0.12	0.15	0.05

Intersection Summary

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	20	630	370	25	90	25
Future Volume (vph)	20	630	370	25	90	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.4	5.4		4.3	4.3
Lane Util. Factor	1.00	*0.80	*0.80		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1656	4427	4202		1703	1538
Flt Permitted	0.46	1.00	1.00		0.95	1.00
Satd. Flow (perm)	811	4427	4202		1703	1538
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	20	630	370	25	90	25
RTOR Reduction (vph)	0	0	3	0	0	22
Lane Group Flow (vph)	20	630	392	0	90	3
Heavy Vehicles (%)	9%	3%	8%	0%	6%	5%
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		8	
Permitted Phases	2					8
Actuated Green, G (s)	83.5	83.5	76.7		9.8	9.8
Effective Green, g (s)	84.5	84.5	77.7		10.8	10.8
Actuated g/C Ratio	0.80	0.80	0.74		0.10	0.10
Clearance Time (s)	4.0	6.4	6.4		5.3	5.3
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	683	3562	3109		175	158
v/s Ratio Prot	0.00	c0.14	0.09		c0.05	
v/s Ratio Perm	0.02					0.00
v/c Ratio	0.03	0.18	0.13		0.51	0.02
Uniform Delay, d1	2.1	2.3	3.9		44.6	42.3
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.0	0.1	0.1		2.5	0.0
Delay (s)	2.1	2.4	4.0		47.2	42.4
Level of Service	A	A	A		D	D
Approach Delay (s)		2.4	4.0		46.1	
Approach LOS		A	A		D	

Intersection Summary				
HCM 2000 Control Delay	7.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.22		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	12.7
Intersection Capacity Utilization	33.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	25	890	785	55	75
Future Volume (vph)	25	890	785	55	75
Turn Type	pm+pt	NA	NA	Prot	Perm
Protected Phases	5	2	6	4	
Permitted Phases	2				4
Detector Phase	5	2	6	4	4
Switch Phase					
Minimum Initial (s)	7.0	20.0	20.0	10.0	10.0
Minimum Split (s)	11.0	29.0	29.0	43.0	43.0
Total Split (s)	15.0	80.0	65.0	50.0	50.0
Total Split (%)	11.5%	61.5%	50.0%	38.5%	38.5%
Yellow Time (s)	3.0	4.0	4.0	3.0	3.0
All-Red Time (s)	1.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.0	6.0	5.0	5.0
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	None	None
Act Effct Green (s)	110.2	107.2	100.6	11.8	11.8
Actuated g/C Ratio	0.85	0.82	0.77	0.09	0.09
v/c Ratio	0.05	0.24	0.23	0.34	0.35
Control Delay	4.6	7.1	4.6	61.1	16.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	4.6	7.1	4.6	61.1	16.3
LOS	A	A	A	E	B
Approach Delay		7.0	4.6	35.2	
Approach LOS		A	A	D	

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.35			
Intersection Signal Delay: 8.0		Intersection LOS: A	
Intersection Capacity Utilization 38.3%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 11: Britannia Rd & Rose Way

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	25	890	795	55	75
v/c Ratio	0.05	0.24	0.23	0.34	0.35
Control Delay	4.6	7.1	4.6	61.1	16.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	4.6	7.1	4.6	61.1	16.3
Queue Length 50th (m)	2.3	44.0	24.0	14.3	0.0
Queue Length 95th (m)	m4.7	51.4	32.6	27.8	15.3
Internal Link Dist (m)		182.4	155.7	76.0	
Turn Bay Length (m)	50.0			50.0	
Base Capacity (vph)	584	3761	3523	624	608
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.04	0.24	0.23	0.09	0.12

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

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	25	890	785	10	55	75
Future Volume (vph)	25	890	785	10	55	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0		5.0	5.0
Lane Util. Factor	1.00	*0.80	*0.80		1.00	1.00
Frt	1.00	1.00	1.00		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1805	4560	4551		1805	1615
Flt Permitted	0.29	1.00	1.00		0.95	1.00
Satd. Flow (perm)	553	4560	4551		1805	1615
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	25	890	785	10	55	75
RTOR Reduction (vph)	0	0	0	0	0	68
Lane Group Flow (vph)	25	890	795	0	55	7
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)	106.2	106.2	98.0		10.8	10.8
Effective Green, g (s)	107.2	107.2	99.0		11.8	11.8
Actuated g/C Ratio	0.82	0.82	0.76		0.09	0.09
Clearance Time (s)	4.0	7.0	7.0		6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	506	3760	3465		163	146
v/s Ratio Prot	0.00	c0.20	0.17		c0.03	
v/s Ratio Perm	0.04					0.00
v/c Ratio	0.05	0.24	0.23		0.34	0.05
Uniform Delay, d1	2.1	2.5	4.5		55.4	54.0
Progression Factor	2.65	2.73	1.00		1.00	1.00
Incremental Delay, d2	0.0	0.1	0.2		1.2	0.1
Delay (s)	5.6	6.9	4.6		56.7	54.1
Level of Service	A	A	A		E	D
Approach Delay (s)		6.9	4.6		55.2	
Approach LOS		A	A		E	

Intersection Summary				
HCM 2000 Control Delay	9.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.25		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	38.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	205	375	345	545	210	875	435	95	845	195
Future Volume (vph)	205	375	345	545	210	875	435	95	845	195
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4	3	8	5	2		1	6	
Permitted Phases	4		8		2		2	6		6
Detector Phase	7	4	3	8	5	2	2	1	6	6
Switch Phase										
Minimum Initial (s)	5.0	10.0	10.0	10.0	5.0	20.0	20.0	5.0	20.0	20.0
Minimum Split (s)	9.0	30.0	14.0	30.0	9.0	32.2	32.2	9.0	32.2	32.2
Total Split (s)	22.0	30.0	32.0	40.0	22.0	68.0	68.0	10.0	56.0	56.0
Total Split (%)	15.7%	21.4%	22.9%	28.6%	15.7%	48.6%	48.6%	7.1%	40.0%	40.0%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	4.2	4.2	3.0	4.2	4.2
All-Red Time (s)	1.0	3.0	0.0	3.0	1.0	3.0	3.0	1.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.0	2.0	6.0	3.0	6.2	6.2	3.0	6.2	6.2
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	43.5	23.7	54.9	31.0	80.0	65.9	65.9	70.5	59.3	59.3
Actuated g/C Ratio	0.31	0.17	0.39	0.22	0.57	0.47	0.47	0.50	0.42	0.42
v/c Ratio	0.69	0.82	0.83	0.77	0.57	0.55	0.46	0.30	0.57	0.25
Control Delay	42.7	65.1	50.9	57.4	21.9	28.8	5.1	17.9	34.3	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.7	65.1	50.9	57.4	21.9	28.8	5.1	17.9	34.3	4.7
LOS	D	E	D	E	C	C	A	B	C	A
Approach Delay		58.5		55.0		21.1			27.8	
Approach LOS		E		E		C			C	

Intersection Summary			
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 36.5		Intersection LOS: D	
Intersection Capacity Utilization 86.0%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 1: Regional Rd 25 & Louis St Laurent Ave

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	205	495	345	610	210	875	435	95	845	195
v/c Ratio	0.69	0.82	0.83	0.77	0.57	0.55	0.46	0.30	0.57	0.25
Control Delay	42.7	65.1	50.9	57.4	21.9	28.8	5.1	17.9	34.3	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.7	65.1	50.9	57.4	21.9	28.8	5.1	17.9	34.3	4.7
Queue Length 50th (m)	40.3	69.2	72.4	86.4	29.5	98.8	6.4	12.4	100.0	0.0
Queue Length 95th (m)	58.3	#92.2	105.9	106.9	46.9	121.2	29.4	22.7	134.1	16.8
Internal Link Dist (m)		126.1		117.1		481.0			113.5	
Turn Bay Length (m)	90.0		35.0		65.0		65.0	80.0		90.0
Base Capacity (vph)	324	626	468	865	413	1604	947	319	1470	782
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	0.63	0.79	0.74	0.71	0.51	0.55	0.46	0.30	0.57	0.25

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	205	375	120	345	545	65	210	875	435	95	845	195
Future Volume (vph)	205	375	120	345	545	65	210	875	435	95	845	195
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0		2.0	6.0		3.0	6.2	6.2	3.0	6.2	6.2
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.96		1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		1.00	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1769	3435		1899	3537		1787	3406	1567	1804	3471	1582
Flt Permitted	0.24	1.00		0.18	1.00		0.21	1.00	1.00	0.26	1.00	1.00
Satd. Flow (perm)	445	3435		349	3537		394	3406	1567	484	3471	1582
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	205	375	120	345	545	65	210	875	435	95	845	195
RTOR Reduction (vph)	0	22	0	0	7	0	0	0	210	0	0	112
Lane Group Flow (vph)	205	473	0	345	603	0	210	875	225	95	845	83
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Heavy Vehicles (%)	2%	1%	0%	0%	0%	2%	1%	6%	1%	0%	4%	0%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	38.5	22.7		49.9	30.1		75.9	64.9	64.9	65.3	58.3	58.3
Effective Green, g (s)	40.5	23.7		50.9	31.1		76.9	65.9	65.9	67.3	59.3	59.3
Actuated g/C Ratio	0.29	0.17		0.36	0.22		0.55	0.47	0.47	0.48	0.42	0.42
Clearance Time (s)	4.0	7.0		3.0	7.0		4.0	7.2	7.2	4.0	7.2	7.2
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	287	581		405	785		361	1603	737	308	1470	670
v/s Ratio Prot	0.09	0.14		c0.15	c0.17		c0.06	0.26		0.02	0.24	
v/s Ratio Perm	0.12			0.16			c0.26		0.14	0.13		0.05
v/c Ratio	0.71	0.81		0.85	0.77		0.58	0.55	0.31	0.31	0.57	0.12
Uniform Delay, d1	40.5	56.0		36.1	51.1		19.0	26.4	22.9	20.6	30.7	24.5
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	8.2	8.6		15.7	4.5		2.4	1.3	1.1	0.6	1.6	0.4
Delay (s)	48.7	64.6		51.8	55.6		21.4	27.7	24.0	21.2	32.4	24.9
Level of Service	D	E		D	E		C	C	C	C	C	C
Approach Delay (s)		60.0			54.2			25.8			30.2	
Approach LOS		E			D			C			C	

Intersection Summary				
HCM 2000 Control Delay	38.8	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.70			
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.2	
Intersection Capacity Utilization	86.0%	ICU Level of Service	E	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	105	40	25	40	75	90	1520	40	60	1055	135
Future Volume (vph)	105	40	25	40	75	90	1520	40	60	1055	135
Turn Type	Perm	NA	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		8		5	2		1	6	
Permitted Phases	4		8		8	2		2	6		6
Detector Phase	4	4	8	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	7.0	20.0	20.0	7.0	20.0	20.0
Minimum Split (s)	37.5	37.5	37.5	37.5	37.5	11.0	35.5	35.5	11.0	35.5	35.5
Total Split (s)	38.0	38.0	38.0	38.0	38.0	11.0	81.0	81.0	11.0	81.0	81.0
Total Split (%)	29.2%	29.2%	29.2%	29.2%	29.2%	8.5%	62.3%	62.3%	8.5%	62.3%	62.3%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.0	4.2	4.2	3.0	4.2	4.2
All-Red Time (s)	3.2	3.2	3.2	3.2	3.2	1.0	2.3	2.3	1.0	2.3	2.3
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	3.0	5.5	5.5	3.0	5.5	5.5
Lead/Lag						Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	16.6	16.6	16.6	16.6	16.6	102.8	93.5	93.5	101.7	91.1	91.1
Actuated g/C Ratio	0.13	0.13	0.13	0.13	0.13	0.79	0.72	0.72	0.78	0.70	0.70
v/c Ratio	0.60	0.32	0.15	0.17	0.29	0.21	0.61	0.03	0.21	0.44	0.12
Control Delay	67.4	31.8	50.2	50.0	13.0	1.8	7.0	1.2	4.9	9.7	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.4	31.8	50.2	50.0	13.0	1.8	7.0	1.2	4.9	9.7	4.1
LOS	E	C	D	D	B	A	A	A	A	A	A
Approach Delay		52.0		30.2			6.6			8.8	
Approach LOS		D		C			A			A	

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 40 (31%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.61
Intersection Signal Delay: 11.1 — Intersection LOS: B
Intersection Capacity Utilization 75.1% — ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 2: Regional Rd 25 & Whitlock Ave

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	105	80	25	40	75	90	1520	40	60	1055	135
v/c Ratio	0.60	0.32	0.15	0.17	0.29	0.21	0.61	0.03	0.21	0.44	0.12
Control Delay	67.4	31.8	50.2	50.0	13.0	1.8	7.0	1.2	4.9	9.7	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.4	31.8	50.2	50.0	13.0	1.8	7.0	1.2	4.9	9.7	4.1
Queue Length 50th (m)	27.2	10.6	6.1	9.8	0.0	1.4	53.7	0.3	2.6	57.7	5.2
Queue Length 95th (m)	45.1	25.0	14.4	20.3	14.0	m3.0	112.1	m1.7	6.9	87.3	14.4
Internal Link Dist (m)		62.9		68.1			696.9			481.0	
Turn Bay Length (m)	35.0		65.0		65.0	100.0		25.0	100.0		25.0
Base Capacity (vph)	341	452	333	475	441	431	2473	1143	282	2386	1151
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.18	0.08	0.08	0.17	0.21	0.61	0.03	0.21	0.44	0.12

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	40	40	25	40	75	90	1520	40	60	1055	135
Future Volume (vph)	105	40	40	25	40	75	90	1520	40	60	1055	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5		5.5	5.5	5.5	3.0	5.5	5.5	3.0	5.5	5.5
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	1.00
Flpb, ped/bikes	0.99	1.00		0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.93		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1776	1699		1795	1900	1539	1787	3438	1565	1769	3406	1615
Flt Permitted	0.73	1.00		0.70	1.00	1.00	0.23	1.00	1.00	0.13	1.00	1.00
Satd. Flow (perm)	1367	1699		1332	1900	1539	436	3438	1565	238	3406	1615
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	105	40	40	25	40	75	90	1520	40	60	1055	135
RTOR Reduction (vph)	0	32	0	0	0	65	0	0	11	0	0	20
Lane Group Flow (vph)	105	48	0	25	40	10	90	1520	29	60	1055	115
Confl. Peds. (#/hr)	5		5	5		5			5	5		
Heavy Vehicles (%)	1%	5%	0%	0%	0%	3%	1%	5%	0%	2%	6%	0%
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8	2		2	6		6
Actuated Green, G (s)	15.6	15.6		15.6	15.6	15.6	99.1	91.7	91.7	95.7	90.0	90.0
Effective Green, g (s)	16.6	16.6		16.6	16.6	16.6	101.1	92.7	92.7	97.7	91.0	91.0
Actuated g/C Ratio	0.13	0.13		0.13	0.13	0.13	0.78	0.71	0.71	0.75	0.70	0.70
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.5	6.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	174	216		170	242	196	426	2451	1115	257	2384	1130
v/s Ratio Prot		0.03			0.02		c0.01	c0.44		c0.01	0.31	
v/s Ratio Perm	c0.08			0.02		0.01	0.15		0.02	0.16		0.07
v/c Ratio	0.60	0.22		0.15	0.17	0.05	0.21	0.62	0.03	0.23	0.44	0.10
Uniform Delay, d1	53.6	50.9		50.4	50.5	49.8	4.2	9.6	5.5	6.6	8.5	6.3
Progression Factor	1.00	1.00		1.00	1.00	1.00	0.29	0.58	1.51	1.00	1.00	1.00
Incremental Delay, d2	5.8	0.5		0.4	0.3	0.1	0.2	0.9	0.0	0.5	0.6	0.2
Delay (s)	59.4	51.4		50.8	50.9	49.9	1.4	6.5	8.2	7.1	9.1	6.5
Level of Service	E	D		D	D	D	A	A	A	A	A	A
Approach Delay (s)		55.9			50.3			6.3			8.7	
Approach LOS		E			D			A			A	

Intersection Summary				
HCM 2000 Control Delay	12.0	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.60			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	14.0	
Intersection Capacity Utilization	75.1%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	110	0	40	0	130	1500	55	885
Future Volume (vph)	110	0	40	0	130	1500	55	885
Turn Type	pm+pt	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases	7	4		8	5	2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	7	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	7.0	10.0	10.0	10.0	7.0	20.0	7.0	20.0
Minimum Split (s)	11.0	36.2	36.2	36.2	11.0	38.4	11.0	38.4
Total Split (s)	12.0	49.0	37.0	37.0	11.0	70.0	11.0	70.0
Total Split (%)	9.2%	37.7%	28.5%	28.5%	8.5%	53.8%	8.5%	53.8%
Yellow Time (s)	3.0	3.3	3.3	3.3	3.0	4.2	3.0	4.2
All-Red Time (s)	1.0	2.9	2.9	2.9	1.0	2.2	1.0	2.2
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	5.2	5.2	5.2	3.0	5.4	3.0	5.4
Lead/Lag	Lead		Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	23.6	21.4	11.8	11.8	98.8	88.9	96.5	85.8
Actuated g/C Ratio	0.18	0.16	0.09	0.09	0.76	0.68	0.74	0.66
v/c Ratio	0.45	0.16	0.33	0.13	0.32	0.66	0.22	0.47
Control Delay	51.4	0.8	62.5	0.9	3.7	7.8	6.1	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.4	0.8	62.5	0.9	3.7	7.8	6.1	5.3
LOS	D	A	E	A	A	A	A	A
Approach Delay		31.7		31.7		7.5		5.3
Approach LOS		C		C		A		A

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 103 (79%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.66			
Intersection Signal Delay: 8.7		Intersection LOS: A	
Intersection Capacity Utilization 74.3%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 5: Regional Rd 25 & Etheridge Ave/Collector Road

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	110	70	40	40	130	1565	55	1065
v/c Ratio	0.45	0.16	0.33	0.13	0.32	0.66	0.22	0.47
Control Delay	51.4	0.8	62.5	0.9	3.7	7.8	6.1	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.4	0.8	62.5	0.9	3.7	7.8	6.1	5.3
Queue Length 50th (m)	25.8	0.0	10.4	0.0	3.5	56.8	0.7	75.5
Queue Length 95th (m)	42.8	0.0	22.4	0.0	m7.4	78.2	5.4	42.7
Internal Link Dist (m)		53.9		63.5		292.1		696.9
Turn Bay Length (m)	40.0		40.0		70.0		70.0	
Base Capacity (vph)	242	677	330	525	408	2364	252	2250
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	0.45	0.10	0.12	0.08	0.32	0.66	0.22	0.47

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	110	0	70	40	0	40	130	1500	65	55	885	180
Future Volume (vph)	110	0	70	40	0	40	130	1500	65	55	885	180
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.2		5.2	5.2		3.0	5.4		3.0	5.4	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.85		1.00	0.85		1.00	0.99		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1752	1615		1805	1615		1805	3455		1805	3394	
Flt Permitted	0.56	1.00		0.71	1.00		0.22	1.00		0.11	1.00	
Satd. Flow (perm)	1032	1615		1352	1615		409	3455		204	3394	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	110	0	70	40	0	40	130	1500	65	55	885	180
RTOR Reduction (vph)	0	58	0	0	37	0	0	2	0	0	9	0
Lane Group Flow (vph)	110	12	0	40	3	0	130	1563	0	55	1056	0
Heavy Vehicles (%)	3%	0%	0%	0%	0%	0%	0%	4%	0%	0%	4%	2%
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	21.6	21.6		8.8	8.8		94.0	85.9		89.6	83.7	
Effective Green, g (s)	22.6	22.6		9.8	9.8		96.0	86.9		91.6	84.7	
Actuated g/C Ratio	0.17	0.17		0.08	0.08		0.74	0.67		0.70	0.65	
Clearance Time (s)	4.0	6.2		6.2	6.2		4.0	6.4		4.0	6.4	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	233	280		101	121		399	2309		228	2211	
v/s Ratio Prot	c0.04	0.01			0.00		c0.02	c0.45		0.01	0.31	
v/s Ratio Perm	c0.05			0.03			0.22			0.16		
v/c Ratio	0.47	0.04		0.40	0.02		0.33	0.68		0.24	0.48	
Uniform Delay, d1	47.4	44.7		57.3	55.7		6.3	13.1		9.7	11.5	
Progression Factor	1.00	1.00		1.00	1.00		0.53	0.49		0.98	0.40	
Incremental Delay, d2	1.5	0.1		2.5	0.1		0.3	1.1		0.5	0.7	
Delay (s)	48.9	44.8		59.8	55.8		3.7	7.6		10.1	5.3	
Level of Service	D	D		E	E		A	A		B	A	
Approach Delay (s)		47.3			57.8			7.3			5.5	
Approach LOS		D			E			A			A	

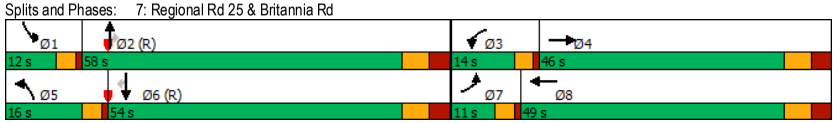
Intersection Summary				
HCM 2000 Control Delay	10.3	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.64			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	16.6	
Intersection Capacity Utilization	74.3%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	45	305	285	470	235	1320	445	145	800	50
Future Volume (vph)	45	305	285	470	235	1320	445	145	800	50
Turn Type	Prot	NA	Prot	NA	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4	3	8	5	2		1	6	
Permitted Phases							2			6
Detector Phase	7	4	3	8	5	2	2	1	6	6
Switch Phase										
Minimum Initial (s)	7.0	10.0	7.0	10.0	7.0	20.0	20.0	7.0	20.0	20.0
Minimum Split (s)	11.0	45.5	11.0	45.5	11.0	49.7	49.7	11.0	49.7	49.7
Total Split (s)	11.0	46.0	14.0	49.0	16.0	58.0	58.0	12.0	54.0	54.0
Total Split (%)	8.5%	35.4%	10.8%	37.7%	12.3%	44.6%	44.6%	9.2%	41.5%	41.5%
Yellow Time (s)	3.0	4.2	3.0	4.2	3.0	4.2	4.2	3.0	4.2	4.2
All-Red Time (s)	1.0	3.3	1.0	3.3	1.0	3.5	3.5	1.0	3.5	3.5
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.5	3.0	6.5	3.0	6.7	6.7	3.0	6.7	6.7
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	8.0	24.0	11.0	29.2	14.9	64.1	64.1	11.8	60.9	60.9
Actuated g/C Ratio	0.06	0.18	0.08	0.22	0.11	0.49	0.49	0.09	0.47	0.47
v/c Ratio	0.22	0.41	0.93	0.75	0.58	0.76	0.46	0.46	0.49	0.06
Control Delay	60.9	45.1	113.3	38.3	60.3	32.1	6.8	71.4	18.0	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.9	45.1	113.3	38.3	60.3	32.1	6.8	71.4	18.0	0.1
LOS	E	D	F	D	E	C	A	E	B	A
Approach Delay		46.9		58.0		29.8			24.9	
Approach LOS		D		E		C			C	

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 104 (80%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.93
Intersection Signal Delay: 37.0 — Intersection LOS: D
Intersection Capacity Utilization 82.3% — ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 7: Regional Rd 25 & Britannia Rd



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	45	345	285	800	235	1320	445	145	800	50
v/c Ratio	0.22	0.41	0.93	0.75	0.58	0.76	0.46	0.46	0.49	0.06
Control Delay	60.9	45.1	113.3	38.3	60.3	32.1	6.8	71.4	18.0	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.9	45.1	113.3	38.3	60.3	32.1	6.8	71.4	18.0	0.1
Queue Length 50th (m)	6.0	32.6	42.2	44.2	31.4	151.5	12.4	20.5	41.6	0.0
Queue Length 95th (m)	12.7	41.6	#69.8	47.3	44.1	#222.5	43.0	32.5	49.6	0.0
Internal Link Dist (m)		377.9		190.1		165.3			292.1	
Turn Bay Length (m)	60.0		120.0		90.0		90.0	90.0		90.0
Base Capacity (vph)	203	1372	305	1481	412	1727	962	315	1626	812
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	0.22	0.25	0.93	0.54	0.57	0.76	0.46	0.46	0.49	0.06

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis — 2029 Future Total PM (South Parcel)
7: Regional Rd 25 & Britannia Rd — 01-12-2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	305	40	285	470	330	235	1320	445	145	800	50
Future Volume (vph)	45	305	40	285	470	330	235	1320	445	145	800	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.5		3.0	6.5		3.0	6.7	6.7	3.0	6.7	6.7
Lane Util. Factor	0.97	*0.80		0.97	*0.80		0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	0.98		1.00	0.94		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		1.00	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3303	4481		3614	4235		3502	3505	1583	3467	3471	1615
Flt Permitted	0.95	1.00		1.00	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3303	4481		3614	4235		3502	3505	1583	3467	3471	1615
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	45	305	40	285	470	330	235	1320	445	145	800	50
RTOR Reduction (vph)	0	12	0	0	112	0	0	0	184	0	0	27
Lane Group Flow (vph)	45	333	0	285	688	0	235	1320	261	145	800	23
Heavy Vehicles (%)	6%	0%	0%	2%	1%	1%	0%	3%	2%	1%	4%	0%
Turn Type	Prot	NA		Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			6
Actuated Green, G (s)	5.6	23.8		10.0	28.2		13.9	62.2	62.2	10.8	59.1	59.1
Effective Green, g (s)	6.6	24.8		11.0	29.2		14.9	63.2	63.2	11.8	60.1	60.1
Actuated g/C Ratio	0.05	0.19		0.08	0.22		0.11	0.49	0.49	0.09	0.46	0.46
Clearance Time (s)	4.0	7.5		4.0	7.5		4.0	7.7	7.7	4.0	7.7	7.7
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	167	854		305	951		401	1703	769	314	1604	746
v/s Ratio Prot	0.01	0.07		c0.08	c0.16		c0.07	c0.38		0.04	0.23	
v/s Ratio Perm									0.16			0.01
v/c Ratio	0.27	0.39		0.93	0.72		0.59	0.78	0.34	0.46	0.50	0.03
Uniform Delay, d1	59.4	46.0		59.1	46.7		54.6	27.5	20.5	56.1	24.4	19.1
Progression Factor	1.00	1.00		1.33	0.88		1.00	1.00	1.00	1.20	0.66	1.00
Incremental Delay, d2	0.9	0.3		33.8	2.7		2.2	3.5	1.2	1.0	1.0	0.1
Delay (s)	60.3	46.3		112.5	43.7		56.8	31.1	21.7	68.4	17.1	19.1
Level of Service	E	D		F	D		E	C	C	E	B	B
Approach Delay (s)		47.9			61.8			32.0			24.7	
Approach LOS		D			E			C			C	

Intersection Summary				
HCM 2000 Control Delay	39.0	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.79			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	19.2	
Intersection Capacity Utilization	82.3%	ICU Level of Service	E	
Analysis Period (min)	15			
c Critical Lane Group				

HCM Unsignalized Intersection Capacity Analysis — 2029 Future Total PM (South Parcel)
8: Site Dwy (South) & Etheridge Ave — 01-12-2024

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	100	10	135	175	10	80
Future Volume (Veh/h)	100	10	135	175	10	80
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	100	10	135	175	10	80
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				78		
pX, platoon unblocked					0.98	
vC, conflicting volume			110		550	105
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			110		531	105
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			91		98	92
cM capacity (veh/h)			1493		457	955

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	110	310	90
Volume Left	0	135	10
Volume Right	10	0	80
cSH	1700	1493	852
Volume to Capacity	0.06	0.09	0.11
Queue Length 95th (m)	0.0	2.4	2.8
Control Delay (s)	0.0	3.8	9.7
Lane LOS		A	A
Approach Delay (s)	0.0	3.8	9.7
Approach LOS			A

Intersection Summary				
Average Delay	4.0			
Intersection Capacity Utilization	35.5%	ICU Level of Service		A
Analysis Period (min)	15			

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	20	335	675	55	15
Future Volume (vph)	20	335	675	55	15
Turn Type	pm+pt	NA	NA	Prot	Perm
Protected Phases	5	2	6	8	
Permitted Phases	2				8
Detector Phase	5	2	6	8	8
Switch Phase					
Minimum Initial (s)	7.0	20.0	20.0	10.0	10.0
Minimum Split (s)	11.0	29.4	29.4	15.3	15.3
Total Split (s)	11.0	64.0	53.0	41.0	41.0
Total Split (%)	10.5%	61.0%	50.5%	39.0%	39.0%
Yellow Time (s)	3.0	4.2	4.2	3.3	3.3
All-Red Time (s)	1.0	2.2	2.2	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	5.4	5.4	4.3	4.3
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	None	None
Act Effct Green (s)	89.3	88.0	83.6	11.4	11.4
Actuated g/C Ratio	0.85	0.84	0.80	0.11	0.11
v/c Ratio	0.03	0.09	0.21	0.29	0.08
Control Delay	1.9	2.1	4.0	47.2	19.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	1.9	2.1	4.0	47.2	19.9
LOS	A	A	A	D	B
Approach Delay		2.1	4.0	41.4	
Approach LOS		A	A	D	

Intersection Summary			
Cycle Length: 105			
Actuated Cycle Length: 105			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.29			
Intersection Signal Delay: 5.7		Intersection LOS: A	
Intersection Capacity Utilization 33.1%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 10: Britannia Rd & Farmstead Dr

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	20	335	755	55	15
v/c Ratio	0.03	0.09	0.21	0.29	0.08
Control Delay	1.9	2.1	4.0	47.2	19.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	1.9	2.1	4.0	47.2	19.9
Queue Length 50th (m)	0.6	4.9	12.0	11.1	0.0
Queue Length 95th (m)	1.9	7.9	28.9	23.1	6.3
Internal Link Dist (m)		101.0	377.9	199.3	
Turn Bay Length (m)	20.0				
Base Capacity (vph)	587	3822	3545	606	574
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.03	0.09	0.21	0.09	0.03

Intersection Summary

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	20	335	675	80	55	15
Future Volume (vph)	20	335	675	80	55	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.4	5.4		4.3	4.3
Lane Util. Factor	1.00	*0.80	*0.80		1.00	1.00
Frt	1.00	1.00	0.98		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1805	4560	4448		1736	1615
Flt Permitted	0.31	1.00	1.00		0.95	1.00
Satd. Flow (perm)	581	4560	4448		1736	1615
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	20	335	675	80	55	15
RTOR Reduction (vph)	0	0	5	0	0	14
Lane Group Flow (vph)	20	335	750	0	55	1
Heavy Vehicles (%)	0%	0%	1%	0%	4%	0%
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		8	
Permitted Phases	2					8
Actuated Green, G (s)	84.9	84.9	78.1		8.4	8.4
Effective Green, g (s)	85.9	85.9	79.1		9.4	9.4
Actuated g/C Ratio	0.82	0.82	0.75		0.09	0.09
Clearance Time (s)	4.0	6.4	6.4		5.3	5.3
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	519	3730	3350		155	144
v/s Ratio Prot	0.00	c0.07	c0.17		c0.03	
v/s Ratio Perm	0.03					0.00
v/c Ratio	0.04	0.09	0.22		0.35	0.01
Uniform Delay, d1	1.8	1.9	3.8		44.9	43.6
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.0	0.0	0.2		1.4	0.0
Delay (s)	1.8	1.9	4.0		46.3	43.6
Level of Service	A	A	A		D	D
Approach Delay (s)		1.9	4.0		45.8	
Approach LOS		A	A		D	

Intersection Summary				
HCM 2000 Control Delay	5.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.23		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	12.7
Intersection Capacity Utilization	33.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	80	815	1035	30	50
Future Volume (vph)	80	815	1035	30	50
Turn Type	pm+pt	NA	NA	Prot	Perm
Protected Phases	5	2	6	4	
Permitted Phases	2				4
Detector Phase	5	2	6	4	4
Switch Phase					
Minimum Initial (s)	7.0	20.0	20.0	10.0	10.0
Minimum Split (s)	11.0	29.0	29.0	43.0	43.0
Total Split (s)	15.0	80.0	65.0	50.0	50.0
Total Split (%)	11.5%	61.5%	50.0%	38.5%	38.5%
Yellow Time (s)	3.0	4.0	4.0	3.0	3.0
All-Red Time (s)	1.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.0	6.0	5.0	5.0
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	None	None
Act Effct Green (s)	114.2	112.4	103.5	11.0	11.0
Actuated g/C Ratio	0.88	0.86	0.80	0.08	0.08
v/c Ratio	0.19	0.21	0.30	0.20	0.27
Control Delay	2.1	1.3	4.9	58.7	18.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	2.1	1.3	4.9	58.7	18.8
LOS	A	A	A	E	B
Approach Delay		1.3	4.9	33.8	
Approach LOS		A	A	C	

Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 65 (50%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.30
Intersection Signal Delay: 4.5 — Intersection LOS: A
Intersection Capacity Utilization 48.0% — ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 11: Britannia Rd & Rose Way

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	80	815	1095	30	50
v/c Ratio	0.19	0.21	0.30	0.20	0.27
Control Delay	2.1	1.3	4.9	58.7	18.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	2.1	1.3	4.9	58.7	18.8
Queue Length 50th (m)	1.2	6.8	35.7	7.7	0.0
Queue Length 95th (m)	3.3	14.0	42.9	18.0	13.0
Internal Link Dist (m)		190.1	148.0	92.6	
Turn Bay Length (m)	50.0			50.0	
Base Capacity (vph)	461	3941	3604	624	591
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.17	0.21	0.30	0.05	0.08

Intersection Summary

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	80	815	1035	60	30	50
Future Volume (vph)	80	815	1035	60	30	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0		5.0	5.0
Lane Util. Factor	1.00	*0.80	*0.80		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1805	4560	4523		1805	1615
Flt Permitted	0.20	1.00	1.00		0.95	1.00
Satd. Flow (perm)	376	4560	4523		1805	1615
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	80	815	1035	60	30	50
RTOR Reduction (vph)	0	0	2	0	0	47
Lane Group Flow (vph)	80	815	1093	0	30	3
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)	109.0	109.0	99.4		8.0	8.0
Effective Green, g (s)	110.0	110.0	100.4		9.0	9.0
Actuated g/C Ratio	0.85	0.85	0.77		0.07	0.07
Clearance Time (s)	4.0	7.0	7.0		6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	390	3858	3493		124	111
v/s Ratio Prot	0.01	c0.18	c0.24		c0.02	
v/s Ratio Perm	0.16					0.00
v/c Ratio	0.21	0.21	0.31		0.24	0.03
Uniform Delay, d1	1.8	1.9	4.4		57.3	56.4
Progression Factor	0.83	0.59	1.00		1.00	1.00
Incremental Delay, d2	0.2	0.1	0.2		1.0	0.1
Delay (s)	1.8	1.2	4.7		58.3	56.5
Level of Service	A	A	A		E	E
Approach Delay (s)		1.3	4.7		57.2	
Approach LOS		A	A		E	

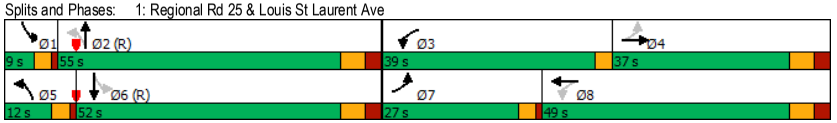
Intersection Summary				
HCM 2000 Control Delay	5.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	48.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

2032 (Full Build) Future Total Traffic Conditions – NO RIRO Accesses

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	270	535	495	560	115	965	65	940
Future Volume (vph)	270	535	495	560	115	965	65	940
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	5.0	10.0	10.0	10.0	5.0	20.0	5.0	20.0
Minimum Split (s)	9.0	30.0	14.0	30.0	9.0	32.2	9.0	32.2
Total Split (s)	27.0	37.0	39.0	49.0	12.0	55.0	9.0	52.0
Total Split (%)	19.3%	26.4%	27.9%	35.0%	8.6%	39.3%	6.4%	37.1%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	4.2	3.0	4.2
All-Red Time (s)	1.0	3.0	0.0	3.0	1.0	3.0	1.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.0	2.0	6.0	3.0	6.2	3.0	6.2
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	52.7	30.9	72.3	46.6	62.7	52.3	57.0	47.6
Actuated g/C Ratio	0.38	0.22	0.52	0.33	0.45	0.37	0.41	0.34
v/c Ratio	0.65	0.93	0.93	0.57	0.62	0.82	0.50	0.72
Control Delay	29.5	70.3	64.3	40.2	39.1	43.8	36.6	43.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.5	70.3	64.3	40.2	39.1	43.8	36.6	43.8
LOS	C	E	E	D	D	D	D	D
Approach Delay		59.2		50.6		43.4		43.4
Approach LOS		E		D		D		D

Intersection Summary	
Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 100	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.93	
Intersection Signal Delay: 48.5	Intersection LOS: D
Intersection Capacity Utilization 95.5%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 1: Regional Rd 25 & Louis St Laurent Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	270	725	495	655	115	1305	65	1035
v/c Ratio	0.65	0.93	0.93	0.57	0.62	0.82	0.50	0.72
Control Delay	29.5	70.3	64.3	40.2	39.1	43.8	36.6	43.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.5	70.3	64.3	40.2	39.1	43.8	36.6	43.8
Queue Length 50th (m)	43.2	105.5	120.2	79.1	20.0	142.2	11.0	110.7
Queue Length 95th (m)	62.6	#144.0	#185.9	105.6	#33.7	166.7	20.8	131.3
Internal Link Dist (m)		126.1		117.1		481.0		113.5
Turn Bay Length (m)	90.0		35.0		65.0		80.0	
Base Capacity (vph)	481	786	548	1149	185	1585	130	1440
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	0.56	0.92	0.90	0.57	0.62	0.82	0.50	0.72

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	270	535	190	495	560	95	115	965	340	65	940	95
Future Volume (vph)	270	535	190	495	560	95	115	965	340	65	940	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0		2.0	6.0		3.0	6.2		3.0	6.2	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	*0.80		1.00	*0.80	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.98		1.00	0.96		1.00	0.99	
Flt Protected	0.95	1.00		1.00	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1767	3409		1863	3427		1703	4135		1719	4221	
Flt Permitted	0.40	1.00		0.12	1.00		0.11	1.00		0.08	1.00	
Satd. Flow (perm)	737	3409		226	3427		199	4135		152	4221	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	270	535	190	495	560	95	115	965	340	65	940	95
RTOR Reduction (vph)	0	26	0	0	9	0	0	42	0	0	7	0
Lane Group Flow (vph)	270	699	0	495	646	0	115	1263	0	65	1028	0
Confl. Peds. (#/hr)	5					5						
Heavy Vehicles (%)	2%	2%	1%	2%	2%	7%	6%	7%	3%	5%	7%	2%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	47.8	30.0		67.4	45.6		58.3	50.4		50.5	46.5	
Effective Green, g (s)	49.8	31.0		68.4	46.6		59.4	51.4		52.5	47.5	
Actuated g/C Ratio	0.36	0.22		0.49	0.33		0.42	0.37		0.38	0.34	
Clearance Time (s)	4.0	7.0		3.0	7.0		4.0	7.2		4.0	7.2	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	400	754		524	1140		180	1518		112	1432	
v/s Ratio Prot	0.09	c0.21		c0.24	0.19		c0.04	c0.31		0.02	0.24	
v/s Ratio Perm	0.15			0.22			0.23			0.19		
v/c Ratio	0.68	0.93		0.94	0.57		0.64	0.83		0.58	0.72	
Uniform Delay, d1	34.3	53.4		41.3	38.4		28.2	40.4		31.9	40.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.5	17.4		26.0	0.6		7.2	5.5		7.4	3.1	
Delay (s)	38.8	70.8		67.3	39.0		35.5	45.9		39.3	43.5	
Level of Service	D	E		E	D		D	D		D	D	
Approach Delay (s)		62.1			51.2			45.0			43.3	
Approach LOS		E			D			D			D	

Intersection Summary				
HCM 2000 Control Delay	49.8	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.89			
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.2	
Intersection Capacity Utilization	95.5%	ICU Level of Service	F	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	145	50	50	35	95	45	1205	50	1775
Future Volume (vph)	145	50	50	35	95	45	1205	50	1775
Turn Type	Perm	NA	Perm	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases		4		8		5	2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	7.0	20.0	7.0	20.0
Minimum Split (s)	37.5	37.5	37.5	37.5	37.5	11.0	35.5	11.0	35.5
Total Split (s)	38.0	38.0	38.0	38.0	38.0	11.0	81.0	11.0	81.0
Total Split (%)	29.2%	29.2%	29.2%	29.2%	29.2%	8.5%	62.3%	8.5%	62.3%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.0	4.2	3.0	4.2
All-Red Time (s)	3.2	3.2	3.2	3.2	3.2	1.0	2.3	1.0	2.3
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	3.0	5.5	3.0	5.5
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	20.4	20.4	20.4	20.4	20.4	98.7	89.7	98.7	89.6
Actuated g/C Ratio	0.16	0.16	0.16	0.16	0.16	0.76	0.69	0.76	0.69
v/c Ratio	0.69	0.49	0.33	0.13	0.31	0.26	0.41	0.15	0.63
Control Delay	68.1	30.2	52.5	45.3	10.9	12.4	6.8	5.3	13.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.1	30.2	52.5	45.3	10.9	12.4	6.8	5.3	13.6
LOS	E	C	D	D	B	B	A	A	B
Approach Delay		49.2		29.2			7.0		13.4
Approach LOS		D		C			A		B

Intersection Summary		
Cycle Length: 130		
Actuated Cycle Length: 130		
Offset: 64 (49%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green		
Natural Cycle: 95		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.69		
Intersection Signal Delay: 14.8	Intersection LOS: B	
Intersection Capacity Utilization 75.1%	ICU Level of Service D	
Analysis Period (min) 15		

Splits and Phases: 2: Regional Rd 25 & Whitlock Ave

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	145	145	50	35	95	45	1215	50	1875
v/c Ratio	0.69	0.49	0.33	0.13	0.31	0.26	0.41	0.15	0.63
Control Delay	68.1	30.2	52.5	45.3	10.9	12.4	6.8	5.3	13.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.1	30.2	52.5	45.3	10.9	12.4	6.8	5.3	13.6
Queue Length 50th (m)	37.5	18.2	12.1	8.2	0.0	1.3	20.2	2.6	111.5
Queue Length 95th (m)	57.3	37.4	23.8	17.1	14.7	m5.4	121.5	7.2	158.2
Internal Link Dist (m)		62.9		68.1			696.9		481.0
Turn Bay Length (m)	35.0		65.0		65.0	100.0		100.0	
Base Capacity (vph)	333	431	241	439	435	175	2959	327	2970
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	0.44	0.34	0.21	0.08	0.22	0.26	0.41	0.15	0.63

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	145	50	95	50	35	95	45	1205	10	50	1775	100
Future Volume (vph)	145	50	95	50	35	95	45	1205	10	50	1775	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5		5.5	5.5	5.5	3.0	5.5		3.0	5.5	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	*0.80		1.00	*0.80	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.90		1.00	1.00	0.85	1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1725	1516		1727	1759	1455	1671	4290		1805	4304	
Flt Permitted	0.73	1.00		0.53	1.00	1.00	0.06	1.00		0.16	1.00	
Satd. Flow (perm)	1333	1516		965	1759	1455	102	4290		308	4304	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	145	50	95	50	35	95	45	1205	10	50	1775	100
RTOR Reduction (vph)	0	59	0	0	0	80	0	0	0	0	3	0
Lane Group Flow (vph)	145	86	0	50	35	15	45	1215	0	50	1872	0
Confl. Peds. (#/hr)	5		5	5		5						
Heavy Vehicles (%)	4%	32%	1%	4%	8%	9%	8%	6%	25%	0%	5%	7%
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	19.4	19.4		19.4	19.4	19.4	93.6	87.9		93.6	87.9	
Effective Green, g (s)	20.4	20.4		20.4	20.4	20.4	95.6	88.9		95.6	88.9	
Actuated g/C Ratio	0.16	0.16		0.16	0.16	0.16	0.74	0.68		0.74	0.68	
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	4.0	6.5		4.0	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	209	237		151	276	228	155	2933		303	2943	
v/s Ratio Prot		0.06			0.02		c0.01	0.28		0.01	c0.43	
v/s Ratio Perm	c0.11			0.05		0.01	0.20			0.11		
v/c Ratio	0.69	0.36		0.33	0.13	0.07	0.29	0.41		0.17	0.64	
Uniform Delay, d1	51.8	49.0		48.7	47.1	46.7	8.5	9.1		5.2	11.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00	2.04	0.64		1.00	1.00	
Incremental Delay, d2	9.6	0.9		1.3	0.2	0.1	1.0	0.4		0.3	1.1	
Delay (s)	61.4	49.9		50.0	47.3	46.8	18.2	6.2		5.4	12.6	
Level of Service	E	D		D	D	D	B	A		A	B	
Approach Delay (s)		55.7			47.8			6.6			12.4	
Approach LOS		E			D			A			B	

Intersection Summary				
HCM 2000 Control Delay	15.6	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.63			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	14.0	
Intersection Capacity Utilization	75.1%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	200	0	65	0	75	1005	30	1800
Future Volume (vph)	200	0	65	0	75	1005	30	1800
Turn Type	pm+pt	NA	Perm	NA	pm+pt	NA	Perm	NA
Protected Phases	7	4		8	5	2		6
Permitted Phases	4		8		2		6	
Detector Phase	7	4	8	8	5	2	6	6
Switch Phase								
Minimum Initial (s)	7.0	10.0	10.0	10.0	7.0	20.0	20.0	20.0
Minimum Split (s)	11.0	36.2	36.2	36.2	11.0	38.4	38.4	38.4
Total Split (s)	12.0	49.0	37.0	37.0	11.0	81.0	70.0	70.0
Total Split (%)	9.2%	37.7%	28.5%	28.5%	8.5%	62.3%	53.8%	53.8%
Yellow Time (s)	3.0	3.3	3.3	3.3	3.0	4.2	4.2	4.2
All-Red Time (s)	1.0	2.9	2.9	2.9	1.0	2.2	2.2	2.2
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	5.2	5.2	5.2	3.0	5.4	5.4	5.4
Lead/Lag	Lead		Lag	Lag	Lead		Lag	Lag
Lead-Lag Optimize?	Yes		Yes	Yes	Yes		Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max
Act Effct Green (s)	25.8	23.6	14.0	14.0	98.2	95.8	86.3	86.3
Actuated g/C Ratio	0.20	0.18	0.11	0.11	0.76	0.74	0.66	0.66
v/c Ratio	0.75	0.48	0.50	0.19	0.42	0.32	0.10	0.66
Control Delay	63.8	21.6	67.0	1.4	43.4	2.4	3.9	9.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.8	21.6	67.0	1.4	43.4	2.4	3.9	9.0
LOS	E	C	E	A	D	A	A	A
Approach Delay		43.5		36.9		5.2		8.9
Approach LOS		D		D		A		A

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 12.5		Intersection LOS: B	
Intersection Capacity Utilization 78.9%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 5: Regional Rd 25 & Etheridge Ave/Collector Road

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	200	185	65	55	75	1025	30	1890
v/c Ratio	0.75	0.48	0.50	0.19	0.42	0.32	0.10	0.66
Control Delay	63.8	21.6	67.0	1.4	43.4	2.4	3.9	9.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.8	21.6	67.0	1.4	43.4	2.4	3.9	9.0
Queue Length 50th (m)	48.3	16.1	16.9	0.0	8.2	9.4	0.9	144.9
Queue Length 95th (m)	69.9	37.5	31.6	0.0	m15.5	14.5	m1.6	183.3
Internal Link Dist (m)		53.9		63.1		292.1		696.9
Turn Bay Length (m)	40.0		40.0		70.0		70.0	
Base Capacity (vph)	268	620	297	499	180	3165	291	2864
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	0.75	0.30	0.22	0.11	0.42	0.32	0.10	0.66

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	200	0	185	65	0	55	75	1005	20	30	1800	90
Future Volume (vph)	200	0	185	65	0	55	75	1005	20	30	1800	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.2		5.2	5.2		3.0	5.4		5.4	5.4	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	*0.80		1.00	*0.80	
Frt	1.00	0.85		1.00	0.85		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1787	1615		1805	1615		1752	4294		1805	4310	
Flt Permitted	0.58	1.00		0.64	1.00		0.05	1.00		0.23	1.00	
Satd. Flow (perm)	1085	1615		1218	1615		92	4294		438	4310	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	200	0	185	65	0	55	75	1005	20	30	1800	90
RTOR Reduction (vph)	0	93	0	0	50	0	0	1	0	0	2	0
Lane Group Flow (vph)	200	92	0	65	5	0	75	1024	0	30	1888	0
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	3%	6%	0%	0%	5%	6%
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases	7	4			8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	23.8	23.8		11.0	11.0		93.6	93.6		83.3	83.3	
Effective Green, g (s)	24.8	24.8		12.0	12.0		94.6	94.6		84.3	84.3	
Actuated g/C Ratio	0.19	0.19		0.09	0.09		0.73	0.73		0.65	0.65	
Clearance Time (s)	4.0	6.2		6.2	6.2		4.0	6.4		6.4	6.4	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	259	308		112	149		160	3124		284	2794	
v/s Ratio Prot	c0.06	0.06			0.00		c0.03	0.24			c0.44	
v/s Ratio Perm	c0.09			0.05			0.31			0.07		
v/c Ratio	0.77	0.30		0.58	0.03		0.47	0.33		0.11	0.68	
Uniform Delay, d1	48.8	45.1		56.6	53.7		13.6	6.3		8.6	14.3	
Progression Factor	1.00	1.00		1.00	1.00		3.27	0.33		0.29	0.53	
Incremental Delay, d2	13.3	0.5		7.4	0.1		1.6	0.2		0.6	1.1	
Delay (s)	62.2	45.7		64.0	53.8		45.9	2.3		3.1	8.6	
Level of Service	E	D		E	D		D	A		A	A	
Approach Delay (s)		54.2			59.3			5.3			8.5	
Approach LOS		D			E			A			A	

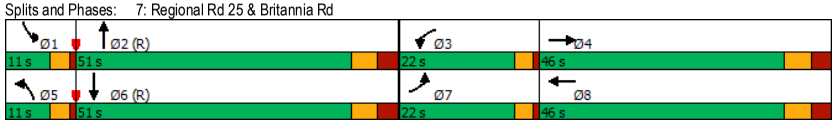
Intersection Summary				
HCM 2000 Control Delay	14.2	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.70			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	16.6	
Intersection Capacity Utilization	78.9%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	60	415	430	345	50	900	360	1670
Future Volume (vph)	60	415	430	345	50	900	360	1670
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases								
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	7.0	10.0	7.0	10.0	7.0	20.0	7.0	20.0
Minimum Split (s)	11.0	45.5	11.0	45.5	11.0	49.7	11.0	49.7
Total Split (s)	22.0	46.0	22.0	46.0	11.0	51.0	11.0	51.0
Total Split (%)	16.9%	35.4%	16.9%	35.4%	8.5%	39.2%	8.5%	39.2%
Yellow Time (s)	3.0	4.2	3.0	4.2	3.0	4.2	3.0	4.2
All-Red Time (s)	1.0	3.3	1.0	3.3	1.0	3.5	1.0	3.5
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.5	3.0	6.5	3.0	6.7	3.0	6.7
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	9.0	25.2	18.8	37.2	8.7	44.3	22.5	60.3
Actuated g/C Ratio	0.07	0.19	0.14	0.29	0.07	0.34	0.17	0.46
v/c Ratio	0.26	0.76	0.87	0.38	0.22	0.77	0.60	0.84
Control Delay	59.9	46.4	68.6	29.3	59.6	41.1	53.9	48.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.9	46.4	68.6	29.3	59.6	41.1	53.9	48.0
LOS	E	D	E	C	E	D	D	D
Approach Delay		47.5		47.8		41.9		49.0
Approach LOS		D		D		D		D

Intersection Summary		
Cycle Length: 130		
Actuated Cycle Length: 130		
Offset: 104 (80%), Referenced to phase 2:NBT and 6:SBT, Start of Green		
Natural Cycle: 130		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.87		
Intersection Signal Delay: 46.8	Intersection LOS: D	
Intersection Capacity Utilization 82.9%	ICU Level of Service E	
Analysis Period (min) 15		

Splits and Phases: 7: Regional Rd 25 & Britannia Rd



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	60	700	430	485	50	1125	360	1690
v/c Ratio	0.26	0.76	0.87	0.38	0.22	0.77	0.60	0.84
Control Delay	59.9	46.4	68.6	29.3	59.6	41.1	53.9	48.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.9	46.4	68.6	29.3	59.6	41.1	53.9	48.0
Queue Length 50th (m)	8.0	62.7	59.0	37.4	6.7	108.9	51.6	157.4
Queue Length 95th (m)	15.3	76.0	#86.3	51.0	13.4	130.2	#73.7	#228.5
Internal Link Dist (m)		377.9		182.4		165.3		292.1
Turn Bay Length (m)	60.0		120.0		90.0		90.0	
Base Capacity (vph)	482	1370	503	1368	225	1464	605	2005
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	0.12	0.51	0.85	0.35	0.22	0.77	0.60	0.84

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	415	285	430	345	140	50	900	225	360	1670	20
Future Volume (vph)	60	415	285	430	345	140	50	900	225	360	1670	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.5		3.0	6.5		3.0	6.7		3.0	6.7	
Lane Util. Factor	0.97	*0.80		0.97	*0.80		0.97	*0.80		0.97	*0.80	
Frt	1.00	0.94		1.00	0.96		1.00	0.97		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3303	4239		3445	4307		3367	4221		3502	4324	
Flt Permitted	0.95	1.00		1.00	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3303	4239		3445	4307		3367	4221		3502	4324	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	60	415	285	430	345	140	50	900	225	360	1670	20
RTOR Reduction (vph)	0	94	0	0	58	0	0	26	0	0	1	0
Lane Group Flow (vph)	60	606	0	430	427	0	50	1099	0	360	1689	0
Heavy Vehicles (%)	6%	1%	1%	7%	1%	2%	4%	5%	4%	0%	5%	27%
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	6.6	25.0		17.8	36.2		6.3	42.5		21.5	57.7	
Effective Green, g (s)	7.6	26.0		18.8	37.2		7.3	43.5		22.5	58.7	
Actuated g/C Ratio	0.06	0.20		0.14	0.29		0.06	0.33		0.17	0.45	
Clearance Time (s)	4.0	7.5		4.0	7.5		4.0	7.7		4.0	7.7	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	193	847		498	1232		189	1412		606	1952	
v/s Ratio Prot	0.02	c0.14		c0.12	0.10		0.01	0.26		c0.10	c0.39	
v/s Ratio Perm												
v/c Ratio	0.31	0.71		0.86	0.35		0.26	0.78		0.59	0.87	
Uniform Delay, d1	58.7	48.5		54.3	36.8		58.8	38.9		49.5	32.1	
Progression Factor	1.00	1.00		0.93	0.93		1.00	1.00		0.99	1.39	
Incremental Delay, d2	0.9	2.9		14.2	0.2		0.8	4.3		1.2	4.4	
Delay (s)	59.6	51.4		64.7	34.3		59.5	43.2		50.4	49.0	
Level of Service	E	D		E	C		E	D		D	D	
Approach Delay (s)		52.1			48.6			43.9			49.3	
Approach LOS		D			D			D			D	

Intersection Summary				
HCM 2000 Control Delay	48.3	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.81			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	19.2	
Intersection Capacity Utilization	82.9%	ICU Level of Service	E	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	165	5	45	85	35	20	0	125	95	0	15
Future Volume (Veh/h)	5	165	5	45	85	35	20	0	125	95	0	15
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	5	165	5	45	85	35	20	0	125	95	0	15
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					78							
pX, platoon unblocked												
vC, conflicting volume	120			170			385	388	168	495	372	102
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	120			170			385	388	168	495	372	102
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			97			96	100	86	77	100	98
cM capacity (veh/h)	1480			1420			553	531	882	408	541	958

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	175	165	145	110
Volume Left	5	45	20	95
Volume Right	5	35	125	15
cSH	1480	1420	815	442
Volume to Capacity	0.00	0.03	0.18	0.25
Queue Length 95th (m)	0.1	0.8	5.2	7.8
Control Delay (s)	0.2	2.3	10.4	15.8
Lane LOS	A	A	B	C
Approach Delay (s)	0.2	2.3	10.4	15.8
Approach LOS			B	C

Intersection Summary				
Average Delay	6.1			
Intersection Capacity Utilization	46.7%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	20	670	390	90	30
Future Volume (vph)	20	670	390	90	30
Turn Type	pm+pt	NA	NA	Prot	Perm
Protected Phases	5	2	6	8	
Permitted Phases	2				8
Detector Phase	5	2	6	8	8
Switch Phase					
Minimum Initial (s)	7.0	20.0	20.0	10.0	10.0
Minimum Split (s)	11.0	29.4	29.4	15.3	15.3
Total Split (s)	11.0	64.0	53.0	41.0	41.0
Total Split (%)	10.5%	61.0%	50.5%	39.0%	39.0%
Yellow Time (s)	3.0	4.2	4.2	3.3	3.3
All-Red Time (s)	1.0	2.2	2.2	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	5.4	5.4	4.3	4.3
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	None	None
Act Effct Green (s)	88.0	86.7	82.3	12.8	12.8
Actuated g/C Ratio	0.84	0.83	0.78	0.12	0.12
v/c Ratio	0.03	0.18	0.13	0.43	0.14
Control Delay	2.4	2.8	4.4	49.0	15.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	2.4	2.8	4.4	49.0	15.4
LOS	A	A	A	D	B
Approach Delay		2.8	4.4	40.6	
Approach LOS		A	A	D	

Intersection Summary			
Cycle Length: 105			
Actuated Cycle Length: 105			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.43			
Intersection Signal Delay: 7.0		Intersection LOS: A	
Intersection Capacity Utilization 33.1%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 10: Britannia Rd & Farmstead Dr

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	20	670	415	90	30
v/c Ratio	0.03	0.18	0.13	0.43	0.14
Control Delay	2.4	2.8	4.4	49.0	15.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	2.4	2.8	4.4	49.0	15.4
Queue Length 50th (m)	0.6	11.4	6.5	18.4	0.0
Queue Length 95th (m)	2.3	18.8	17.7	33.1	8.5
Internal Link Dist (m)		101.0	377.9	199.3	
Turn Bay Length (m)	20.0				
Base Capacity (vph)	728	3653	3295	595	557
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.03	0.18	0.13	0.15	0.05

Intersection Summary

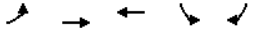
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	20	670	390	25	90	30
Future Volume (vph)	20	670	390	25	90	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.4	5.4		4.3	4.3
Lane Util. Factor	1.00	*0.80	*0.80		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1656	4427	4203		1703	1538
Flt Permitted	0.45	1.00	1.00		0.95	1.00
Satd. Flow (perm)	792	4427	4203		1703	1538
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	20	670	390	25	90	30
RTOR Reduction (vph)	0	0	3	0	0	27
Lane Group Flow (vph)	20	670	412	0	90	3
Heavy Vehicles (%)	9%	3%	8%	0%	6%	5%
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		8	
Permitted Phases	2					8
Actuated Green, G (s)	83.5	83.5	76.7		9.8	9.8
Effective Green, g (s)	84.5	84.5	77.7		10.8	10.8
Actuated g/C Ratio	0.80	0.80	0.74		0.10	0.10
Clearance Time (s)	4.0	6.4	6.4		5.3	5.3
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	668	3562	3110		175	158
v/s Ratio Prot	0.00	c0.15	0.10		c0.05	
v/s Ratio Perm	0.02					0.00
v/c Ratio	0.03	0.19	0.13		0.51	0.02
Uniform Delay, d1	2.1	2.4	3.9		44.6	42.3
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.0	0.1	0.1		2.5	0.0
Delay (s)	2.1	2.5	4.0		47.2	42.4
Level of Service	A	A	A		D	D
Approach Delay (s)		2.5	4.0		46.0	
Approach LOS		A	A		D	

Intersection Summary				
HCM 2000 Control Delay	7.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.23		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	12.7
Intersection Capacity Utilization	33.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	25	975	840	55	75
Future Volume (vph)	25	975	840	55	75
Turn Type	pm+pt	NA	NA	Prot	Perm
Protected Phases	5	2	6	4	
Permitted Phases	2				4
Detector Phase	5	2	6	4	4
Switch Phase					
Minimum Initial (s)	7.0	20.0	20.0	10.0	10.0
Minimum Split (s)	11.0	29.0	29.0	43.0	43.0
Total Split (s)	15.0	80.0	65.0	50.0	50.0
Total Split (%)	11.5%	61.5%	50.0%	38.5%	38.5%
Yellow Time (s)	3.0	4.0	4.0	3.0	3.0
All-Red Time (s)	1.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.0	6.0	5.0	5.0
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	None	None
Act Effct Green (s)	110.2	107.2	100.6	11.8	11.8
Actuated g/C Ratio	0.85	0.82	0.77	0.09	0.09
v/c Ratio	0.05	0.26	0.24	0.34	0.35
Control Delay	4.0	5.9	4.7	61.1	16.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	4.0	5.9	4.7	61.1	16.3
LOS	A	A	A	E	B
Approach Delay		5.8	4.7	35.2	
Approach LOS		A	A	D	

Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.35
Intersection Signal Delay: 7.3 — Intersection LOS: A
Intersection Capacity Utilization 38.3% — ICU Level of Service A
Analysis Period (min) 15

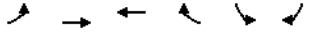
Splits and Phases: 11: Britannia Rd & Rose Way



Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	25	975	850	55	75
v/c Ratio	0.05	0.26	0.24	0.34	0.35
Control Delay	4.0	5.9	4.7	61.1	16.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	4.0	5.9	4.7	61.1	16.3
Queue Length 50th (m)	1.9	41.4	26.0	14.3	0.0
Queue Length 95th (m)	m3.1	49.2	35.2	27.8	15.3
Internal Link Dist (m)		182.4	155.7	76.0	
Turn Bay Length (m)	50.0			50.0	
Base Capacity (vph)	555	3761	3523	624	608
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.05	0.26	0.24	0.09	0.12

Intersection Summary

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



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	25	975	840	10	55	75
Future Volume (vph)	25	975	840	10	55	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0		5.0	5.0
Lane Util. Factor	1.00	*0.80	*0.80		1.00	1.00
Frt	1.00	1.00	1.00		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1805	4560	4552		1805	1615
Flt Permitted	0.27	1.00	1.00		0.95	1.00
Satd. Flow (perm)	515	4560	4552		1805	1615
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	25	975	840	10	55	75
RTOR Reduction (vph)	0	0	0	0	0	68
Lane Group Flow (vph)	25	975	850	0	55	7
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)	106.2	106.2	98.0		10.8	10.8
Effective Green, g (s)	107.2	107.2	99.0		11.8	11.8
Actuated g/C Ratio	0.82	0.82	0.76		0.09	0.09
Clearance Time (s)	4.0	7.0	7.0		6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	476	3760	3466		163	146
v/s Ratio Prot	0.00	c0.21	0.19		c0.03	
v/s Ratio Perm	0.04					0.00
v/c Ratio	0.05	0.26	0.25		0.34	0.05
Uniform Delay, d1	2.1	2.5	4.5		55.4	54.0
Progression Factor	2.32	2.21	1.00		1.00	1.00
Incremental Delay, d2	0.0	0.1	0.2		1.2	0.1
Delay (s)	4.9	5.8	4.7		56.7	54.1
Level of Service	A	A	A		E	D
Approach Delay (s)		5.7	4.7		55.2	
Approach LOS		A	A		E	

Intersection Summary				
HCM 2000 Control Delay	8.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.27		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	38.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	205	375	365	545	220	1005	95	950
Future Volume (vph)	205	375	365	545	220	1005	95	950
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	5.0	10.0	10.0	10.0	5.0	20.0	5.0	20.0
Minimum Split (s)	9.0	30.0	14.0	30.0	9.0	32.2	9.0	32.2
Total Split (s)	22.0	30.0	32.0	40.0	22.0	68.0	10.0	56.0
Total Split (%)	15.7%	21.4%	22.9%	28.6%	15.7%	48.6%	7.1%	40.0%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	4.2	3.0	4.2
All-Red Time (s)	1.0	3.0	0.0	3.0	1.0	3.0	1.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.0	2.0	6.0	3.0	6.2	3.0	6.2
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	43.2	23.4	55.7	31.9	79.3	65.3	68.2	57.2
Actuated g/C Ratio	0.31	0.17	0.40	0.23	0.57	0.47	0.49	0.41
v/c Ratio	0.68	0.84	0.86	0.75	0.74	0.74	0.57	0.65
Control Delay	41.4	66.4	54.7	55.8	37.8	31.4	35.1	36.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.4	66.4	54.7	55.8	37.8	31.4	35.1	36.0
LOS	D	E	D	E	D	C	D	D
Approach Delay		59.1		55.4		32.3		35.9
Approach LOS		E		E		C		D

Intersection Summary		
Cycle Length: 140		
Actuated Cycle Length: 140		
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green		
Natural Cycle: 90		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.86		
Intersection Signal Delay: 42.2	Intersection LOS: D	
Intersection Capacity Utilization 87.3%	ICU Level of Service E	
Analysis Period (min) 15		

Splits and Phases: 1: Regional Rd 25 & Louis St Laurent Ave

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	205	500	365	610	220	1460	95	1145
v/c Ratio	0.68	0.84	0.86	0.75	0.74	0.74	0.57	0.65
Control Delay	41.4	66.4	54.7	55.8	37.8	31.4	35.1	36.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.4	66.4	54.7	55.8	37.8	31.4	35.1	36.0
Queue Length 50th (m)	39.5	69.7	79.1	84.8	33.7	139.3	12.8	114.0
Queue Length 95th (m)	58.3	#93.7	115.9	106.9	64.4	162.2	#33.1	139.6
Internal Link Dist (m)		126.1		117.1		481.0		113.5
Turn Bay Length (m)	90.0		35.0		65.0		80.0	
Base Capacity (vph)	331	620	467	865	332	1982	166	1765
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	0.62	0.81	0.78	0.71	0.66	0.74	0.57	0.65

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	205	375	125	365	545	65	220	1005	455	95	950	195
Future Volume (vph)	205	375	125	365	545	65	220	1005	455	95	950	195
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0		2.0	6.0		3.0	6.2		3.0	6.2	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	*0.80		1.00	*0.80	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.98		1.00	0.95		1.00	0.97	
Flt Protected	0.95	1.00		1.00	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1768	3431		1899	3537		1787	4136		1805	4286	
Flt Permitted	0.26	1.00		0.17	1.00		0.11	1.00		0.08	1.00	
Satd. Flow (perm)	483	3431		331	3537		209	4136		151	4286	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	205	375	125	365	545	65	220	1005	455	95	950	195
RTOR Reduction (vph)	0	23	0	0	7	0	0	55	0	0	17	0
Lane Group Flow (vph)	205	477	0	365	603	0	220	1405	0	95	1128	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Heavy Vehicles (%)	2%	1%	0%	0%	0%	2%	1%	6%	1%	0%	4%	0%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	38.1	22.4		50.6	30.9		75.2	64.3		63.1	56.2	
Effective Green, g (s)	40.1	23.4		51.6	31.9		76.2	65.3		65.1	57.2	
Actuated g/C Ratio	0.29	0.17		0.37	0.23		0.54	0.47		0.46	0.41	
Clearance Time (s)	4.0	7.0		3.0	7.0		4.0	7.2		4.0	7.2	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	291	573		415	805		294	1929		163	1751	
v/s Ratio Prot	0.08	c0.14		c0.16	0.17		c0.09	0.34		0.03	0.26	
v/s Ratio Perm	0.12			0.16			c0.32			0.24		
v/c Ratio	0.70	0.83		0.88	0.75		0.75	0.73		0.58	0.64	
Uniform Delay, d1	40.7	56.4		38.0	50.3		24.2	30.2		24.3	33.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	7.5	10.0		18.7	3.8		10.0	2.4		5.2	1.8	
Delay (s)	48.2	66.4		56.6	54.2		34.1	32.6		29.6	35.1	
Level of Service	D	E		E	D		C	C		C	D	
Approach Delay (s)		61.1			55.1			32.8			34.7	
Approach LOS		E			E			C			C	

Intersection Summary				
HCM 2000 Control Delay	42.4	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.81			
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.2	
Intersection Capacity Utilization	87.3%	ICU Level of Service	E	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	105	40	25	40	75	90	1680	60	1185
Future Volume (vph)	105	40	25	40	75	90	1680	60	1185
Turn Type	Perm	NA	Perm	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases		4		8		5	2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	7.0	20.0	7.0	20.0
Minimum Split (s)	37.5	37.5	37.5	37.5	37.5	11.0	35.5	11.0	35.5
Total Split (s)	38.0	38.0	38.0	38.0	38.0	11.0	81.0	11.0	81.0
Total Split (%)	29.2%	29.2%	29.2%	29.2%	29.2%	8.5%	62.3%	8.5%	62.3%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.0	4.2	3.0	4.2
All-Red Time (s)	3.2	3.2	3.2	3.2	3.2	1.0	2.3	1.0	2.3
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	3.0	5.5	3.0	5.5
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	16.6	16.6	16.6	16.6	16.6	102.6	93.3	101.9	91.1
Actuated g/C Ratio	0.13	0.13	0.13	0.13	0.13	0.79	0.72	0.78	0.70
v/c Ratio	0.60	0.32	0.15	0.17	0.29	0.30	0.55	0.27	0.44
Control Delay	67.4	31.8	50.2	50.0	13.0	3.3	6.1	6.2	9.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.4	31.8	50.2	50.0	13.0	3.3	6.1	6.2	9.3
LOS	E	C	D	D	B	A	A	A	A
Approach Delay		52.0		30.2			6.0		9.2
Approach LOS		D		C			A		A

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 40 (31%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.60			
Intersection Signal Delay: 10.6		Intersection LOS: B	
Intersection Capacity Utilization 66.5%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Regional Rd 25 & Whitlock Ave

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	105	80	25	40	75	90	1720	60	1320
v/c Ratio	0.60	0.32	0.15	0.17	0.29	0.30	0.55	0.27	0.44
Control Delay	67.4	31.8	50.2	50.0	13.0	3.3	6.1	6.2	9.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.4	31.8	50.2	50.0	13.0	3.3	6.1	6.2	9.3
Queue Length 50th (m)	27.2	10.6	6.1	9.8	0.0	1.6	53.2	2.6	56.1
Queue Length 95th (m)	45.1	25.0	14.4	20.3	14.0	3.9	69.5	6.9	82.4
Internal Link Dist (m)		62.9		68.1			696.9		481.0
Turn Bay Length (m)	35.0		65.0		65.0	100.0		100.0	
Base Capacity (vph)	341	452	333	475	441	304	3110	220	2992
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	0.31	0.18	0.08	0.08	0.17	0.30	0.55	0.27	0.44

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	40	40	25	40	75	90	1680	40	60	1185	135
Future Volume (vph)	105	40	40	25	40	75	90	1680	40	60	1185	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5		5.5	5.5	5.5	3.0	5.5		3.0	5.5	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	*0.80		1.00	*0.80	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		0.99	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.93		1.00	1.00	0.85	1.00	1.00		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1776	1699		1795	1900	1539	1787	4329		1770	4261	
Flt Permitted	0.73	1.00		0.70	1.00	1.00	0.14	1.00		0.08	1.00	
Satd. Flow (perm)	1367	1699		1332	1900	1539	261	4329		149	4261	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	105	40	40	25	40	75	90	1680	40	60	1185	135
RTOR Reduction (vph)	0	32	0	0	0	65	0	1	0	0	6	0
Lane Group Flow (vph)	105	48	0	25	40	10	90	1719	0	60	1314	0
Confl. Peds. (#/hr)	5		5	5		5			5	5		
Heavy Vehicles (%)	1%	5%	0%	0%	0%	3%	1%	5%	0%	2%	6%	0%
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	15.6	15.6		15.6	15.6	15.6	98.9	91.5		95.9	90.0	
Effective Green, g (s)	16.6	16.6		16.6	16.6	16.6	100.9	92.5		97.9	91.0	
Actuated g/C Ratio	0.13	0.13		0.13	0.13	0.13	0.78	0.71		0.75	0.70	
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	4.0	6.5		4.0	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	174	216		170	242	196	301	3080		198	2982	
v/s Ratio Prot		0.03			0.02		c0.02	c0.40		0.02	0.31	
v/s Ratio Perm	c0.08			0.02		0.01	0.21			0.21		
v/c Ratio	0.60	0.22		0.15	0.17	0.05	0.30	0.56		0.30	0.44	
Uniform Delay, d1	53.6	50.9		50.4	50.5	49.8	4.4	9.0		5.9	8.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00	0.39	0.57		1.00	1.00	
Incremental Delay, d2	5.8	0.5		0.4	0.3	0.1	0.5	0.6		0.9	0.5	
Delay (s)	59.4	51.4		50.8	50.9	49.9	2.2	5.7		6.8	8.9	
Level of Service	E	D		D	D	D	A	A		A	A	
Approach Delay (s)		55.9			50.3			5.5			8.8	
Approach LOS		E			D			A			A	

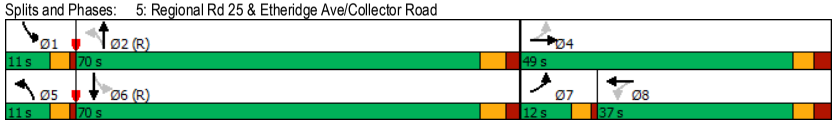
Intersection Summary				
HCM 2000 Control Delay	11.3	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.55			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	14.0	
Intersection Capacity Utilization	66.5%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	135	0	40	0	180	1635	55	965
Future Volume (vph)	135	0	40	0	180	1635	55	965
Turn Type	pm+pt	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases	7	4		8	5	2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	7	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	7.0	10.0	10.0	10.0	7.0	20.0	7.0	20.0
Minimum Split (s)	11.0	36.2	36.2	36.2	11.0	38.4	11.0	38.4
Total Split (s)	12.0	49.0	37.0	37.0	11.0	70.0	11.0	70.0
Total Split (%)	9.2%	37.7%	28.5%	28.5%	8.5%	53.8%	8.5%	53.8%
Yellow Time (s)	3.0	3.3	3.3	3.3	3.0	4.2	3.0	4.2
All-Red Time (s)	1.0	2.9	2.9	2.9	1.0	2.2	1.0	2.2
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	5.2	5.2	5.2	3.0	5.4	3.0	5.4
Lead/Lag	Lead		Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	23.7	21.5	11.9	11.9	99.9	88.8	94.9	84.2
Actuated g/C Ratio	0.18	0.17	0.09	0.09	0.77	0.68	0.73	0.65
v/c Ratio	0.56	0.24	0.33	0.14	0.52	0.57	0.26	0.43
Control Delay	55.2	1.3	62.8	1.0	15.0	7.5	13.4	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.2	1.3	62.8	1.0	15.0	7.5	13.4	5.1
LOS	E	A	E	A	B	A	B	A
Approach Delay		32.3		31.9		8.2		5.5
Approach LOS		C		C		A		A

Intersection Summary		
Cycle Length: 130		
Actuated Cycle Length: 130		
Offset: 103 (79%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green		
Natural Cycle: 100		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.57		
Intersection Signal Delay: 9.4	Intersection LOS: A	
Intersection Capacity Utilization 65.2%	ICU Level of Service C	
Analysis Period (min) 15		

Splits and Phases: 5: Regional Rd 25 & Etheridge Ave/Collector Road



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	135	100	40	40	180	1700	55	1195
v/c Ratio	0.56	0.24	0.33	0.14	0.52	0.57	0.26	0.43
Control Delay	55.2	1.3	62.8	1.0	15.0	7.5	13.4	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.2	1.3	62.8	1.0	15.0	7.5	13.4	5.1
Queue Length 50th (m)	32.1	0.0	10.4	0.0	8.1	53.5	2.2	64.9
Queue Length 95th (m)	51.1	0.0	22.4	0.0	m22.4	m69.5	8.5	63.3
Internal Link Dist (m)		53.9		63.5		292.1		696.9
Turn Bay Length (m)	40.0		40.0		70.0		70.0	
Base Capacity (vph)	243	664	321	515	349	2983	215	2785
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	0.56	0.15	0.12	0.08	0.52	0.57	0.26	0.43

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	135	0	100	40	0	40	180	1635	65	55	965	230
Future Volume (vph)	135	0	100	40	0	40	180	1635	65	55	965	230
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.2		5.2	5.2		3.0	5.4		3.0	5.4	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	*0.80		1.00	*0.80	
Frt	1.00	0.85		1.00	0.85		1.00	0.99		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1752	1615		1805	1615		1805	4366		1805	4274	
Flt Permitted	0.56	1.00		0.69	1.00		0.15	1.00		0.08	1.00	
Satd. Flow (perm)	1035	1615		1315	1615		293	4366		150	4274	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	135	0	100	40	0	40	180	1635	65	55	965	230
RTOR Reduction (vph)	0	83	0	0	37	0	0	2	0	0	17	0
Lane Group Flow (vph)	135	17	0	40	3	0	180	1698	0	55	1178	0
Heavy Vehicles (%)	3%	0%	0%	0%	0%	0%	0%	4%	0%	0%	4%	2%
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	21.7	21.7		8.9	8.9		95.5	85.8		87.9	82.0	
Effective Green, g (s)	22.7	22.7		9.9	9.9		96.7	86.8		89.9	83.0	
Actuated g/C Ratio	0.17	0.17		0.08	0.08		0.74	0.67		0.69	0.64	
Clearance Time (s)	4.0	6.2		6.2	6.2		4.0	6.4		4.0	6.4	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	234	282		100	122		342	2915		191	2728	
v/s Ratio Prot	c0.04	0.01			0.00		c0.04	c0.39		0.02	0.28	
v/s Ratio Perm	c0.06			0.03			0.35			0.18		
v/c Ratio	0.58	0.06		0.40	0.02		0.53	0.58		0.29	0.43	
Uniform Delay, d1	48.0	44.8		57.2	55.6		6.6	11.7		8.3	11.7	
Progression Factor	1.00	1.00		1.00	1.00		2.82	0.59		2.31	0.41	
Incremental Delay, d2	3.4	0.1		2.6	0.1		0.7	0.4		0.8	0.5	
Delay (s)	51.4	44.9		59.8	55.7		19.4	7.3		19.9	5.2	
Level of Service	D	D		E	E		B	A		B	A	
Approach Delay (s)		48.6			57.8			8.5			5.9	
Approach LOS		D			E			A			A	

Intersection Summary				
HCM 2000 Control Delay	11.4	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.60			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	16.6	
Intersection Capacity Utilization	65.2%	ICU Level of Service	C	
Analysis Period (min)	15			

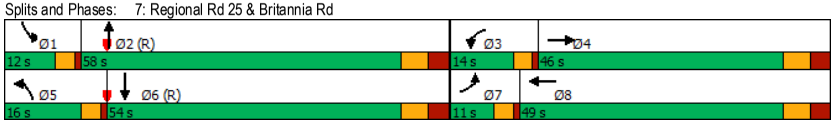
c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	50	320	300	500	250	1455	165	890
Future Volume (vph)	50	320	300	500	250	1455	165	890
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases								
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	7.0	10.0	7.0	10.0	7.0	20.0	7.0	20.0
Minimum Split (s)	11.0	45.5	11.0	45.5	11.0	49.7	11.0	49.7
Total Split (s)	11.0	46.0	14.0	49.0	16.0	58.0	12.0	54.0
Total Split (%)	8.5%	35.4%	10.8%	37.7%	12.3%	44.6%	9.2%	41.5%
Yellow Time (s)	3.0	4.2	3.0	4.2	3.0	4.2	3.0	4.2
All-Red Time (s)	1.0	3.3	1.0	3.3	1.0	3.5	1.0	3.5
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.5	3.0	6.5	3.0	6.7	3.0	6.7
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	8.0	26.0	11.0	31.2	15.3	61.5	12.3	58.5
Actuated g/C Ratio	0.06	0.20	0.08	0.24	0.12	0.47	0.09	0.45
v/c Ratio	0.25	0.40	0.98	0.89dr	0.61	0.93	0.50	0.48
Control Delay	61.4	43.5	123.0	37.7	60.6	41.8	73.7	18.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.4	43.5	123.0	37.7	60.6	41.8	73.7	18.6
LOS	E	D	F	D	E	D	E	B
Approach Delay		45.7		59.5		44.0		26.8
Approach LOS		D		E		D		C

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 104 (80%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 140			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.98			
Intersection Signal Delay: 44.0		Intersection LOS: D	
Intersection Capacity Utilization 85.9%		ICU Level of Service E	
Analysis Period (min) 15			

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Splits and Phases: 7: Regional Rd 25 & Britannia Rd



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	50	360	300	875	250	1920	165	940
v/c Ratio	0.25	0.40	0.98	0.89dr	0.61	0.93	0.50	0.48
Control Delay	61.4	43.5	123.0	37.7	60.6	41.8	73.7	18.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.4	43.5	123.0	37.7	60.6	41.8	73.7	18.6
Queue Length 50th (m)	6.7	33.5	44.6	47.0	33.4	199.5	23.4	39.4
Queue Length 95th (m)	13.7	42.5	#75.1	50.0	46.8	#278.1	36.4	46.3
Internal Link Dist (m)		377.9		190.1		165.3		292.1
Turn Bay Length (m)	60.0		120.0		90.0		90.0	
Base Capacity (vph)	203	1371	305	1485	420	2058	328	1964
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	0.25	0.26	0.98	0.59	0.60	0.93	0.50	0.48

Intersection Summary

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

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	320	40	300	500	375	250	1455	465	165	890	50
Future Volume (vph)	50	320	40	300	500	375	250	1455	465	165	890	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.5		3.0	6.5		3.0	6.7		3.0	6.7	
Lane Util. Factor	0.97	*0.80		0.97	*0.80		0.97	*0.80		0.97	*0.80	
Frt	1.00	0.98		1.00	0.94		1.00	0.96		1.00	0.99	
Flt Protected	0.95	1.00		1.00	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3303	4484		3614	4225		3502	4276		3467	4359	
Flt Permitted	0.95	1.00		1.00	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3303	4484		3614	4225		3502	4276		3467	4359	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	50	320	40	300	500	375	250	1455	465	165	890	50
RTOR Reduction (vph)	0	11	0	0	117	0	0	34	0	0	3	0
Lane Group Flow (vph)	50	349	0	300	758	0	250	1886	0	165	937	0
Heavy Vehicles (%)	6%	0%	0%	2%	1%	1%	0%	3%	2%	1%	4%	0%
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	5.6	25.8		10.0	30.2		14.3	59.7		11.3	56.7	
Effective Green, g (s)	6.6	26.8		11.0	31.2		15.3	60.7		12.3	57.7	
Actuated g/C Ratio	0.05	0.21		0.08	0.24		0.12	0.47		0.09	0.44	
Clearance Time (s)	4.0	7.5		4.0	7.5		4.0	7.7		4.0	7.7	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	167	924		305	1014		412	1996		328	1934	
v/s Ratio Prot	0.02	0.08		c0.08	c0.18		c0.07	c0.44		0.05	0.21	
v/s Ratio Perm												
v/c Ratio	0.30	0.38		0.98	0.89dr		0.61	0.95		0.50	0.48	
Uniform Delay, d1	59.5	44.4		59.4	45.8		54.5	33.1		55.9	25.6	
Progression Factor	1.00	1.00		1.33	0.87		1.00	1.00		1.23	0.67	
Incremental Delay, d2	1.0	0.3		45.8	2.9		2.5	10.8		1.1	0.8	
Delay (s)	60.5	44.7		124.7	42.9		57.0	43.9		70.0	17.9	
Level of Service	E	D		F	D		E	D		E	B	
Approach Delay (s)		46.6			63.8			45.4			25.6	
Approach LOS		D			E			D			C	

Intersection Summary				
HCM 2000 Control Delay	45.5	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.88			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	19.2	
Intersection Capacity Utilization	85.9%	ICU Level of Service	E	
Analysis Period (min)	15			

dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	100	10	135	175	100	10	0	80	55	0	10
Future Volume (Veh/h)	10	100	10	135	175	100	10	0	80	55	0	10
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	10	100	10	135	175	100	10	0	80	55	0	10
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					78							
pX, platoon unblocked	0.97						0.97	0.97		0.97	0.97	0.97
vC, conflicting volume	275			110			630	670	105	700	625	225
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	233			110			600	642	105	673	595	181
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			91			97	100	92	82	100	99
cM capacity (veh/h)	1302			1493			367	345	955	305	367	838

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	120	410	90	65
Volume Left	10	135	10	55
Volume Right	10	100	80	10
cSH	1302	1493	811	338
Volume to Capacity	0.01	0.09	0.11	0.19
Queue Length 95th (m)	0.2	2.4	3.0	5.6
Control Delay (s)	0.7	3.1	10.0	18.2
Lane LOS	A	A	A	C
Approach Delay (s)	0.7	3.1	10.0	18.2
Approach LOS			A	C

Intersection Summary					
Average Delay			5.0		
Intersection Capacity Utilization			46.4%	ICU Level of Service	A
Analysis Period (min)			15		

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	25	355	720	55	15
Future Volume (vph)	25	355	720	55	15
Turn Type	pm+pt	NA	NA	Prot	Perm
Protected Phases	5	2	6	8	
Permitted Phases	2				8
Detector Phase	5	2	6	8	8
Switch Phase					
Minimum Initial (s)	7.0	20.0	20.0	10.0	10.0
Minimum Split (s)	11.0	29.4	29.4	15.3	15.3
Total Split (s)	11.0	64.0	53.0	41.0	41.0
Total Split (%)	10.5%	61.0%	50.5%	39.0%	39.0%
Yellow Time (s)	3.0	4.2	4.2	3.3	3.3
All-Red Time (s)	1.0	2.2	2.2	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	5.4	5.4	4.3	4.3
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	None	None
Act Effct Green (s)	89.3	88.0	83.6	11.4	11.4
Actuated g/C Ratio	0.85	0.84	0.80	0.11	0.11
v/c Ratio	0.04	0.09	0.23	0.29	0.08
Control Delay	2.0	2.1	4.1	47.2	19.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	2.0	2.1	4.1	47.2	19.9
LOS	A	A	A	D	B
Approach Delay		2.1	4.1	41.4	
Approach LOS		A	A	D	

Intersection Summary		
Cycle Length: 105		
Actuated Cycle Length: 105		
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green		
Natural Cycle: 60		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.29		
Intersection Signal Delay: 5.6	Intersection LOS: A	
Intersection Capacity Utilization 37.2%	ICU Level of Service A	
Analysis Period (min) 15		

Splits and Phases: 10: Britannia Rd & Farmstead Dr

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	25	355	800	55	15
v/c Ratio	0.04	0.09	0.23	0.29	0.08
Control Delay	2.0	2.1	4.1	47.2	19.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	2.0	2.1	4.1	47.2	19.9
Queue Length 50th (m)	0.7	5.2	12.8	11.1	0.0
Queue Length 95th (m)	2.2	8.3	30.9	23.1	6.3
Internal Link Dist (m)		101.0	377.9	199.3	
Turn Bay Length (m)	20.0				
Base Capacity (vph)	561	3822	3549	606	574
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.04	0.09	0.23	0.09	0.03

Intersection Summary

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	25	355	720	80	55	15
Future Volume (vph)	25	355	720	80	55	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.4	5.4		4.3	4.3
Lane Util. Factor	1.00	*0.80	*0.80		1.00	1.00
Frt	1.00	1.00	0.98		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1805	4560	4452		1736	1615
Flt Permitted	0.29	1.00	1.00		0.95	1.00
Satd. Flow (perm)	548	4560	4452		1736	1615
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	25	355	720	80	55	15
RTOR Reduction (vph)	0	0	5	0	0	14
Lane Group Flow (vph)	25	355	795	0	55	1
Heavy Vehicles (%)	0%	0%	1%	0%	4%	0%
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		8	
Permitted Phases	2					8
Actuated Green, G (s)	84.9	84.9	78.1		8.4	8.4
Effective Green, g (s)	85.9	85.9	79.1		9.4	9.4
Actuated g/C Ratio	0.82	0.82	0.75		0.09	0.09
Clearance Time (s)	4.0	6.4	6.4		5.3	5.3
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	493	3730	3353		155	144
v/s Ratio Prot	0.00	c0.08	c0.18		c0.03	
v/s Ratio Perm	0.04					0.00
v/c Ratio	0.05	0.10	0.24		0.35	0.01
Uniform Delay, d1	1.8	1.9	3.9		44.9	43.6
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.0	0.1	0.2		1.4	0.0
Delay (s)	1.9	1.9	4.1		46.3	43.6
Level of Service	A	A	A		D	D
Approach Delay (s)		1.9	4.1		45.8	
Approach LOS		A	A		D	

Intersection Summary				
HCM 2000 Control Delay	5.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.24		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	12.7
Intersection Capacity Utilization	37.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	80	870	1125	30	50
Future Volume (vph)	80	870	1125	30	50
Turn Type	pm+pt	NA	NA	Prot	Perm
Protected Phases	5	2	6	4	
Permitted Phases	2				4
Detector Phase	5	2	6	4	4
Switch Phase					
Minimum Initial (s)	7.0	20.0	20.0	10.0	10.0
Minimum Split (s)	11.0	29.0	29.0	43.0	43.0
Total Split (s)	15.0	80.0	65.0	50.0	50.0
Total Split (%)	11.5%	61.5%	50.0%	38.5%	38.5%
Yellow Time (s)	3.0	4.0	4.0	3.0	3.0
All-Red Time (s)	1.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.0	6.0	5.0	5.0
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	None	None
Act Effct Green (s)	114.2	112.4	103.5	11.0	11.0
Actuated g/C Ratio	0.88	0.86	0.80	0.08	0.08
v/c Ratio	0.21	0.22	0.33	0.20	0.27
Control Delay	2.9	2.5	5.1	58.7	18.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	2.9	2.5	5.1	58.7	18.8
LOS	A	A	A	E	B
Approach Delay		2.6	5.1	33.8	
Approach LOS		A	A	C	

Intersection Summary

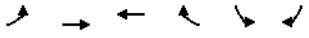
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 65 (50%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.33
Intersection Signal Delay: 5.0 — Intersection LOS: A
Intersection Capacity Utilization 49.7% — ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 11: Britannia Rd & Rose Way

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	80	870	1185	30	50
v/c Ratio	0.21	0.22	0.33	0.20	0.27
Control Delay	2.9	2.5	5.1	58.7	18.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	2.9	2.5	5.1	58.7	18.8
Queue Length 50th (m)	2.7	18.0	39.9	7.7	0.0
Queue Length 95th (m)	m4.4	m24.2	47.5	18.0	13.0
Internal Link Dist (m)		190.1	148.0	92.6	
Turn Bay Length (m)	50.0			50.0	
Base Capacity (vph)	427	3941	3604	624	591
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.19	0.22	0.33	0.05	0.08

Intersection Summary

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



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	80	870	1125	60	30	50
Future Volume (vph)	80	870	1125	60	30	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0		5.0	5.0
Lane Util. Factor	1.00	*0.80	*0.80		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1805	4560	4525		1805	1615
Flt Permitted	0.18	1.00	1.00		0.95	1.00
Satd. Flow (perm)	333	4560	4525		1805	1615
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	80	870	1125	60	30	50
RTOR Reduction (vph)	0	0	2	0	0	47
Lane Group Flow (vph)	80	870	1183	0	30	3
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)	109.0	109.0	99.4		8.0	8.0
Effective Green, g (s)	110.0	110.0	100.4		9.0	9.0
Actuated g/C Ratio	0.85	0.85	0.77		0.07	0.07
Clearance Time (s)	4.0	7.0	7.0		6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	356	3858	3494		124	111
v/s Ratio Prot	0.01	c0.19	c0.26		c0.02	
v/s Ratio Perm	0.18					0.00
v/c Ratio	0.22	0.23	0.34		0.24	0.03
Uniform Delay, d1	1.9	1.9	4.6		57.3	56.4
Progression Factor	1.37	1.22	1.00		1.00	1.00
Incremental Delay, d2	0.2	0.1	0.3		1.0	0.1
Delay (s)	2.9	2.4	4.8		58.3	56.5
Level of Service	A	A	A		E	E
Approach Delay (s)		2.5	4.8		57.2	
Approach LOS		A	A		E	

Intersection Summary			
HCM 2000 Control Delay	5.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	49.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

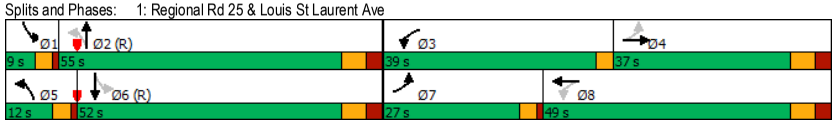
2037 Future Total Traffic Conditions – NO RIRO Accesses

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	270	535	495	560	115	1155	65	1280
Future Volume (vph)	270	535	495	560	115	1155	65	1280
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	5.0	10.0	10.0	10.0	5.0	20.0	5.0	20.0
Minimum Split (s)	9.0	30.0	14.0	30.0	9.0	32.2	9.0	32.2
Total Split (s)	27.0	37.0	39.0	49.0	12.0	55.0	9.0	52.0
Total Split (%)	19.3%	26.4%	27.9%	35.0%	8.6%	39.3%	6.4%	37.1%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	4.2	3.0	4.2
All-Red Time (s)	1.0	3.0	0.0	3.0	1.0	3.0	1.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.0	2.0	6.0	3.0	6.2	3.0	6.2
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	52.7	30.9	72.3	46.6	62.7	52.3	56.9	47.5
Actuated g/C Ratio	0.38	0.22	0.52	0.33	0.45	0.37	0.41	0.34
v/c Ratio	0.65	0.93	0.93	0.57	0.71	0.95	0.50	0.95
Control Delay	29.5	70.3	64.3	40.2	49.3	54.9	36.6	60.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.5	70.3	64.3	40.2	49.3	54.9	36.6	60.2
LOS	C	E	E	D	D	D	D	E
Approach Delay		59.2		50.6		54.5		59.1
Approach LOS		E		D		D		E

Intersection Summary

Cycle Length: 140
Actuated Cycle Length: 140
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.95
Intersection Signal Delay: 55.8 — Intersection LOS: E
Intersection Capacity Utilization 99.2% — ICU Level of Service F
Analysis Period (min) 15

Splits and Phases: 1: Regional Rd 25 & Louis St Laurent Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	270	725	495	655	115	1495	65	1375
v/c Ratio	0.65	0.93	0.93	0.57	0.71	0.95	0.50	0.95
Control Delay	29.5	70.3	64.3	40.2	49.3	54.9	36.6	60.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.5	70.3	64.3	40.2	49.3	54.9	36.6	60.2
Queue Length 50th (m)	43.2	105.5	120.2	79.1	20.0	~181.7	11.0	165.3
Queue Length 95th (m)	62.6	#144.0	#185.9	105.6	#46.0	#222.6	20.8	#206.5
Internal Link Dist (m)		126.1		117.1		481.0		113.5
Turn Bay Length (m)	90.0		35.0		65.0		80.0	
Base Capacity (vph)	481	786	548	1149	164	1579	130	1441
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	0.56	0.92	0.90	0.57	0.70	0.95	0.50	0.95

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	270	535	190	495	560	95	115	1155	340	65	1280	95
Future Volume (vph)	270	535	190	495	560	95	115	1155	340	65	1280	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0		2.0	6.0		3.0	6.2		3.0	6.2	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	*0.80		1.00	*0.80	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.98		1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00		1.00	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1767	3409		1863	3427		1703	4152		1719	4231	
Flt Permitted	0.40	1.00		0.12	1.00		0.08	1.00		0.08	1.00	
Satd. Flow (perm)	737	3409		226	3427		142	4152		153	4231	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	270	535	190	495	560	95	115	1155	340	65	1280	95
RTOR Reduction (vph)	0	26	0	0	9	0	0	30	0	0	5	0
Lane Group Flow (vph)	270	699	0	495	646	0	115	1465	0	65	1370	0
Confl. Peds. (#/hr)	5					5						
Heavy Vehicles (%)	2%	2%	1%	2%	2%	7%	6%	7%	3%	5%	7%	2%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	47.8	30.0		67.4	45.6		58.4	50.4		50.4	46.4	
Effective Green, g (s)	49.8	31.0		68.4	46.6		59.4	51.4		52.4	47.4	
Actuated g/C Ratio	0.36	0.22		0.49	0.33		0.42	0.37		0.37	0.34	
Clearance Time (s)	4.0	7.0		3.0	7.0		4.0	7.2		4.0	7.2	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	400	754		524	1140		160	1524		113	1432	
v/s Ratio Prot	0.09	c0.21		c0.24	0.19		c0.05	c0.35		0.02	0.32	
v/s Ratio Perm	0.15			0.22			0.26			0.19		
v/c Ratio	0.68	0.93		0.94	0.57		0.72	0.96		0.58	0.96	
Uniform Delay, d1	34.3	53.4		41.3	38.4		31.7	43.3		33.8	45.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.5	17.4		26.0	0.6		14.3	15.5		6.9	15.4	
Delay (s)	38.8	70.8		67.3	39.0		46.1	58.9		40.7	60.7	
Level of Service	D	E		E	D		D	E		D	E	
Approach Delay (s)		62.1			51.2			58.0			59.8	
Approach LOS		E			D			E			E	

Intersection Summary				
HCM 2000 Control Delay	57.8	HCM 2000 Level of Service	E	
HCM 2000 Volume to Capacity ratio	0.95			
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.2	
Intersection Capacity Utilization	99.2%	ICU Level of Service	F	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	145	50	50	35	95	45	1395	50	2115
Future Volume (vph)	145	50	50	35	95	45	1395	50	2115
Turn Type	Perm	NA	Perm	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases		4		8		5	2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	7.0	20.0	7.0	20.0
Minimum Split (s)	37.5	37.5	37.5	37.5	37.5	11.0	35.5	11.0	35.5
Total Split (s)	38.0	38.0	38.0	38.0	38.0	11.0	81.0	11.0	81.0
Total Split (%)	29.2%	29.2%	29.2%	29.2%	29.2%	8.5%	62.3%	8.5%	62.3%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.0	4.2	3.0	4.2
All-Red Time (s)	3.2	3.2	3.2	3.2	3.2	1.0	2.3	1.0	2.3
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	3.0	5.5	3.0	5.5
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	20.4	20.4	20.4	20.4	20.4	98.7	89.7	98.7	89.6
Actuated g/C Ratio	0.16	0.16	0.16	0.16	0.16	0.76	0.69	0.76	0.69
v/c Ratio	0.69	0.49	0.33	0.13	0.31	0.28	0.47	0.18	0.75
Control Delay	68.1	30.2	52.5	45.3	10.9	21.5	7.1	5.8	16.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.1	30.2	52.5	45.3	10.9	21.5	7.1	5.8	16.6
LOS	E	C	D	D	B	C	A	A	B
Approach Delay		49.2		29.2			7.6		16.3
Approach LOS		D		C			A		B

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 64 (49%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 105			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 16.1		Intersection LOS: B	
Intersection Capacity Utilization 76.6%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 2: Regional Rd 25 & Whitlock Ave

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	145	145	50	35	95	45	1405	50	2215
v/c Ratio	0.69	0.49	0.33	0.13	0.31	0.28	0.47	0.18	0.75
Control Delay	68.1	30.2	52.5	45.3	10.9	21.5	7.1	5.8	16.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.1	30.2	52.5	45.3	10.9	21.5	7.1	5.8	16.6
Queue Length 50th (m)	37.5	18.2	12.1	8.2	0.0	2.2	26.6	2.6	153.0
Queue Length 95th (m)	57.3	37.4	23.8	17.1	14.7	m7.7	156.5	7.2	216.5
Internal Link Dist (m)		62.9		68.1			696.9		481.0
Turn Bay Length (m)	35.0		65.0		65.0	100.0		100.0	
Base Capacity (vph)	333	431	241	439	435	159	2960	275	2973
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	0.44	0.34	0.21	0.08	0.22	0.28	0.47	0.18	0.75

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	145	50	95	50	35	95	45	1395	10	50	2115	100
Future Volume (vph)	145	50	95	50	35	95	45	1395	10	50	2115	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5		5.5	5.5	5.5	3.0	5.5		3.0	5.5	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	*0.80		1.00	*0.80	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.90		1.00	1.00	0.85	1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1725	1516		1727	1759	1455	1671	4292		1805	4310	
Flt Permitted	0.73	1.00		0.53	1.00	1.00	0.04	1.00		0.12	1.00	
Satd. Flow (perm)	1333	1516		965	1759	1455	79	4292		233	4310	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	145	50	95	50	35	95	45	1395	10	50	2115	100
RTOR Reduction (vph)	0	59	0	0	0	80	0	0	0	0	3	0
Lane Group Flow (vph)	145	86	0	50	35	15	45	1405	0	50	2212	0
Confl. Peds. (#/hr)	5		5	5		5						
Heavy Vehicles (%)	4%	32%	1%	4%	8%	9%	8%	6%	25%	0%	5%	7%
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	19.4	19.4		19.4	19.4	19.4	93.6	87.9		93.6	87.9	
Effective Green, g (s)	20.4	20.4		20.4	20.4	20.4	95.6	88.9		95.6	88.9	
Actuated g/C Ratio	0.16	0.16		0.16	0.16	0.16	0.74	0.68		0.74	0.68	
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	4.0	6.5		4.0	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	209	237		151	276	228	140	2935		252	2947	
v/s Ratio Prot		0.06			0.02		c0.02	0.33		0.01	c0.51	
v/s Ratio Perm	c0.11			0.05		0.01	0.22			0.14		
v/c Ratio	0.69	0.36		0.33	0.13	0.07	0.32	0.48		0.20	0.75	
Uniform Delay, d1	51.8	49.0		48.7	47.1	46.7	12.8	9.7		5.6	13.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00	2.19	0.62		1.00	1.00	
Incremental Delay, d2	9.6	0.9		1.3	0.2	0.1	1.2	0.5		0.4	1.8	
Delay (s)	61.4	49.9		50.0	47.3	46.8	29.3	6.6		6.0	15.2	
Level of Service	E	D		D	D	D	C	A		A	B	
Approach Delay (s)		55.7			47.8			7.3			15.0	
Approach LOS		E			D			A			B	

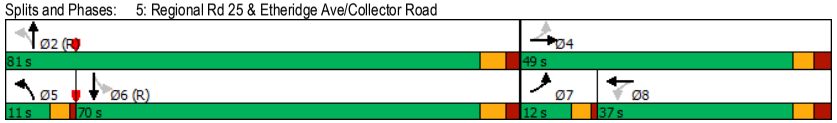
Intersection Summary				
HCM 2000 Control Delay	16.5	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.72			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	14.0	
Intersection Capacity Utilization	76.6%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	200	0	65	0	75	1195	30	2140
Future Volume (vph)	200	0	65	0	75	1195	30	2140
Turn Type	pm+pt	NA	Perm	NA	pm+pt	NA	Perm	NA
Protected Phases	7	4		8	5	2		6
Permitted Phases	4		8		2		6	
Detector Phase	7	4	8	8	5	2	6	6
Switch Phase								
Minimum Initial (s)	7.0	10.0	10.0	10.0	7.0	20.0	20.0	20.0
Minimum Split (s)	11.0	36.2	36.2	36.2	11.0	38.4	38.4	38.4
Total Split (s)	12.0	49.0	37.0	37.0	11.0	81.0	70.0	70.0
Total Split (%)	9.2%	37.7%	28.5%	28.5%	8.5%	62.3%	53.8%	53.8%
Yellow Time (s)	3.0	3.3	3.3	3.3	3.0	4.2	4.2	4.2
All-Red Time (s)	1.0	2.9	2.9	2.9	1.0	2.2	2.2	2.2
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	5.2	5.2	5.2	3.0	5.4	5.4	5.4
Lead/Lag	Lead		Lag	Lag	Lead		Lag	Lag
Lead-Lag Optimize?	Yes		Yes	Yes	Yes		Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max
Act Effct Green (s)	25.8	23.6	14.0	14.0	98.2	95.8	86.3	86.3
Actuated g/C Ratio	0.20	0.18	0.11	0.11	0.76	0.74	0.66	0.66
v/c Ratio	0.75	0.48	0.50	0.21	0.43	0.38	0.13	0.78
Control Delay	63.8	22.5	67.0	2.5	44.6	2.3	3.7	10.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.8	22.5	67.0	2.5	44.6	2.3	3.7	10.1
LOS	E	C	E	A	D	A	A	B
Approach Delay		44.0		37.4		4.8		10.0
Approach LOS		D		D		A		A

Intersection Summary		
Cycle Length: 130		
Actuated Cycle Length: 130		
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green		
Natural Cycle: 130		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.78		
Intersection Signal Delay: 12.4	Intersection LOS: B	
Intersection Capacity Utilization 85.5%	ICU Level of Service E	
Analysis Period (min) 15		

Splits and Phases: 5: Regional Rd 25 & Etheridge Ave/Collector Road



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	200	185	65	55	75	1215	30	2230
v/c Ratio	0.75	0.48	0.50	0.21	0.43	0.38	0.13	0.78
Control Delay	63.8	22.5	67.0	2.5	44.6	2.3	3.7	10.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.8	22.5	67.0	2.5	44.6	2.3	3.7	10.1
Queue Length 50th (m)	48.3	17.0	16.9	0.0	8.9	11.1	0.8	194.9
Queue Length 95th (m)	69.9	38.5	31.6	1.4	m13.2	m15.7	m1.2	193.1
Internal Link Dist (m)		53.9		63.1		292.1		696.9
Turn Bay Length (m)	40.0		40.0		70.0		70.0	
Base Capacity (vph)	268	617	297	471	175	3168	232	2867
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	0.75	0.30	0.22	0.12	0.43	0.38	0.13	0.78

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	200	0	185	65	0	55	75	1195	20	30	2140	90
Future Volume (vph)	200	0	185	65	0	55	75	1195	20	30	2140	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.2		5.2	5.2		3.0	5.4		5.4	5.4	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	*0.80		1.00	*0.80	
Frt	1.00	0.85		1.00	0.85		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1787	1615		1805	1615		1752	4295		1805	4315	
Flt Permitted	0.58	1.00		0.64	1.00		0.05	1.00		0.18	1.00	
Satd. Flow (perm)	1085	1615		1218	1615		85	4295		349	4315	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	200	0	185	65	0	55	75	1195	20	30	2140	90
RTOR Reduction (vph)	0	90	0	0	50	0	0	1	0	0	2	0
Lane Group Flow (vph)	200	95	0	65	5	0	75	1214	0	30	2228	0
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	3%	6%	0%	0%	5%	6%
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases	7	4			8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	23.8	23.8		11.0	11.0		93.6	93.6		83.3	83.3	
Effective Green, g (s)	24.8	24.8		12.0	12.0		94.6	94.6		84.3	84.3	
Actuated g/C Ratio	0.19	0.19		0.09	0.09		0.73	0.73		0.65	0.65	
Clearance Time (s)	4.0	6.2		6.2	6.2		4.0	6.4		6.4	6.4	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	259	308		112	149		155	3125		226	2798	
v/s Ratio Prot	c0.06	0.06			0.00		c0.03	0.28			c0.52	
v/s Ratio Perm	c0.09			0.05			0.33			0.09		
v/c Ratio	0.77	0.31		0.58	0.03		0.48	0.39		0.13	0.80	
Uniform Delay, d1	48.8	45.2		56.6	53.7		19.2	6.7		8.8	16.6	
Progression Factor	1.00	1.00		1.00	1.00		2.94	0.30		0.25	0.47	
Incremental Delay, d2	13.3	0.6		7.4	0.1		1.4	0.2		0.8	1.7	
Delay (s)	62.2	45.8		64.0	53.8		57.9	2.2		3.0	9.5	
Level of Service	E	D		E	D		E	A		A	A	
Approach Delay (s)		54.3			59.3			5.5			9.4	
Approach LOS		D			E			A			A	

Intersection Summary				
HCM 2000 Control Delay	13.9	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.79			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	16.6	
Intersection Capacity Utilization	85.5%	ICU Level of Service	E	
Analysis Period (min)	15			

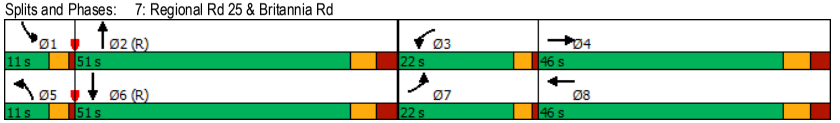
c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	65	455	465	380	55	1075	390	1980
Future Volume (vph)	65	455	465	380	55	1075	390	1980
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases								
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	7.0	10.0	7.0	10.0	7.0	20.0	7.0	20.0
Minimum Split (s)	11.0	45.5	11.0	45.5	11.0	49.7	11.0	49.7
Total Split (s)	22.0	46.0	22.0	46.0	11.0	51.0	11.0	51.0
Total Split (%)	16.9%	35.4%	16.9%	35.4%	8.5%	39.2%	8.5%	39.2%
Yellow Time (s)	3.0	4.2	3.0	4.2	3.0	4.2	3.0	4.2
All-Red Time (s)	1.0	3.3	1.0	3.3	1.0	3.5	1.0	3.5
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.5	3.0	6.5	3.0	6.7	3.0	6.7
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	9.2	27.8	19.0	39.8	8.8	44.3	19.7	57.3
Actuated g/C Ratio	0.07	0.21	0.15	0.31	0.07	0.34	0.15	0.44
v/c Ratio	0.28	0.87dr	0.92	0.39	0.24	0.90	0.74	1.05
Control Delay	60.0	45.9	75.9	29.5	59.7	49.3	57.3	77.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.0	45.9	75.9	29.5	59.7	49.3	57.3	77.0
LOS	E	D	E	C	E	D	E	E
Approach Delay		47.0		51.2		49.8		73.8
Approach LOS		D		D		D		E

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 104 (80%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.05			
Intersection Signal Delay: 59.9		Intersection LOS: E	
Intersection Capacity Utilization 91.3%		ICU Level of Service F	
Analysis Period (min) 15			

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Splits and Phases: 7: Regional Rd 25 & Britannia Rd



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	65	770	465	530	55	1320	390	2000
v/c Ratio	0.28	0.87dr	0.92	0.39	0.24	0.90	0.74	1.05
Control Delay	60.0	45.9	75.9	29.5	59.7	49.3	57.3	77.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.0	45.9	75.9	29.5	59.7	49.3	57.3	77.0
Queue Length 50th (m)	8.7	70.3	64.6	42.3	7.4	137.6	56.2	~246.7
Queue Length 95th (m)	16.3	83.0	#97.3	55.8	14.3	#164.1	m#95.7	#315.9
Internal Link Dist (m)		377.9		182.4		165.3		292.1
Turn Bay Length (m)	60.0		120.0		90.0		90.0	
Base Capacity (vph)	482	1368	503	1407	229	1463	530	1908
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	0.13	0.56	0.92	0.38	0.24	0.90	0.74	1.05

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.
dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	455	315	465	380	150	55	1075	245	390	1980	20
Future Volume (vph)	65	455	315	465	380	150	55	1075	245	390	1980	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.5		3.0	6.5		3.0	6.7		3.0	6.7	
Lane Util. Factor	0.97	*0.80		0.97	*0.80		0.97	*0.80		0.97	*0.80	
Frt	1.00	0.94		1.00	0.96		1.00	0.97		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3303	4238		3445	4311		3367	4229		3502	4327	
Flt Permitted	0.95	1.00		1.00	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3303	4238		3445	4311		3367	4229		3502	4327	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	65	455	315	465	380	150	55	1075	245	390	1980	20
RTOR Reduction (vph)	0	90	0	0	55	0	0	23	0	0	1	0
Lane Group Flow (vph)	65	680	0	465	475	0	55	1297	0	390	1999	0
Heavy Vehicles (%)	6%	1%	1%	7%	1%	2%	4%	5%	4%	0%	5%	27%
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	6.8	27.6		18.0	38.8		6.4	42.5		18.7	54.8	
Effective Green, g (s)	7.8	28.6		19.0	39.8		7.4	43.5		19.7	55.8	
Actuated g/C Ratio	0.06	0.22		0.15	0.31		0.06	0.33		0.15	0.43	
Clearance Time (s)	4.0	7.5		4.0	7.5		4.0	7.7		4.0	7.7	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	198	932		503	1319		191	1415		530	1857	
v/s Ratio Prot	0.02	c0.16		c0.13	0.11		0.02	0.31		c0.11	c0.46	
v/s Ratio Perm												
v/c Ratio	0.33	0.87dr		0.92	0.36		0.29	0.92		0.74	1.08	
Uniform Delay, d1	58.6	47.1		54.8	35.2		58.8	41.5		52.7	37.1	
Progression Factor	1.00	1.00		0.93	0.96		1.00	1.00		0.95	1.34	
Incremental Delay, d2	1.0	2.9		22.5	0.2		0.8	10.9		3.6	42.0	
Delay (s)	59.6	50.0		73.3	33.8		59.6	52.4		53.7	91.7	
Level of Service	E	D		E	C		E	D		D	F	
Approach Delay (s)		50.7			52.3			52.7			85.5	
Approach LOS		D			D			D			F	

Intersection Summary				
HCM 2000 Control Delay	66.3	HCM 2000 Level of Service	E	
HCM 2000 Volume to Capacity ratio	0.94			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	19.2	
Intersection Capacity Utilization	91.3%	ICU Level of Service	F	
Analysis Period (min)	15			

dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	165	5	45	85	35	20	0	125	95	0	15
Future Volume (Veh/h)	5	165	5	45	85	35	20	0	125	95	0	15
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	5	165	5	45	85	35	20	0	125	95	0	15
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					78							
pX, platoon unblocked												
vC, conflicting volume	120			170			385	388	168	495	372	102
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	120			170			385	388	168	495	372	102
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			97			96	100	86	77	100	98
cM capacity (veh/h)	1480			1420			553	531	882	408	541	958

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	175	165	145	110
Volume Left	5	45	20	95
Volume Right	5	35	125	15
cSH	1480	1420	815	442
Volume to Capacity	0.00	0.03	0.18	0.25
Queue Length 95th (m)	0.1	0.8	5.2	7.8
Control Delay (s)	0.2	2.3	10.4	15.8
Lane LOS	A	A	B	C
Approach Delay (s)	0.2	2.3	10.4	15.8
Approach LOS			B	C

Intersection Summary					
Average Delay			6.1		
Intersection Capacity Utilization			46.7%	ICU Level of Service	A
Analysis Period (min)			15		

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	20	745	430	90	30
Future Volume (vph)	20	745	430	90	30
Turn Type	pm+pt	NA	NA	Prot	Perm
Protected Phases	5	2	6	8	
Permitted Phases	2				8
Detector Phase	5	2	6	8	8
Switch Phase					
Minimum Initial (s)	7.0	20.0	20.0	10.0	10.0
Minimum Split (s)	11.0	29.4	29.4	15.3	15.3
Total Split (s)	11.0	64.0	53.0	41.0	41.0
Total Split (%)	10.5%	61.0%	50.5%	39.0%	39.0%
Yellow Time (s)	3.0	4.2	4.2	3.3	3.3
All-Red Time (s)	1.0	2.2	2.2	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	5.4	5.4	4.3	4.3
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	None	None
Act Effct Green (s)	88.0	86.7	82.3	12.8	12.8
Actuated g/C Ratio	0.84	0.83	0.78	0.12	0.12
v/c Ratio	0.03	0.20	0.14	0.43	0.14
Control Delay	2.4	2.8	4.4	49.0	15.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	2.4	2.8	4.4	49.0	15.4
LOS	A	A	A	D	B
Approach Delay		2.8	4.4	40.6	
Approach LOS		A	A	D	

Intersection Summary			
Cycle Length: 105			
Actuated Cycle Length: 105			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.43			
Intersection Signal Delay: 6.7		Intersection LOS: A	
Intersection Capacity Utilization 33.1%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 10: Britannia Rd & Farmstead Dr

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	20	745	455	90	30
v/c Ratio	0.03	0.20	0.14	0.43	0.14
Control Delay	2.4	2.8	4.4	49.0	15.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	2.4	2.8	4.4	49.0	15.4
Queue Length 50th (m)	0.6	12.9	7.2	18.4	0.0
Queue Length 95th (m)	2.3	21.1	19.4	33.1	8.5
Internal Link Dist (m)		101.0	377.9	199.3	
Turn Bay Length (m)	20.0				
Base Capacity (vph)	702	3653	3297	595	557
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.03	0.20	0.14	0.15	0.05

Intersection Summary

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	20	745	430	25	90	30
Future Volume (vph)	20	745	430	25	90	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.4	5.4		4.3	4.3
Lane Util. Factor	1.00	*0.80	*0.80		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1656	4427	4205		1703	1538
Flt Permitted	0.43	1.00	1.00		0.95	1.00
Satd. Flow (perm)	756	4427	4205		1703	1538
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	20	745	430	25	90	30
RTOR Reduction (vph)	0	0	3	0	0	27
Lane Group Flow (vph)	20	745	452	0	90	3
Heavy Vehicles (%)	9%	3%	8%	0%	6%	5%
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		8	
Permitted Phases	2					8
Actuated Green, G (s)	83.5	83.5	76.7		9.8	9.8
Effective Green, g (s)	84.5	84.5	77.7		10.8	10.8
Actuated g/C Ratio	0.80	0.80	0.74		0.10	0.10
Clearance Time (s)	4.0	6.4	6.4		5.3	5.3
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	640	3562	3111		175	158
v/s Ratio Prot	0.00	c0.17	0.11		c0.05	
v/s Ratio Perm	0.02					0.00
v/c Ratio	0.03	0.21	0.15		0.51	0.02
Uniform Delay, d1	2.1	2.4	4.0		44.6	42.3
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.0	0.1	0.1		2.5	0.0
Delay (s)	2.1	2.5	4.1		47.2	42.4
Level of Service	A	A	A		D	D
Approach Delay (s)		2.5	4.1		46.0	
Approach LOS		A	A		D	

Intersection Summary				
HCM 2000 Control Delay	6.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.25		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	12.7
Intersection Capacity Utilization	33.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	25	1065	920	55	75
Future Volume (vph)	25	1065	920	55	75
Turn Type	pm+pt	NA	NA	Prot	Perm
Protected Phases	5	2	6	4	
Permitted Phases	2				4
Detector Phase	5	2	6	4	4
Switch Phase					
Minimum Initial (s)	7.0	20.0	20.0	10.0	10.0
Minimum Split (s)	11.0	29.0	29.0	43.0	43.0
Total Split (s)	15.0	80.0	65.0	50.0	50.0
Total Split (%)	11.5%	61.5%	50.0%	38.5%	38.5%
Yellow Time (s)	3.0	4.0	4.0	3.0	3.0
All-Red Time (s)	1.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.0	6.0	5.0	5.0
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	None	None
Act Effct Green (s)	110.2	107.2	100.6	11.8	11.8
Actuated g/C Ratio	0.85	0.82	0.77	0.09	0.09
v/c Ratio	0.05	0.28	0.26	0.34	0.35
Control Delay	3.7	5.6	4.8	61.1	16.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	3.7	5.6	4.8	61.1	16.3
LOS	A	A	A	E	B
Approach Delay		5.6	4.8	35.2	
Approach LOS		A	A	D	

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.35			
Intersection Signal Delay: 7.1		Intersection LOS: A	
Intersection Capacity Utilization 38.3%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 11: Britannia Rd & Rose Way

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	25	1065	930	55	75
v/c Ratio	0.05	0.28	0.26	0.34	0.35
Control Delay	3.7	5.6	4.8	61.1	16.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	3.7	5.6	4.8	61.1	16.3
Queue Length 50th (m)	1.7	45.9	29.2	14.3	0.0
Queue Length 95th (m)	m2.5	m52.9	39.1	27.8	15.3
Internal Link Dist (m)		182.4	155.7	76.0	
Turn Bay Length (m)	50.0			50.0	
Base Capacity (vph)	517	3761	3523	624	608
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.05	0.28	0.26	0.09	0.12

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

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	25	1065	920	10	55	75
Future Volume (vph)	25	1065	920	10	55	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0		5.0	5.0
Lane Util. Factor	1.00	*0.80	*0.80		1.00	1.00
Frt	1.00	1.00	1.00		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1805	4560	4553		1805	1615
Flt Permitted	0.24	1.00	1.00		0.95	1.00
Satd. Flow (perm)	464	4560	4553		1805	1615
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	25	1065	920	10	55	75
RTOR Reduction (vph)	0	0	0	0	0	68
Lane Group Flow (vph)	25	1065	930	0	55	7
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)	106.2	106.2	98.0		10.8	10.8
Effective Green, g (s)	107.2	107.2	99.0		11.8	11.8
Actuated g/C Ratio	0.82	0.82	0.76		0.09	0.09
Clearance Time (s)	4.0	7.0	7.0		6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	436	3760	3467		163	146
v/s Ratio Prot	0.00	c0.23	0.20		c0.03	
v/s Ratio Perm	0.04					0.00
v/c Ratio	0.06	0.28	0.27		0.34	0.05
Uniform Delay, d1	2.2	2.6	4.6		55.4	54.0
Progression Factor	2.13	2.07	1.00		1.00	1.00
Incremental Delay, d2	0.0	0.1	0.2		1.2	0.1
Delay (s)	4.6	5.5	4.8		56.7	54.1
Level of Service	A	A	A		E	D
Approach Delay (s)		5.5	4.8		55.2	
Approach LOS		A	A		E	

Intersection Summary				
HCM 2000 Control Delay	8.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	38.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	205	375	365	545	220	1310	95	1130
Future Volume (vph)	205	375	365	545	220	1310	95	1130
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	5.0	10.0	10.0	10.0	5.0	20.0	5.0	20.0
Minimum Split (s)	9.0	30.0	14.0	30.0	9.0	32.2	9.0	32.2
Total Split (s)	22.0	30.0	32.0	40.0	22.0	68.0	10.0	56.0
Total Split (%)	15.7%	21.4%	22.9%	28.6%	15.7%	48.6%	7.1%	40.0%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	4.2	3.0	4.2
All-Red Time (s)	1.0	3.0	0.0	3.0	1.0	3.0	1.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.0	2.0	6.0	3.0	6.2	3.0	6.2
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	43.2	23.4	55.7	31.9	79.3	65.3	67.7	56.6
Actuated g/C Ratio	0.31	0.17	0.40	0.23	0.57	0.47	0.48	0.40
v/c Ratio	0.68	0.84	0.86	0.75	0.82	0.89	0.60	0.76
Control Delay	41.4	66.4	54.7	55.8	56.9	40.1	39.8	40.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.4	66.4	54.7	55.8	56.9	40.1	39.8	40.0
LOS	D	E	D	E	E	D	D	D
Approach Delay		59.1		55.4		42.0		39.9
Approach LOS		E		E		D		D

Intersection Summary			
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.89			
Intersection Signal Delay: 46.4		Intersection LOS: D	
Intersection Capacity Utilization 93.1%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 1: Regional Rd 25 & Louis St Laurent Ave

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	205	500	365	610	220	1765	95	1325
v/c Ratio	0.68	0.84	0.86	0.75	0.82	0.89	0.60	0.76
Control Delay	41.4	66.4	54.7	55.8	56.9	40.1	39.8	40.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.4	66.4	54.7	55.8	56.9	40.1	39.8	40.0
Queue Length 50th (m)	39.5	69.7	79.1	84.8	44.9	195.5	12.8	143.2
Queue Length 95th (m)	58.3	#93.7	115.9	106.9	#81.9	#230.5	#37.1	170.6
Internal Link Dist (m)		126.1		117.1		481.0		113.5
Turn Bay Length (m)	90.0		35.0		65.0		80.0	
Base Capacity (vph)	331	620	467	865	299	1980	159	1751
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	0.62	0.81	0.78	0.71	0.74	0.89	0.60	0.76

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	205	375	125	365	545	65	220	1310	455	95	1130	195
Future Volume (vph)	205	375	125	365	545	65	220	1310	455	95	1130	195
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0		2.0	6.0		3.0	6.2		3.0	6.2	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	*0.80		1.00	*0.80	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.98		1.00	0.96		1.00	0.98	
Flt Protected	0.95	1.00		1.00	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1768	3431		1899	3537		1787	4165		1805	4299	
Flt Permitted	0.26	1.00		0.17	1.00		0.07	1.00		0.07	1.00	
Satd. Flow (perm)	483	3431		331	3537		132	4165		134	4299	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	205	375	125	365	545	65	220	1310	455	95	1130	195
RTOR Reduction (vph)	0	23	0	0	7	0	0	40	0	0	13	0
Lane Group Flow (vph)	205	477	0	365	603	0	220	1725	0	95	1312	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Heavy Vehicles (%)	2%	1%	0%	0%	0%	2%	1%	6%	1%	0%	4%	0%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	38.1	22.4		50.6	30.9		75.2	64.3		62.6	55.7	
Effective Green, g (s)	40.1	23.4		51.6	31.9		76.2	65.3		64.6	56.7	
Actuated g/C Ratio	0.29	0.17		0.37	0.23		0.54	0.47		0.46	0.41	
Clearance Time (s)	4.0	7.0		3.0	7.0		4.0	7.2		4.0	7.2	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	291	573		415	805		266	1942		156	1741	
v/s Ratio Prot	0.08	c0.14		c0.16	0.17		c0.10	c0.41		0.03	0.31	
v/s Ratio Perm	0.12			0.16			0.35			0.25		
v/c Ratio	0.70	0.83		0.88	0.75		0.83	0.89		0.61	0.75	
Uniform Delay, d1	40.7	56.4		38.0	50.3		38.7	34.0		27.9	35.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	7.5	10.0		18.7	3.8		18.6	6.5		6.6	3.1	
Delay (s)	48.2	66.4		56.6	54.2		57.3	40.5		34.5	38.7	
Level of Service	D	E		E	D		E	D		C	D	
Approach Delay (s)		61.1			55.1			42.4			38.5	
Approach LOS		E			E			D			D	

Intersection Summary				
HCM 2000 Control Delay	46.3	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.89			
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.2	
Intersection Capacity Utilization	93.1%	ICU Level of Service	F	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	105	40	25	40	75	90	1985	60	1365
Future Volume (vph)	105	40	25	40	75	90	1985	60	1365
Turn Type	Perm	NA	Perm	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases		4		8		5	2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	7.0	20.0	7.0	20.0
Minimum Split (s)	37.5	37.5	37.5	37.5	37.5	11.0	35.5	11.0	35.5
Total Split (s)	38.0	38.0	38.0	38.0	38.0	11.0	81.0	11.0	81.0
Total Split (%)	29.2%	29.2%	29.2%	29.2%	29.2%	8.5%	62.3%	8.5%	62.3%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.0	4.2	3.0	4.2
All-Red Time (s)	3.2	3.2	3.2	3.2	3.2	1.0	2.3	1.0	2.3
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	3.0	5.5	3.0	5.5
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	16.6	16.6	16.6	16.6	16.6	102.5	93.2	102.0	91.1
Actuated g/C Ratio	0.13	0.13	0.13	0.13	0.13	0.79	0.72	0.78	0.70
v/c Ratio	0.60	0.32	0.15	0.17	0.29	0.35	0.65	0.34	0.50
Control Delay	67.4	31.8	50.2	50.0	13.0	5.6	7.8	13.0	10.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.4	31.8	50.2	50.0	13.0	5.6	7.8	13.0	10.1
LOS	E	C	D	D	B	A	A	B	B
Approach Delay		52.0		30.2			7.7		10.2
Approach LOS		D		C			A		B

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 40 (31%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 95			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.65			
Intersection Signal Delay: 11.5		Intersection LOS: B	
Intersection Capacity Utilization 72.4%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Regional Rd 25 & Whitlock Ave

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	105	80	25	40	75	90	2025	60	1500
v/c Ratio	0.60	0.32	0.15	0.17	0.29	0.35	0.65	0.34	0.50
Control Delay	67.4	31.8	50.2	50.0	13.0	5.6	7.8	13.0	10.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.4	31.8	50.2	50.0	13.0	5.6	7.8	13.0	10.1
Queue Length 50th (m)	27.2	10.6	6.1	9.8	0.0	1.3	69.0	2.6	68.3
Queue Length 95th (m)	45.1	25.0	14.4	20.3	14.0	m3.4	183.5	12.6	99.2
Internal Link Dist (m)		62.9		68.1			696.9		481.0
Turn Bay Length (m)	35.0		65.0		65.0	100.0		100.0	
Base Capacity (vph)	341	452	333	475	441	260	3106	178	2992
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	0.31	0.18	0.08	0.08	0.17	0.35	0.65	0.34	0.50

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	40	40	25	40	75	90	1985	40	60	1365	135
Future Volume (vph)	105	40	40	25	40	75	90	1985	40	60	1365	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5		5.5	5.5	5.5	3.0	5.5		3.0	5.5	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	*0.80		1.00	*0.80	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		0.99	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.93		1.00	1.00	0.85	1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1776	1699		1795	1900	1539	1787	4331		1770	4266	
Flt Permitted	0.73	1.00		0.70	1.00	1.00	0.11	1.00		0.05	1.00	
Satd. Flow (perm)	1367	1699		1332	1900	1539	201	4331		90	4266	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	105	40	40	25	40	75	90	1985	40	60	1365	135
RTOR Reduction (vph)	0	32	0	0	0	65	0	1	0	0	5	0
Lane Group Flow (vph)	105	48	0	25	40	10	90	2024	0	60	1495	0
Confl. Peds. (#/hr)	5		5	5		5			5	5		
Heavy Vehicles (%)	1%	5%	0%	0%	0%	3%	1%	5%	0%	2%	6%	0%
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	15.6	15.6		15.6	15.6	15.6	98.8	91.4		96.0	90.0	
Effective Green, g (s)	16.6	16.6		16.6	16.6	16.6	100.8	92.4		98.0	91.0	
Actuated g/C Ratio	0.13	0.13		0.13	0.13	0.13	0.78	0.71		0.75	0.70	
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	4.0	6.5		4.0	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	174	216		170	242	196	258	3078		158	2986	
v/s Ratio Prot		0.03			0.02		c0.02	c0.47		c0.02	0.35	
v/s Ratio Perm	c0.08			0.02		0.01	0.25			0.26		
v/c Ratio	0.60	0.22		0.15	0.17	0.05	0.35	0.66		0.38	0.50	
Uniform Delay, d1	53.6	50.9		50.4	50.5	49.8	5.1	10.2		9.1	9.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	0.91	0.63		1.00	1.00	
Incremental Delay, d2	5.8	0.5		0.4	0.3	0.1	0.6	0.8		1.5	0.6	
Delay (s)	59.4	51.4		50.8	50.9	49.9	5.3	7.2		10.6	9.6	
Level of Service	E	D		D	D	D	A	A		B	A	
Approach Delay (s)		55.9			50.3			7.2			9.6	
Approach LOS		E			D			A			A	

Intersection Summary				
HCM 2000 Control Delay	11.9	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.64			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	14.0	
Intersection Capacity Utilization	72.4%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	135	0	40	0	180	1940	55	1145
Future Volume (vph)	135	0	40	0	180	1940	55	1145
Turn Type	pm+pt	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases	7	4		8	5	2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	7	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	7.0	10.0	10.0	10.0	7.0	20.0	7.0	20.0
Minimum Split (s)	11.0	36.2	36.2	36.2	11.0	38.4	11.0	38.4
Total Split (s)	12.0	49.0	37.0	37.0	11.0	70.0	11.0	70.0
Total Split (%)	9.2%	37.7%	28.5%	28.5%	8.5%	53.8%	8.5%	53.8%
Yellow Time (s)	3.0	3.3	3.3	3.3	3.0	4.2	3.0	4.2
All-Red Time (s)	1.0	2.9	2.9	2.9	1.0	2.2	1.0	2.2
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	5.2	5.2	5.2	3.0	5.4	3.0	5.4
Lead/Lag	Lead		Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	23.7	21.5	11.9	11.9	100.3	88.8	92.5	81.8
Actuated g/C Ratio	0.18	0.17	0.09	0.09	0.77	0.68	0.71	0.63
v/c Ratio	0.56	0.25	0.33	0.14	0.55	0.67	0.31	0.51
Control Delay	55.2	2.7	62.8	1.0	21.3	8.7	31.6	6.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.2	2.7	62.8	1.0	21.3	8.7	31.6	6.8
LOS	E	A	E	A	C	A	C	A
Approach Delay		32.9		31.9		9.8		7.8
Approach LOS		C		C		A		A

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 103 (79%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay: 10.9		Intersection LOS: B	
Intersection Capacity Utilization 71.1%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 5: Regional Rd 25 & Etheridge Ave/Collector Road

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	135	100	40	40	180	2005	55	1375
v/c Ratio	0.56	0.25	0.33	0.14	0.55	0.67	0.31	0.51
Control Delay	55.2	2.7	62.8	1.0	21.3	8.7	31.6	6.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.2	2.7	62.8	1.0	21.3	8.7	31.6	6.8
Queue Length 50th (m)	32.1	0.0	10.4	0.0	20.6	69.7	3.0	82.3
Queue Length 95th (m)	51.1	3.3	22.4	0.0	m24.0	m67.0	14.8	114.5
Internal Link Dist (m)		53.9		63.5		292.1		696.9
Turn Bay Length (m)	40.0		40.0		70.0		70.0	
Base Capacity (vph)	243	645	321	511	327	2985	176	2712
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	0.56	0.16	0.12	0.08	0.55	0.67	0.31	0.51

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	135	0	100	40	0	40	180	1940	65	55	1145	230
Future Volume (vph)	135	0	100	40	0	40	180	1940	65	55	1145	230
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.2		5.2	5.2		3.0	5.4		3.0	5.4	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	*0.80		1.00	*0.80	
Frt	1.00	0.85		1.00	0.85		1.00	1.00		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1752	1615		1805	1615		1805	4369		1805	4288	
Flt Permitted	0.56	1.00		0.69	1.00		0.11	1.00		0.05	1.00	
Satd. Flow (perm)	1035	1615		1315	1615		217	4369		94	4288	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	135	0	100	40	0	40	180	1940	65	55	1145	230
RTOR Reduction (vph)	0	83	0	0	37	0	0	2	0	0	14	0
Lane Group Flow (vph)	135	17	0	40	3	0	180	2003	0	55	1361	0
Heavy Vehicles (%)	3%	0%	0%	0%	0%	0%	0%	4%	0%	0%	4%	2%
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	21.7	21.7		8.9	8.9		95.7	85.8		85.5	79.6	
Effective Green, g (s)	22.7	22.7		9.9	9.9		96.7	86.8		87.5	80.6	
Actuated g/C Ratio	0.17	0.17		0.08	0.08		0.74	0.67		0.67	0.62	
Clearance Time (s)	4.0	6.2		6.2	6.2		4.0	6.4		4.0	6.4	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	234	282		100	122		321	2917		154	2658	
v/s Ratio Prot	c0.04	0.01			0.00		c0.06	c0.46		0.02	0.32	
v/s Ratio Perm	c0.06			0.03			0.36			0.22		
v/c Ratio	0.58	0.06		0.40	0.02		0.56	0.69		0.36	0.51	
Uniform Delay, d1	48.0	44.8		57.2	55.6		9.1	13.3		11.4	13.8	
Progression Factor	1.00	1.00		1.00	1.00		2.85	0.63		2.70	0.45	
Incremental Delay, d2	3.4	0.1		2.6	0.1		0.2	0.1		1.3	0.6	
Delay (s)	51.4	44.9		59.8	55.7		26.2	8.5		32.1	6.8	
Level of Service	D	D		E	E		C	A		C	A	
Approach Delay (s)		48.6			57.8			9.9			7.8	
Approach LOS		D			E			A			A	

Intersection Summary				
HCM 2000 Control Delay	12.4	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.68			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	16.6	
Intersection Capacity Utilization	71.1%	ICU Level of Service	C	
Analysis Period (min)	15			

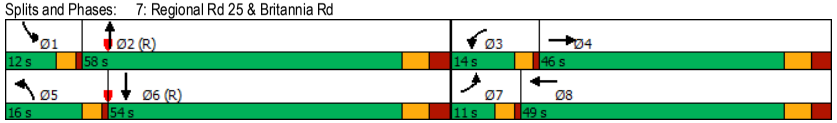
c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	55	350	325	550	275	1725	175	1055
Future Volume (vph)	55	350	325	550	275	1725	175	1055
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases								
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	7.0	10.0	7.0	10.0	7.0	20.0	7.0	20.0
Minimum Split (s)	11.0	45.5	11.0	45.5	11.0	49.7	11.0	49.7
Total Split (s)	11.0	46.0	14.0	49.0	16.0	58.0	12.0	54.0
Total Split (%)	8.5%	35.4%	10.8%	37.7%	12.3%	44.6%	9.2%	41.5%
Yellow Time (s)	3.0	4.2	3.0	4.2	3.0	4.2	3.0	4.2
All-Red Time (s)	1.0	3.3	1.0	3.3	1.0	3.5	1.0	3.5
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.5	3.0	6.5	3.0	6.7	3.0	6.7
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	8.0	28.5	11.0	33.7	15.6	59.3	12.0	55.8
Actuated g/C Ratio	0.06	0.22	0.08	0.26	0.12	0.46	0.09	0.43
v/c Ratio	0.27	0.40	1.07	0.92dr	0.66	1.12	0.55	0.59
Control Delay	61.9	41.7	139.7	37.4	62.5	95.9	75.5	20.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.9	41.7	139.7	37.4	62.5	95.9	75.5	20.6
LOS	E	D	F	D	E	F	E	C
Approach Delay		44.2		63.4		92.2		28.1
Approach LOS		D		E		F		C

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 104 (80%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.12
Intersection Signal Delay: 66.7 — Intersection LOS: E
Intersection Capacity Utilization 93.6% — ICU Level of Service F
Analysis Period (min) 15
dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Splits and Phases: 7: Regional Rd 25 & Britannia Rd



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	55	395	325	955	275	2230	175	1110
v/c Ratio	0.27	0.40	1.07	0.92dr	0.66	1.12	0.55	0.59
Control Delay	61.9	41.7	139.7	37.4	62.5	95.9	75.5	20.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.9	41.7	139.7	37.4	62.5	95.9	75.5	20.6
Queue Length 50th (m)	7.4	35.9	~51.3	50.0	36.7	~299.0	25.4	46.0
Queue Length 95th (m)	14.6	44.6	#83.6	52.7	52.7	#351.6	38.7	56.0
Internal Link Dist (m)		377.9		190.1		165.3		292.1
Turn Bay Length (m)	60.0		120.0		90.0		90.0	
Base Capacity (vph)	203	1372	305	1483	421	1986	320	1874
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	0.27	0.29	1.07	0.64	0.65	1.12	0.55	0.59

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
dr Defacto Right Lane. Recode with 1 though lane as a right lane.

HCM Signalized Intersection Capacity Analysis
7: Regional Rd 25 & Britannia Rd

2037 Future Total PM
01-12-2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	350	45	325	550	405	275	1725	505	175	1055	55
Future Volume (vph)	55	350	45	325	550	405	275	1725	505	175	1055	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.5		3.0	6.5		3.0	6.7		3.0	6.7	
Lane Util. Factor	0.97	*0.80		0.97	*0.80		0.97	*0.80		0.97	*0.80	
Frt	1.00	0.98		1.00	0.94		1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00		1.00	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3303	4482		3614	4228		3502	4286		3467	4360	
Flt Permitted	0.95	1.00		1.00	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3303	4482		3614	4228		3502	4286		3467	4360	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	55	350	45	325	550	405	275	1725	505	175	1055	55
RTOR Reduction (vph)	0	12	0	0	112	0	0	30	0	0	3	0
Lane Group Flow (vph)	55	383	0	325	843	0	275	2200	0	175	1107	0
Heavy Vehicles (%)	6%	0%	0%	2%	1%	1%	0%	3%	2%	1%	4%	0%
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	5.6	28.3		10.0	32.7		14.6	57.5		11.0	53.9	
Effective Green, g (s)	6.6	29.3		11.0	33.7		15.6	58.5		12.0	54.9	
Actuated g/C Ratio	0.05	0.23		0.08	0.26		0.12	0.45		0.09	0.42	
Clearance Time (s)	4.0	7.5		4.0	7.5		4.0	7.7		4.0	7.7	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	167	1010		305	1096		420	1928		320	1841	
v/s Ratio Prot	0.02	0.09		c0.09	c0.20		c0.08	c0.51		0.05	0.25	
v/s Ratio Perm												
v/c Ratio	0.33	0.38		1.07	0.92dr		0.65	1.14		0.55	0.60	
Uniform Delay, d1	59.6	42.7		59.5	44.6		54.6	35.8		56.4	29.1	
Progression Factor	1.00	1.00		1.32	0.87		1.00	1.00		1.23	0.64	
Incremental Delay, d2	1.2	0.2		68.8	3.2		3.7	70.4		1.7	1.3	
Delay (s)	60.7	42.9		147.5	41.9		58.3	106.1		71.1	20.0	
Level of Service	E	D		F	D		E	F		E	C	
Approach Delay (s)		45.1			68.7			100.9			27.0	
Approach LOS		D			E			F			C	

Intersection Summary				
HCM 2000 Control Delay	71.7	HCM 2000 Level of Service	E	
HCM 2000 Volume to Capacity ratio	1.01			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	19.2	
Intersection Capacity Utilization	93.6%	ICU Level of Service	F	
Analysis Period (min)	15			

dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
8: Site Dwy (South)/Site Dwy (North) & Etheridge Ave

2037 Future Total PM
01-12-2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	100	10	135	175	100	10	0	80	55	0	10
Future Volume (Veh/h)	10	100	10	135	175	100	10	0	80	55	0	10
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	10	100	10	135	175	100	10	0	80	55	0	10
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					78							
pX, platoon unblocked	0.97						0.97	0.97		0.97	0.97	0.97
vC, conflicting volume	275			110			630	670	105	700	625	225
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	233			110			600	642	105	673	595	181
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			91			97	100	92	82	100	99
cM capacity (veh/h)	1302			1493			367	345	955	305	367	838

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	120	410	90	65
Volume Left	10	135	10	55
Volume Right	10	100	80	10
cSH	1302	1493	811	338
Volume to Capacity	0.01	0.09	0.11	0.19
Queue Length 95th (m)	0.2	2.4	3.0	5.6
Control Delay (s)	0.7	3.1	10.0	18.2
Lane LOS	A	A	A	C
Approach Delay (s)	0.7	3.1	10.0	18.2
Approach LOS			A	C

Intersection Summary			
Average Delay	5.0		
Intersection Capacity Utilization	46.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	25	395	800	55	15
Future Volume (vph)	25	395	800	55	15
Turn Type	pm+pt	NA	NA	Prot	Perm
Protected Phases	5	2	6	8	
Permitted Phases	2				8
Detector Phase	5	2	6	8	8
Switch Phase					
Minimum Initial (s)	7.0	20.0	20.0	10.0	10.0
Minimum Split (s)	11.0	29.4	29.4	15.3	15.3
Total Split (s)	11.0	64.0	53.0	41.0	41.0
Total Split (%)	10.5%	61.0%	50.5%	39.0%	39.0%
Yellow Time (s)	3.0	4.2	4.2	3.3	3.3
All-Red Time (s)	1.0	2.2	2.2	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	5.4	5.4	4.3	4.3
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	None	None
Act Effct Green (s)	89.3	88.0	83.6	11.4	11.4
Actuated g/C Ratio	0.85	0.84	0.80	0.11	0.11
v/c Ratio	0.05	0.10	0.25	0.29	0.08
Control Delay	2.0	2.2	4.2	47.2	19.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	2.0	2.2	4.2	47.2	19.9
LOS	A	A	A	D	B
Approach Delay		2.2	4.2	41.4	
Approach LOS		A	A	D	

Intersection Summary			
Cycle Length: 105			
Actuated Cycle Length: 105			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.29			
Intersection Signal Delay: 5.5		Intersection LOS: A	
Intersection Capacity Utilization 37.2%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 10: Britannia Rd & Farmstead Dr

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	25	395	880	55	15
v/c Ratio	0.05	0.10	0.25	0.29	0.08
Control Delay	2.0	2.2	4.2	47.2	19.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	2.0	2.2	4.2	47.2	19.9
Queue Length 50th (m)	0.7	5.9	14.5	11.1	0.0
Queue Length 95th (m)	2.2	9.2	34.6	23.1	6.3
Internal Link Dist (m)		101.0	377.9	199.3	
Turn Bay Length (m)	20.0				
Base Capacity (vph)	519	3822	3552	606	574
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.05	0.10	0.25	0.09	0.03

Intersection Summary

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	25	395	800	80	55	15
Future Volume (vph)	25	395	800	80	55	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.4	5.4		4.3	4.3
Lane Util. Factor	1.00	*0.80	*0.80		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1805	4560	4457		1736	1615
Flt Permitted	0.26	1.00	1.00		0.95	1.00
Satd. Flow (perm)	494	4560	4457		1736	1615
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	25	395	800	80	55	15
RTOR Reduction (vph)	0	0	4	0	0	14
Lane Group Flow (vph)	25	395	876	0	55	1
Heavy Vehicles (%)	0%	0%	1%	0%	4%	0%
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		8	
Permitted Phases	2					8
Actuated Green, G (s)	84.9	84.9	78.1		8.4	8.4
Effective Green, g (s)	85.9	85.9	79.1		9.4	9.4
Actuated g/C Ratio	0.82	0.82	0.75		0.09	0.09
Clearance Time (s)	4.0	6.4	6.4		5.3	5.3
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	451	3730	3357		155	144
v/s Ratio Prot	0.00	c0.09	c0.20		c0.03	
v/s Ratio Perm	0.04					0.00
v/c Ratio	0.06	0.11	0.26		0.35	0.01
Uniform Delay, d1	1.9	1.9	4.0		44.9	43.6
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.1	0.1	0.2		1.4	0.0
Delay (s)	1.9	2.0	4.2		46.3	43.6
Level of Service	A	A	A		D	D
Approach Delay (s)		2.0	4.2		45.8	
Approach LOS		A	A		D	

Intersection Summary				
HCM 2000 Control Delay	5.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.26		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	12.7
Intersection Capacity Utilization	37.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	80	950	1230	30	50
Future Volume (vph)	80	950	1230	30	50
Turn Type	pm+pt	NA	NA	Prot	Perm
Protected Phases	5	2	6	4	
Permitted Phases	2				4
Detector Phase	5	2	6	4	4
Switch Phase					
Minimum Initial (s)	7.0	20.0	20.0	10.0	10.0
Minimum Split (s)	11.0	29.0	29.0	43.0	43.0
Total Split (s)	15.0	80.0	65.0	50.0	50.0
Total Split (%)	11.5%	61.5%	50.0%	38.5%	38.5%
Yellow Time (s)	3.0	4.0	4.0	3.0	3.0
All-Red Time (s)	1.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.0	6.0	5.0	5.0
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	None	None
Act Effct Green (s)	114.2	112.4	103.5	11.0	11.0
Actuated g/C Ratio	0.88	0.86	0.80	0.08	0.08
v/c Ratio	0.23	0.24	0.36	0.20	0.27
Control Delay	3.1	2.6	5.3	58.7	18.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	3.1	2.6	5.3	58.7	18.8
LOS	A	A	A	E	B
Approach Delay		2.6	5.3	33.8	
Approach LOS		A	A	C	

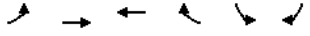
Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 65 (50%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.36
Intersection Signal Delay: 5.1 — Intersection LOS: A
Intersection Capacity Utilization 51.8% — ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 11: Britannia Rd & Rose Way

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	80	950	1290	30	50
v/c Ratio	0.23	0.24	0.36	0.20	0.27
Control Delay	3.1	2.6	5.3	58.7	18.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	3.1	2.6	5.3	58.7	18.8
Queue Length 50th (m)	2.8	21.0	44.9	7.7	0.0
Queue Length 95th (m)	m4.2	m24.3	53.1	18.0	13.0
Internal Link Dist (m)		190.1	148.0	92.6	
Turn Bay Length (m)	50.0			50.0	
Base Capacity (vph)	393	3941	3607	624	591
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.20	0.24	0.36	0.05	0.08

Intersection Summary

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



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	80	950	1230	60	30	50
Future Volume (vph)	80	950	1230	60	30	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0		5.0	5.0
Lane Util. Factor	1.00	*0.80	*0.80		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1805	4560	4528		1805	1615
Flt Permitted	0.15	1.00	1.00		0.95	1.00
Satd. Flow (perm)	289	4560	4528		1805	1615
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	80	950	1230	60	30	50
RTOR Reduction (vph)	0	0	1	0	0	47
Lane Group Flow (vph)	80	950	1289	0	30	3
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)	109.0	109.0	99.4		8.0	8.0
Effective Green, g (s)	110.0	110.0	100.4		9.0	9.0
Actuated g/C Ratio	0.85	0.85	0.77		0.07	0.07
Clearance Time (s)	4.0	7.0	7.0		6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	321	3858	3497		124	111
v/s Ratio Prot	0.01	c0.21	c0.28		c0.02	
v/s Ratio Perm	0.20					0.00
v/c Ratio	0.25	0.25	0.37		0.24	0.03
Uniform Delay, d1	2.1	1.9	4.7		57.3	56.4
Progression Factor	1.48	1.23	1.00		1.00	1.00
Incremental Delay, d2	0.3	0.1	0.3		1.0	0.1
Delay (s)	3.3	2.5	5.0		58.3	56.5
Level of Service	A	A	A		E	E
Approach Delay (s)		2.6	5.0		57.2	
Approach LOS		A	A		E	

Intersection Summary				
HCM 2000 Control Delay	5.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	51.8%	ICU Level of Service	A
Analysis Period (min)	15		

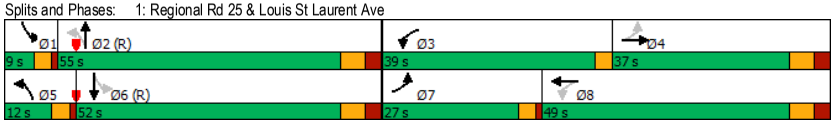
c Critical Lane Group

Sensitivity Analysis – Extra 144 Units for North Parcel

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	270	535	495	560	115	955	65	945
Future Volume (vph)	270	535	495	560	115	955	65	945
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	5.0	10.0	10.0	10.0	5.0	20.0	5.0	20.0
Minimum Split (s)	9.0	30.0	14.0	30.0	9.0	32.2	9.0	32.2
Total Split (s)	27.0	37.0	39.0	49.0	12.0	55.0	9.0	52.0
Total Split (%)	19.3%	26.4%	27.9%	35.0%	8.6%	39.3%	6.4%	37.1%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	4.2	3.0	4.2
All-Red Time (s)	1.0	3.0	0.0	3.0	1.0	3.0	1.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.0	2.0	6.0	3.0	6.2	3.0	6.2
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	52.7	31.0	72.4	46.6	62.6	52.2	56.9	47.5
Actuated g/C Ratio	0.38	0.22	0.52	0.33	0.45	0.37	0.41	0.34
v/c Ratio	0.65	0.94	0.93	0.57	0.63	0.81	0.50	0.72
Control Delay	29.5	70.9	64.4	40.1	39.7	43.4	36.6	43.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.5	70.9	64.4	40.1	39.7	43.4	36.6	43.9
LOS	C	E	E	D	D	D	D	D
Approach Delay		59.7		50.6		43.1		43.5
Approach LOS		E		D		D		D

Intersection Summary	
Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.94	
Intersection Signal Delay: 48.6	Intersection LOS: D
Intersection Capacity Utilization 95.4%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 1: Regional Rd 25 & Louis St Laurent Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	270	730	495	655	115	1290	65	1040
v/c Ratio	0.65	0.94	0.93	0.57	0.63	0.81	0.50	0.72
Control Delay	29.5	70.9	64.4	40.1	39.7	43.4	36.6	43.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.5	70.9	64.4	40.1	39.7	43.4	36.6	43.9
Queue Length 50th (m)	43.2	106.4	120.2	79.1	20.0	139.9	11.0	111.4
Queue Length 95th (m)	62.6	#145.4	#185.9	105.6	#34.2	164.2	20.8	132.1
Internal Link Dist (m)		126.1		117.1		481.0		113.5
Turn Bay Length (m)	90.0		35.0		65.0		80.0	
Base Capacity (vph)	481	786	548	1150	183	1583	130	1439
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	0.56	0.93	0.90	0.57	0.63	0.81	0.50	0.72

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	270	535	195	495	560	95	115	955	335	65	945	95
Future Volume (vph)	270	535	195	495	560	95	115	955	335	65	945	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0		2.0	6.0		3.0	6.2		3.0	6.2	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	*0.80		1.00	*0.80	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.98		1.00	0.96		1.00	0.99	
Flt Protected	0.95	1.00		1.00	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1767	3406		1863	3427		1703	4136		1719	4221	
Flt Permitted	0.40	1.00		0.12	1.00		0.11	1.00		0.08	1.00	
Satd. Flow (perm)	737	3406		226	3427		196	4136		152	4221	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	270	535	195	495	560	95	115	955	335	65	945	95
RTOR Reduction (vph)	0	26	0	0	9	0	0	41	0	0	7	0
Lane Group Flow (vph)	270	704	0	495	646	0	115	1249	0	65	1033	0
Confl. Peds. (#/hr)	5					5						
Heavy Vehicles (%)	2%	2%	1%	2%	2%	7%	6%	7%	3%	5%	7%	2%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	47.8	30.0		67.4	45.6		58.3	50.4		50.5	46.5	
Effective Green, g (s)	49.8	31.0		68.4	46.6		59.4	51.4		52.5	47.5	
Actuated g/C Ratio	0.36	0.22		0.49	0.33		0.42	0.37		0.38	0.34	
Clearance Time (s)	4.0	7.0		3.0	7.0		4.0	7.2		4.0	7.2	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	400	754		524	1140		178	1518		112	1432	
v/s Ratio Prot	0.09	c0.21		c0.24	0.19		c0.04	c0.30		0.02	0.24	
v/s Ratio Perm	0.15			0.22			0.23			0.19		
v/c Ratio	0.68	0.93		0.94	0.57		0.65	0.82		0.58	0.72	
Uniform Delay, d1	34.3	53.5		41.3	38.4		28.3	40.2		31.7	40.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.5	18.4		26.0	0.6		7.8	5.2		7.4	3.2	
Delay (s)	38.8	71.8		67.3	39.0		36.1	45.3		39.2	43.6	
Level of Service	D	E		E	D		D	D		D	D	
Approach Delay (s)		62.9			51.2			44.6			43.4	
Approach LOS		E			D			D			D	

Intersection Summary				
HCM 2000 Control Delay	49.9	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.89			
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.2	
Intersection Capacity Utilization	95.4%	ICU Level of Service	F	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	145	50	50	35	95	45	1190	50	1785
Future Volume (vph)	145	50	50	35	95	45	1190	50	1785
Turn Type	Perm	NA	Perm	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases		4		8		5	2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	7.0	20.0	7.0	20.0
Minimum Split (s)	37.5	37.5	37.5	37.5	37.5	11.0	35.5	11.0	35.5
Total Split (s)	38.0	38.0	38.0	38.0	38.0	11.0	81.0	11.0	81.0
Total Split (%)	29.2%	29.2%	29.2%	29.2%	29.2%	8.5%	62.3%	8.5%	62.3%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.0	4.2	3.0	4.2
All-Red Time (s)	3.2	3.2	3.2	3.2	3.2	1.0	2.3	1.0	2.3
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	3.0	5.5	3.0	5.5
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	20.4	20.4	20.4	20.4	20.4	98.7	89.7	98.7	89.6
Actuated g/C Ratio	0.16	0.16	0.16	0.16	0.16	0.76	0.69	0.76	0.69
v/c Ratio	0.69	0.49	0.33	0.13	0.31	0.26	0.41	0.15	0.63
Control Delay	68.1	30.2	52.5	45.3	10.9	13.3	6.5	5.3	13.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.1	30.2	52.5	45.3	10.9	13.3	6.5	5.3	13.7
LOS	E	C	D	D	B	B	A	A	B
Approach Delay		49.2		29.2			6.8		13.5
Approach LOS		D		C			A		B

Intersection Summary		
Cycle Length: 130		
Actuated Cycle Length: 130		
Offset: 64 (49%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green		
Natural Cycle: 95		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.69		
Intersection Signal Delay: 14.8	Intersection LOS: B	
Intersection Capacity Utilization 75.1%	ICU Level of Service D	
Analysis Period (min) 15		

Splits and Phases: 2: Regional Rd 25 & Whitlock Ave

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	145	145	50	35	95	45	1200	50	1885
v/c Ratio	0.69	0.49	0.33	0.13	0.31	0.26	0.41	0.15	0.63
Control Delay	68.1	30.2	52.5	45.3	10.9	13.3	6.5	5.3	13.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.1	30.2	52.5	45.3	10.9	13.3	6.5	5.3	13.7
Queue Length 50th (m)	37.5	18.2	12.1	8.2	0.0	1.5	20.3	2.6	112.4
Queue Length 95th (m)	57.3	37.4	23.8	17.1	14.7	m5.8	117.8	7.2	159.7
Internal Link Dist (m)		62.9		68.1			497.5		481.0
Turn Bay Length (m)	35.0		65.0		65.0	100.0		100.0	
Base Capacity (vph)	333	431	241	439	435	174	2959	331	2970
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	0.44	0.34	0.21	0.08	0.22	0.26	0.41	0.15	0.63

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	145	50	95	50	35	95	45	1190	10	50	1785	100
Future Volume (vph)	145	50	95	50	35	95	45	1190	10	50	1785	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5		5.5	5.5	5.5	3.0	5.5		3.0	5.5	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	*0.80		1.00	*0.80	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.90		1.00	1.00	0.85	1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1725	1516		1727	1759	1455	1671	4290		1805	4304	
Flt Permitted	0.73	1.00		0.53	1.00	1.00	0.06	1.00		0.17	1.00	
Satd. Flow (perm)	1333	1516		965	1759	1455	100	4290		314	4304	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	145	50	95	50	35	95	45	1190	10	50	1785	100
RTOR Reduction (vph)	0	59	0	0	0	80	0	0	0	0	3	0
Lane Group Flow (vph)	145	86	0	50	35	15	45	1200	0	50	1882	0
Confl. Peds. (#/hr)	5		5	5		5						
Heavy Vehicles (%)	4%	32%	1%	4%	8%	9%	8%	6%	25%	0%	5%	7%
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	19.4	19.4		19.4	19.4	19.4	93.6	87.9		93.6	87.9	
Effective Green, g (s)	20.4	20.4		20.4	20.4	20.4	95.6	88.9		95.6	88.9	
Actuated g/C Ratio	0.16	0.16		0.16	0.16	0.16	0.74	0.68		0.74	0.68	
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	4.0	6.5		4.0	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	209	237		151	276	228	154	2933		307	2943	
v/s Ratio Prot		0.06			0.02		c0.02	0.28		0.01	c0.44	
v/s Ratio Perm	c0.11			0.05		0.01	0.20			0.11		
v/c Ratio	0.69	0.36		0.33	0.13	0.07	0.29	0.41		0.16	0.64	
Uniform Delay, d1	51.8	49.0		48.7	47.1	46.7	8.6	9.0		5.2	11.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00	2.20	0.62		1.00	1.00	
Incremental Delay, d2	9.6	0.9		1.3	0.2	0.1	1.0	0.4		0.3	1.1	
Delay (s)	61.4	49.9		50.0	47.3	46.8	19.9	6.0		5.4	12.6	
Level of Service	E	D		D	D	D	B	A		A	B	
Approach Delay (s)		55.7			47.8			6.5			12.4	
Approach LOS		E			D			A			B	

Intersection Summary				
HCM 2000 Control Delay	15.6	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.63			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	14.0	
Intersection Capacity Utilization	75.1%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	60	0	1245	1915	15
Future Volume (Veh/h)	0	60	0	1245	1915	15
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	60	0	1245	1915	15
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				199		
pX, platoon unblocked	0.94					
vC, conflicting volume	2338	646	1930			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2209	646	1930			
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	86	100			
cM capacity (veh/h)	36	419	309			

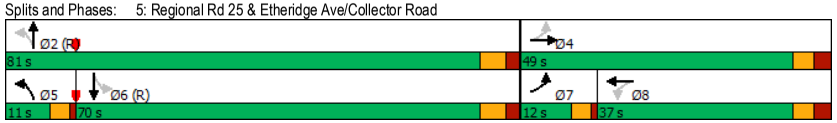
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	60	415	415	415	766	766	398
Volume Left	0	0	0	0	0	0	0
Volume Right	60	0	0	0	0	0	15
cSH	419	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.14	0.24	0.24	0.24	0.45	0.45	0.23
Queue Length 95th (m)	4.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	15.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	C						
Approach Delay (s)	15.0	0.0			0.0		
Approach LOS	C						

Intersection Summary				
Average Delay	0.3			
Intersection Capacity Utilization	47.7%	ICU Level of Service		A
Analysis Period (min)	15			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	185	0	65	0	70	1005	30	1880
Future Volume (vph)	185	0	65	0	70	1005	30	1880
Turn Type	pm+pt	NA	Perm	NA	pm+pt	NA	Perm	NA
Protected Phases	7	4		8	5	2		6
Permitted Phases	4		8		2		6	
Detector Phase	7	4	8	8	5	2	6	6
Switch Phase								
Minimum Initial (s)	7.0	10.0	10.0	10.0	7.0	20.0	20.0	20.0
Minimum Split (s)	11.0	36.2	36.2	36.2	11.0	38.4	38.4	38.4
Total Split (s)	12.0	49.0	37.0	37.0	11.0	81.0	70.0	70.0
Total Split (%)	9.2%	37.7%	28.5%	28.5%	8.5%	62.3%	53.8%	53.8%
Yellow Time (s)	3.0	3.3	3.3	3.3	3.0	4.2	4.2	4.2
All-Red Time (s)	1.0	2.9	2.9	2.9	1.0	2.2	2.2	2.2
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	5.2	5.2	5.2	3.0	5.4	5.4	5.4
Lead/Lag	Lead		Lag	Lag	Lead		Lag	Lag
Lead-Lag Optimize?	Yes		Yes	Yes	Yes		Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max
Act Effct Green (s)	25.3	23.1	13.5	13.5	98.7	96.3	86.9	86.9
Actuated g/C Ratio	0.19	0.18	0.10	0.10	0.76	0.74	0.67	0.67
v/c Ratio	0.70	0.25	0.47	0.19	0.40	0.32	0.10	0.67
Control Delay	61.1	6.4	65.8	1.4	43.9	2.3	4.0	9.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.1	6.4	65.8	1.4	43.9	2.3	4.0	9.1
LOS	E	A	E	A	D	A	A	A
Approach Delay		42.5		36.3		5.0		9.1
Approach LOS		D		D		A		A

Intersection Summary		
Cycle Length: 130		
Actuated Cycle Length: 130		
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green		
Natural Cycle: 110		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.70		
Intersection Signal Delay: 11.4	Intersection LOS: B	
Intersection Capacity Utilization 72.7%	ICU Level of Service C	
Analysis Period (min) 15		

Splits and Phases: 5: Regional Rd 25 & Etheridge Ave/Collector Road



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	185	95	65	55	70	1025	30	1945
v/c Ratio	0.70	0.25	0.47	0.19	0.40	0.32	0.10	0.67
Control Delay	61.1	6.4	65.8	1.4	43.9	2.3	4.0	9.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.1	6.4	65.8	1.4	43.9	2.3	4.0	9.1
Queue Length 50th (m)	44.5	0.0	16.9	0.0	7.6	9.4	0.9	150.3
Queue Length 95th (m)	65.7	10.4	31.7	0.0	m14.9	14.5	m1.3	171.2
Internal Link Dist (m)		53.9		63.1		108.9		175.3
Turn Bay Length (m)	40.0		40.0		70.0		70.0	
Base Capacity (vph)	263	619	322	501	174	3180	293	2889
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	0.70	0.15	0.20	0.11	0.40	0.32	0.10	0.67

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	185	0	95	65	0	55	70	1005	20	30	1880	65
Future Volume (vph)	185	0	95	65	0	55	70	1005	20	30	1880	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.2		5.2	5.2		3.0	5.4		5.4	5.4	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	*0.80		1.00	*0.80	
Frt	1.00	0.85		1.00	0.85		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1787	1615		1805	1615		1752	4294		1805	4320	
Flt Permitted	0.57	1.00		0.70	1.00		0.05	1.00		0.23	1.00	
Satd. Flow (perm)	1076	1615		1321	1615		84	4294		438	4320	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	185	0	95	65	0	55	70	1005	20	30	1880	65
RTOR Reduction (vph)	0	77	0	0	50	0	0	1	0	0	2	0
Lane Group Flow (vph)	185	18	0	65	5	0	70	1024	0	30	1943	0
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	3%	6%	0%	0%	5%	6%
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases	7	4			8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	23.3	23.3		10.5	10.5		94.1	94.1		84.0	84.0	
Effective Green, g (s)	24.3	24.3		11.5	11.5		95.1	95.1		85.0	85.0	
Actuated g/C Ratio	0.19	0.19		0.09	0.09		0.73	0.73		0.65	0.65	
Clearance Time (s)	4.0	6.2		6.2	6.2		4.0	6.4		6.4	6.4	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	254	301		116	142		152	3141		286	2824	
v/s Ratio Prot	c0.05	0.01			0.00		c0.03	0.24			c0.45	
v/s Ratio Perm	c0.08			0.05			0.31			0.07		
v/c Ratio	0.73	0.06		0.56	0.03		0.46	0.33		0.10	0.69	
Uniform Delay, d1	48.6	43.5		56.8	54.2		14.1	6.2		8.4	14.2	
Progression Factor	1.00	1.00		1.00	1.00		3.17	0.34		0.31	0.54	
Incremental Delay, d2	10.0	0.1		6.1	0.1		1.6	0.2		0.6	1.1	
Delay (s)	58.6	43.5		62.9	54.3		46.3	2.3		3.2	8.8	
Level of Service	E	D		E	D		D	A		A	A	
Approach Delay (s)		53.5			58.9			5.1			8.7	
Approach LOS		D			E			A			A	

Intersection Summary				
HCM 2000 Control Delay	12.9	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.70			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	16.6	
Intersection Capacity Utilization	72.7%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	65	0	1095	2020	20
Future Volume (Veh/h)	0	65	0	1095	2020	20
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	65	0	1095	2020	20
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				183	133	
pX, platoon unblocked	0.82	0.73	0.73			
vC, conflicting volume	2395	683	2040			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	451	0	1126			
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	92	100			
cM capacity (veh/h)	443	795	458			

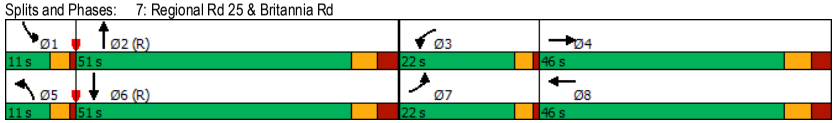
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	65	365	365	365	808	808	424
Volume Left	0	0	0	0	0	0	0
Volume Right	65	0	0	0	0	0	20
cSH	795	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.08	0.21	0.21	0.21	0.48	0.48	0.25
Queue Length 95th (m)	2.1	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	9.9	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	A						
Approach Delay (s)	9.9	0.0			0.0		
Approach LOS	A						

Intersection Summary				
Average Delay	0.2			
Intersection Capacity Utilization	50.2%	ICU Level of Service		A
Analysis Period (min)	15			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	60	415	430	345	50	895	390	1670
Future Volume (vph)	60	415	430	345	50	895	390	1670
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases								
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	7.0	10.0	7.0	10.0	7.0	20.0	7.0	20.0
Minimum Split (s)	11.0	45.5	11.0	45.5	11.0	49.7	11.0	49.7
Total Split (s)	22.0	46.0	22.0	46.0	11.0	51.0	11.0	51.0
Total Split (%)	16.9%	35.4%	16.9%	35.4%	8.5%	39.2%	8.5%	39.2%
Yellow Time (s)	3.0	4.2	3.0	4.2	3.0	4.2	3.0	4.2
All-Red Time (s)	1.0	3.3	1.0	3.3	1.0	3.5	1.0	3.5
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.5	3.0	6.5	3.0	6.7	3.0	6.7
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	9.0	25.2	18.8	37.2	8.7	44.3	22.5	60.3
Actuated g/C Ratio	0.07	0.19	0.14	0.29	0.07	0.34	0.17	0.46
v/c Ratio	0.26	0.76	0.87	0.38	0.22	0.77	0.64	0.85
Control Delay	59.9	46.4	68.6	29.3	59.6	41.0	56.1	48.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.9	46.4	68.6	29.3	59.6	41.0	56.1	48.2
LOS	E	D	E	C	E	D	E	D
Approach Delay		47.5		47.8		41.8		49.7
Approach LOS		D		D		D		D

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 104 (80%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 130			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.87			
Intersection Signal Delay: 47.1		Intersection LOS: D	
Intersection Capacity Utilization 83.0%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 7: Regional Rd 25 & Britannia Rd



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	60	700	430	485	50	1120	390	1695
v/c Ratio	0.26	0.76	0.87	0.38	0.22	0.77	0.64	0.85
Control Delay	59.9	46.4	68.6	29.3	59.6	41.0	56.1	48.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.9	46.4	68.6	29.3	59.6	41.0	56.1	48.2
Queue Length 50th (m)	8.0	62.7	59.0	37.4	6.7	108.3	57.6	155.7
Queue Length 95th (m)	15.3	76.0	#86.3	51.0	13.4	129.5	#84.8	#230.0
Internal Link Dist (m)		377.9		182.4		165.3		159.1
Turn Bay Length (m)	60.0		120.0		90.0		90.0	
Base Capacity (vph)	482	1370	503	1368	225	1464	605	2005
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	0.12	0.51	0.85	0.35	0.22	0.77	0.64	0.85

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	415	285	430	345	140	50	895	225	390	1670	25
Future Volume (vph)	60	415	285	430	345	140	50	895	225	390	1670	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.5		3.0	6.5		3.0	6.7		3.0	6.7	
Lane Util. Factor	0.97	*0.80		0.97	*0.80		0.97	*0.80		0.97	*0.80	
Frt	1.00	0.94		1.00	0.96		1.00	0.97		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3303	4239		3445	4307		3367	4220		3502	4320	
Flt Permitted	0.95	1.00		1.00	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3303	4239		3445	4307		3367	4220		3502	4320	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	60	415	285	430	345	140	50	895	225	390	1670	25
RTOR Reduction (vph)	0	94	0	0	58	0	0	26	0	0	1	0
Lane Group Flow (vph)	60	606	0	430	427	0	50	1094	0	390	1694	0
Heavy Vehicles (%)	6%	1%	1%	7%	1%	2%	4%	5%	4%	0%	5%	27%
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	6.6	25.0		17.8	36.2		6.3	42.5		21.5	57.7	
Effective Green, g (s)	7.6	26.0		18.8	37.2		7.3	43.5		22.5	58.7	
Actuated g/C Ratio	0.06	0.20		0.14	0.29		0.06	0.33		0.17	0.45	
Clearance Time (s)	4.0	7.5		4.0	7.5		4.0	7.7		4.0	7.7	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	193	847		498	1232		189	1412		606	1950	
v/s Ratio Prot	0.02	c0.14		c0.12	0.10		0.01	0.26		c0.11	c0.39	
v/s Ratio Perm												
v/c Ratio	0.31	0.71		0.86	0.35		0.26	0.77		0.64	0.87	
Uniform Delay, d1	58.7	48.5		54.3	36.8		58.8	38.9		50.0	32.2	
Progression Factor	1.00	1.00		0.93	0.93		1.00	1.00		1.01	1.40	
Incremental Delay, d2	0.9	2.9		14.2	0.2		0.8	4.2		1.9	4.5	
Delay (s)	59.6	51.4		64.7	34.3		59.5	43.1		52.6	49.4	
Level of Service	E	D		E	C		E	D		D	D	
Approach Delay (s)		52.1			48.6			43.8			50.0	
Approach LOS		D			D			D			D	

Intersection Summary				
HCM 2000 Control Delay	48.6	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.82			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	19.2	
Intersection Capacity Utilization	83.0%	ICU Level of Service	E	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	165	5	25	85	25	20	0	60	55	0	20
Future Volume (Veh/h)	5	165	5	25	85	25	20	0	60	55	0	20
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	5	165	5	25	85	25	20	0	60	55	0	20
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					78							
pX, platoon unblocked												
vC, conflicting volume	110			170			345	338	168	385	328	98
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	110			170			345	338	168	385	328	98
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			97	100	93	90	100	98
cM capacity (veh/h)	1493			1420			591	575	882	529	582	964

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	175	135	80	75
Volume Left	5	25	20	55
Volume Right	5	25	60	20
cSH	1493	1420	785	602
Volume to Capacity	0.00	0.02	0.10	0.12
Queue Length 95th (m)	0.1	0.4	2.7	3.4
Control Delay (s)	0.2	1.5	10.1	11.8
Lane LOS	A	A	B	B
Approach Delay (s)	0.2	1.5	10.1	11.8
Approach LOS			B	B

Intersection Summary				
Average Delay	4.2			
Intersection Capacity Utilization	36.0%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	20	670	395	90	30
Future Volume (vph)	20	670	395	90	30
Turn Type	pm+pt	NA	NA	Prot	Perm
Protected Phases	5	2	6	8	
Permitted Phases	2				8
Detector Phase	5	2	6	8	8
Switch Phase					
Minimum Initial (s)	7.0	20.0	20.0	10.0	10.0
Minimum Split (s)	11.0	29.4	29.4	15.3	15.3
Total Split (s)	11.0	64.0	53.0	41.0	41.0
Total Split (%)	10.5%	61.0%	50.5%	39.0%	39.0%
Yellow Time (s)	3.0	4.2	4.2	3.3	3.3
All-Red Time (s)	1.0	2.2	2.2	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	5.4	5.4	4.3	4.3
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	None	None
Act Effct Green (s)	88.0	86.7	82.3	12.8	12.8
Actuated g/C Ratio	0.84	0.83	0.78	0.12	0.12
v/c Ratio	0.03	0.18	0.13	0.43	0.14
Control Delay	2.4	2.8	4.4	49.0	15.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	2.4	2.8	4.4	49.0	15.4
LOS	A	A	A	D	B
Approach Delay		2.8	4.4	40.6	
Approach LOS		A	A	D	

Intersection Summary			
Cycle Length: 105			
Actuated Cycle Length: 105			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.43			
Intersection Signal Delay: 7.0		Intersection LOS: A	
Intersection Capacity Utilization 33.1%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 10: Britannia Rd & Farmstead Dr

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	20	670	420	90	30
v/c Ratio	0.03	0.18	0.13	0.43	0.14
Control Delay	2.4	2.8	4.4	49.0	15.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	2.4	2.8	4.4	49.0	15.4
Queue Length 50th (m)	0.6	11.4	6.5	18.4	0.0
Queue Length 95th (m)	2.3	18.8	18.0	33.1	8.5
Internal Link Dist (m)		101.0	377.9	199.3	
Turn Bay Length (m)	20.0				
Base Capacity (vph)	726	3653	3295	595	557
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.03	0.18	0.13	0.15	0.05

Intersection Summary

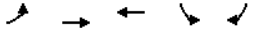
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	20	670	395	25	90	30
Future Volume (vph)	20	670	395	25	90	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.4	5.4		4.3	4.3
Lane Util. Factor	1.00	*0.80	*0.80		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1656	4427	4203		1703	1538
Flt Permitted	0.45	1.00	1.00		0.95	1.00
Satd. Flow (perm)	787	4427	4203		1703	1538
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	20	670	395	25	90	30
RTOR Reduction (vph)	0	0	3	0	0	27
Lane Group Flow (vph)	20	670	417	0	90	3
Heavy Vehicles (%)	9%	3%	8%	0%	6%	5%
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		8	
Permitted Phases	2					8
Actuated Green, G (s)	83.5	83.5	76.7		9.8	9.8
Effective Green, g (s)	84.5	84.5	77.7		10.8	10.8
Actuated g/C Ratio	0.80	0.80	0.74		0.10	0.10
Clearance Time (s)	4.0	6.4	6.4		5.3	5.3
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	664	3562	3110		175	158
v/s Ratio Prot	0.00	c0.15	0.10		c0.05	
v/s Ratio Perm	0.02					0.00
v/c Ratio	0.03	0.19	0.13		0.51	0.02
Uniform Delay, d1	2.1	2.4	3.9		44.6	42.3
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.0	0.1	0.1		2.5	0.0
Delay (s)	2.1	2.5	4.0		47.2	42.4
Level of Service	A	A	A		D	D
Approach Delay (s)		2.5	4.0		46.0	
Approach LOS		A	A		D	

Intersection Summary				
HCM 2000 Control Delay	7.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.23		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	12.7
Intersection Capacity Utilization	33.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	25	1005	840	55	75
Future Volume (vph)	25	1005	840	55	75
Turn Type	pm+pt	NA	NA	Prot	Perm
Protected Phases	5	2	6	4	
Permitted Phases	2				4
Detector Phase	5	2	6	4	4
Switch Phase					
Minimum Initial (s)	7.0	20.0	20.0	10.0	10.0
Minimum Split (s)	11.0	29.0	29.0	43.0	43.0
Total Split (s)	15.0	80.0	65.0	50.0	50.0
Total Split (%)	11.5%	61.5%	50.0%	38.5%	38.5%
Yellow Time (s)	3.0	4.0	4.0	3.0	3.0
All-Red Time (s)	1.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.0	6.0	5.0	5.0
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	None	None
Act Effct Green (s)	110.2	107.2	100.6	11.8	11.8
Actuated g/C Ratio	0.85	0.82	0.77	0.09	0.09
v/c Ratio	0.05	0.27	0.24	0.34	0.35
Control Delay	3.8	5.7	4.7	61.1	16.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	3.8	5.7	4.7	61.1	16.3
LOS	A	A	A	E	B
Approach Delay		5.7	4.7	35.2	
Approach LOS		A	A	D	

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.35			
Intersection Signal Delay: 7.2		Intersection LOS: A	
Intersection Capacity Utilization 38.3%		ICU Level of Service A	
Analysis Period (min) 15			

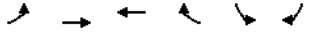
Splits and Phases: 11: Britannia Rd & Rose Way



Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	25	1005	850	55	75
v/c Ratio	0.05	0.27	0.24	0.34	0.35
Control Delay	3.8	5.7	4.7	61.1	16.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	3.8	5.7	4.7	61.1	16.3
Queue Length 50th (m)	1.8	41.5	26.0	14.3	0.0
Queue Length 95th (m)	m3.1	49.0	35.2	27.8	15.3
Internal Link Dist (m)		182.4	155.7	76.0	
Turn Bay Length (m)	50.0			50.0	
Base Capacity (vph)	555	3761	3523	624	608
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.05	0.27	0.24	0.09	0.12

Intersection Summary

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



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	25	1005	840	10	55	75
Future Volume (vph)	25	1005	840	10	55	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0		5.0	5.0
Lane Util. Factor	1.00	*0.80	*0.80		1.00	1.00
Frt	1.00	1.00	1.00		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1805	4560	4552		1805	1615
Flt Permitted	0.27	1.00	1.00		0.95	1.00
Satd. Flow (perm)	515	4560	4552		1805	1615
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	25	1005	840	10	55	75
RTOR Reduction (vph)	0	0	0	0	0	68
Lane Group Flow (vph)	25	1005	850	0	55	7
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)	106.2	106.2	98.0		10.8	10.8
Effective Green, g (s)	107.2	107.2	99.0		11.8	11.8
Actuated g/C Ratio	0.82	0.82	0.76		0.09	0.09
Clearance Time (s)	4.0	7.0	7.0		6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	476	3760	3466		163	146
v/s Ratio Prot	0.00	c0.22	0.19		c0.03	
v/s Ratio Perm	0.04					0.00
v/c Ratio	0.05	0.27	0.25		0.34	0.05
Uniform Delay, d1	2.1	2.6	4.5		55.4	54.0
Progression Factor	2.24	2.13	1.00		1.00	1.00
Incremental Delay, d2	0.0	0.1	0.2		1.2	0.1
Delay (s)	4.8	5.6	4.7		56.7	54.1
Level of Service	A	A	A		E	D
Approach Delay (s)		5.6	4.7		55.2	
Approach LOS		A	A		E	

Intersection Summary				
HCM 2000 Control Delay	8.4	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.28			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	14.0	
Intersection Capacity Utilization	38.3%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	205	375	370	545	220	1000	95	955
Future Volume (vph)	205	375	370	545	220	1000	95	955
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	5.0	10.0	10.0	10.0	5.0	20.0	5.0	20.0
Minimum Split (s)	9.0	30.0	14.0	30.0	9.0	32.2	9.0	32.2
Total Split (s)	22.0	30.0	32.0	40.0	22.0	68.0	10.0	56.0
Total Split (%)	15.7%	21.4%	22.9%	28.6%	15.7%	48.6%	7.1%	40.0%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	4.2	3.0	4.2
All-Red Time (s)	1.0	3.0	0.0	3.0	1.0	3.0	1.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.0	2.0	6.0	3.0	6.2	3.0	6.2
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	43.1	23.4	55.9	32.2	79.1	65.1	67.8	56.8
Actuated g/C Ratio	0.31	0.17	0.40	0.23	0.56	0.46	0.48	0.41
v/c Ratio	0.67	0.84	0.86	0.74	0.74	0.73	0.57	0.65
Control Delay	41.1	66.4	55.3	55.3	38.5	31.4	35.1	36.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.1	66.4	55.3	55.3	38.5	31.4	35.1	36.3
LOS	D	E	E	E	D	C	D	D
Approach Delay		59.0		55.3		32.3		36.2
Approach LOS		E		E		C		D

Intersection Summary

Cycle Length: 140
Actuated Cycle Length: 140
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.86
Intersection Signal Delay: 42.4 — Intersection LOS: D
Intersection Capacity Utilization 87.6% — ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 1: Regional Rd 25 & Louis St Laurent Ave

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	205	500	370	610	220	1450	95	1150
v/c Ratio	0.67	0.84	0.86	0.74	0.74	0.73	0.57	0.65
Control Delay	41.1	66.4	55.3	55.3	38.5	31.4	35.1	36.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.1	66.4	55.3	55.3	38.5	31.4	35.1	36.3
Queue Length 50th (m)	39.3	69.7	80.3	84.4	34.5	137.7	12.9	115.8
Queue Length 95th (m)	58.3	#93.7	117.9	106.9	65.1	160.7	#32.6	140.5
Internal Link Dist (m)		126.1		117.1		481.0		113.5
Turn Bay Length (m)	90.0		35.0		65.0		80.0	
Base Capacity (vph)	333	620	468	868	330	1978	166	1756
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	0.62	0.81	0.79	0.70	0.67	0.73	0.57	0.65

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	205	375	125	370	545	65	220	1000	450	95	955	195
Future Volume (vph)	205	375	125	370	545	65	220	1000	450	95	955	195
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0		2.0	6.0		3.0	6.2		3.0	6.2	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	*0.80		1.00	*0.80	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.98		1.00	0.95		1.00	0.97	
Flt Protected	0.95	1.00		1.00	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1768	3431		1899	3537		1787	4136		1805	4286	
Flt Permitted	0.27	1.00		0.17	1.00		0.11	1.00		0.08	1.00	
Satd. Flow (perm)	496	3431		331	3537		205	4136		155	4286	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	205	375	125	370	545	65	220	1000	450	95	955	195
RTOR Reduction (vph)	0	23	0	0	7	0	0	56	0	0	16	0
Lane Group Flow (vph)	205	477	0	370	603	0	220	1394	0	95	1134	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Heavy Vehicles (%)	2%	1%	0%	0%	0%	2%	1%	6%	1%	0%	4%	0%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	38.1	22.4		50.9	31.2		74.9	64.1		62.6	55.8	
Effective Green, g (s)	40.1	23.4		51.9	32.2		75.9	65.1		64.6	56.8	
Actuated g/C Ratio	0.29	0.17		0.37	0.23		0.54	0.46		0.46	0.41	
Clearance Time (s)	4.0	7.0		3.0	7.0		4.0	7.2		4.0	7.2	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	293	573		419	813		293	1923		163	1738	
v/s Ratio Prot	0.08	c0.14		c0.17	0.17		c0.09	0.34		0.03	0.26	
v/s Ratio Perm	0.12			0.16			c0.32			0.24		
v/c Ratio	0.70	0.83		0.88	0.74		0.75	0.73		0.58	0.65	
Uniform Delay, d1	40.7	56.4		38.1	50.0		25.1	30.2		24.5	33.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	7.1	10.0		19.2	3.7		10.3	2.4		5.2	1.9	
Delay (s)	47.8	66.4		57.3	53.7		35.4	32.6		29.7	35.5	
Level of Service	D	E		E	D		D	C		C	D	
Approach Delay (s)		61.0			55.1			33.0			35.1	
Approach LOS		E			E			C			D	

Intersection Summary				
HCM 2000 Control Delay	42.6	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.81			
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.2	
Intersection Capacity Utilization	87.6%	ICU Level of Service	E	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	105	40	25	40	75	90	1670	60	1195
Future Volume (vph)	105	40	25	40	75	90	1670	60	1195
Turn Type	Perm	NA	Perm	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases		4		8		5	2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	7.0	20.0	7.0	20.0
Minimum Split (s)	37.5	37.5	37.5	37.5	37.5	11.0	35.5	11.0	35.5
Total Split (s)	38.0	38.0	38.0	38.0	38.0	11.0	81.0	11.0	81.0
Total Split (%)	29.2%	29.2%	29.2%	29.2%	29.2%	8.5%	62.3%	8.5%	62.3%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.0	4.2	3.0	4.2
All-Red Time (s)	3.2	3.2	3.2	3.2	3.2	1.0	2.3	1.0	2.3
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	3.0	5.5	3.0	5.5
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	16.6	16.6	16.6	16.6	16.6	102.6	93.3	101.9	91.1
Actuated g/C Ratio	0.13	0.13	0.13	0.13	0.13	0.79	0.72	0.78	0.70
v/c Ratio	0.60	0.32	0.15	0.17	0.29	0.30	0.55	0.27	0.44
Control Delay	67.4	31.8	50.2	50.0	13.0	3.5	6.2	6.2	9.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.4	31.8	50.2	50.0	13.0	3.5	6.2	6.2	9.3
LOS	E	C	D	D	B	A	A	A	A
Approach Delay		52.0		30.2			6.1		9.2
Approach LOS		D		C			A		A

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 40 (31%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.60			
Intersection Signal Delay: 10.7		Intersection LOS: B	
Intersection Capacity Utilization 66.3%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Regional Rd 25 & Whitlock Ave

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	105	80	25	40	75	90	1710	60	1330
v/c Ratio	0.60	0.32	0.15	0.17	0.29	0.30	0.55	0.27	0.44
Control Delay	67.4	31.8	50.2	50.0	13.0	3.5	6.2	6.2	9.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.4	31.8	50.2	50.0	13.0	3.5	6.2	6.2	9.3
Queue Length 50th (m)	27.2	10.6	6.1	9.8	0.0	1.6	56.8	2.6	56.7
Queue Length 95th (m)	45.1	25.0	14.4	20.3	14.0	4.3	69.4	6.9	83.0
Internal Link Dist (m)		62.9		68.1			503.8		481.0
Turn Bay Length (m)	35.0		65.0		65.0	100.0		100.0	
Base Capacity (vph)	341	452	333	475	441	302	3107	221	2992
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	0.31	0.18	0.08	0.08	0.17	0.30	0.55	0.27	0.44

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	40	40	25	40	75	90	1670	40	60	1195	135
Future Volume (vph)	105	40	40	25	40	75	90	1670	40	60	1195	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5		5.5	5.5	5.5	3.0	5.5		3.0	5.5	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	*0.80		1.00	*0.80	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		0.99	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.93		1.00	1.00	0.85	1.00	1.00		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1776	1699		1795	1900	1539	1787	4329		1770	4261	
Flt Permitted	0.73	1.00		0.70	1.00	1.00	0.14	1.00		0.08	1.00	
Satd. Flow (perm)	1367	1699		1332	1900	1539	257	4329		151	4261	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	105	40	40	25	40	75	90	1670	40	60	1195	135
RTOR Reduction (vph)	0	32	0	0	0	65	0	1	0	0	6	0
Lane Group Flow (vph)	105	48	0	25	40	10	90	1709	0	60	1324	0
Confl. Peds. (#/hr)	5		5	5		5			5	5		
Heavy Vehicles (%)	1%	5%	0%	0%	0%	3%	1%	5%	0%	2%	6%	0%
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	15.6	15.6		15.6	15.6	15.6	98.9	91.5		95.9	90.0	
Effective Green, g (s)	16.6	16.6		16.6	16.6	16.6	100.9	92.5		97.9	91.0	
Actuated g/C Ratio	0.13	0.13		0.13	0.13	0.13	0.78	0.71		0.75	0.70	
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	4.0	6.5		4.0	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	174	216		170	242	196	298	3080		199	2982	
v/s Ratio Prot		0.03			0.02		c0.02	c0.39		0.02	0.31	
v/s Ratio Perm	c0.08			0.02		0.01	0.21			0.21		
v/c Ratio	0.60	0.22		0.15	0.17	0.05	0.30	0.55		0.30	0.44	
Uniform Delay, d1	53.6	50.9		50.4	50.5	49.8	4.4	8.9		5.8	8.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00	0.44	0.58		1.00	1.00	
Incremental Delay, d2	5.8	0.5		0.4	0.3	0.1	0.5	0.6		0.9	0.5	
Delay (s)	59.4	51.4		50.8	50.9	49.9	2.4	5.8		6.7	9.0	
Level of Service	E	D		D	D	D	A	A		A	A	
Approach Delay (s)		55.9			50.3			5.6			8.9	
Approach LOS		E			D			A			A	

Intersection Summary					
HCM 2000 Control Delay	11.3	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio	0.55				
Actuated Cycle Length (s)	130.0	Sum of lost time (s)		14.0	
Intersection Capacity Utilization	66.3%	ICU Level of Service		C	
Analysis Period (min)	15				

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	35	0	1800	1210	50
Future Volume (Veh/h)	0	35	0	1800	1210	50
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	35	0	1800	1210	50
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				193		
pX, platoon unblocked	0.81					
vC, conflicting volume	1835	428	1260			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1202	428	1260			
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	94	100			
cM capacity (veh/h)	145	580	559			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	35	600	600	600	484	484	292
Volume Left	0	0	0	0	0	0	0
Volume Right	35	0	0	0	0	0	50
cSH	580	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.06	0.35	0.35	0.35	0.28	0.28	0.17
Queue Length 95th (m)	1.5	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	11.6	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B						
Approach Delay (s)	11.6	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	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	125	0	40	0	195	1635	55	1050
Future Volume (vph)	125	0	40	0	195	1635	55	1050
Turn Type	pm+pt	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases	7	4		8	5	2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	7	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	7.0	10.0	10.0	10.0	7.0	20.0	7.0	20.0
Minimum Split (s)	11.0	36.2	36.2	36.2	11.0	38.4	11.0	38.4
Total Split (s)	12.0	49.0	37.0	37.0	11.0	70.0	11.0	70.0
Total Split (%)	9.2%	37.7%	28.5%	28.5%	8.5%	53.8%	8.5%	53.8%
Yellow Time (s)	3.0	3.3	3.3	3.3	3.0	4.2	3.0	4.2
All-Red Time (s)	1.0	2.9	2.9	2.9	1.0	2.2	1.0	2.2
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	5.2	5.2	5.2	3.0	5.4	3.0	5.4
Lead/Lag	Lead		Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	23.6	21.4	11.8	11.8	100.3	88.9	94.2	83.5
Actuated g/C Ratio	0.18	0.16	0.09	0.09	0.77	0.68	0.72	0.64
v/c Ratio	0.52	0.11	0.32	0.14	0.54	0.57	0.26	0.43
Control Delay	53.8	0.6	62.2	1.0	16.8	7.6	13.8	5.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.8	0.6	62.2	1.0	16.8	7.6	13.8	5.9
LOS	D	A	E	A	B	A	B	A
Approach Delay		39.7		31.6		8.6		6.2
Approach LOS		D		C		A		A

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 103 (79%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.57			
Intersection Signal Delay: 9.8		Intersection LOS: A	
Intersection Capacity Utilization 64.6%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 5: Regional Rd 25 & Etheridge Ave/Collector Road

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	125	45	40	40	195	1700	55	1190
v/c Ratio	0.52	0.11	0.32	0.14	0.54	0.57	0.26	0.43
Control Delay	53.8	0.6	62.2	1.0	16.8	7.6	13.8	5.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.8	0.6	62.2	1.0	16.8	7.6	13.8	5.9
Queue Length 50th (m)	29.6	0.0	10.4	0.0	13.0	57.7	2.4	66.7
Queue Length 95th (m)	48.0	0.0	22.4	0.0	m26.1	m68.3	8.9	79.5
Internal Link Dist (m)		53.9		63.5		106.2		169.0
Turn Bay Length (m)	40.0		40.0		70.0		70.0	
Base Capacity (vph)	241	654	338	518	360	2988	215	2778
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	0.52	0.07	0.12	0.08	0.54	0.57	0.26	0.43

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	125	0	45	40	0	40	195	1635	65	55	1050	140
Future Volume (vph)	125	0	45	40	0	40	195	1635	65	55	1050	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.2		5.2	5.2		3.0	5.4		3.0	5.4	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	*0.80		1.00	*0.80	
Frt	1.00	0.85		1.00	0.85		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1752	1615		1805	1615		1805	4366		1805	4317	
Flt Permitted	0.56	1.00		0.73	1.00		0.15	1.00		0.08	1.00	
Satd. Flow (perm)	1032	1615		1383	1615		293	4366		151	4317	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	125	0	45	40	0	40	195	1635	65	55	1050	140
RTOR Reduction (vph)	0	37	0	0	37	0	0	2	0	0	8	0
Lane Group Flow (vph)	125	8	0	40	3	0	195	1698	0	55	1182	0
Heavy Vehicles (%)	3%	0%	0%	0%	0%	0%	0%	4%	0%	0%	4%	2%
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	21.6	21.6		8.8	8.8		95.8	85.9		87.1	81.2	
Effective Green, g (s)	22.6	22.6		9.8	9.8		96.8	86.9		89.1	82.2	
Actuated g/C Ratio	0.17	0.17		0.08	0.08		0.74	0.67		0.69	0.63	
Clearance Time (s)	4.0	6.2		6.2	6.2		4.0	6.4		4.0	6.4	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	233	280		104	121		353	2918		191	2729	
v/s Ratio Prot	c0.04	0.00			0.00		c0.05	c0.39		0.02	0.27	
v/s Ratio Perm	c0.05			0.03			0.36			0.18		
v/c Ratio	0.54	0.03		0.38	0.02		0.55	0.58		0.29	0.43	
Uniform Delay, d1	47.8	44.6		57.2	55.7		6.8	11.7		8.4	12.1	
Progression Factor	1.00	1.00		1.00	1.00		3.25	0.60		2.35	0.45	
Incremental Delay, d2	2.4	0.0		2.4	0.1		0.9	0.4		0.8	0.5	
Delay (s)	50.2	44.6		59.6	55.8		23.1	7.5		20.4	5.9	
Level of Service	D	D		E	E		C	A		C	A	
Approach Delay (s)		48.7			57.7			9.1			6.5	
Approach LOS		D			E			A			A	

Intersection Summary				
HCM 2000 Control Delay	11.3	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.60			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	16.6	
Intersection Capacity Utilization	64.6%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	40	0	1895	1085	50
Future Volume (Veh/h)	0	40	0	1895	1085	50
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	40	0	1895	1085	50
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				186	130	
pX, platoon unblocked	0.69	0.89	0.89			
vC, conflicting volume	1742	387	1135			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0	706			
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	96	100			
cM capacity (veh/h)	707	968	800			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	40	632	632	632	434	434	267
Volume Left	0	0	0	0	0	0	0
Volume Right	40	0	0	0	0	0	50
cSH	968	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.04	0.37	0.37	0.37	0.26	0.26	0.16
Queue Length 95th (m)	1.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	8.9	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	A						
Approach Delay (s)	8.9	0.0			0.0		
Approach LOS	A						

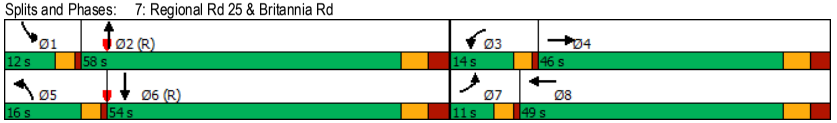
Intersection Summary			
Average Delay		0.1	
Intersection Capacity Utilization		39.9%	ICU Level of Service A
Analysis Period (min)		15	

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	50	320	300	500	250	1465	185	890
Future Volume (vph)	50	320	300	500	250	1465	185	890
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases								
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	7.0	10.0	7.0	10.0	7.0	20.0	7.0	20.0
Minimum Split (s)	11.0	45.5	11.0	45.5	11.0	49.7	11.0	49.7
Total Split (s)	11.0	46.0	14.0	49.0	16.0	58.0	12.0	54.0
Total Split (%)	8.5%	35.4%	10.8%	37.7%	12.3%	44.6%	9.2%	41.5%
Yellow Time (s)	3.0	4.2	3.0	4.2	3.0	4.2	3.0	4.2
All-Red Time (s)	1.0	3.3	1.0	3.3	1.0	3.5	1.0	3.5
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.5	3.0	6.5	3.0	6.7	3.0	6.7
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	8.0	26.1	11.0	31.3	15.3	60.7	13.0	58.4
Actuated g/C Ratio	0.06	0.20	0.08	0.24	0.12	0.47	0.10	0.45
v/c Ratio	0.25	0.40	0.98	0.89dr	0.61	0.95	0.53	0.48
Control Delay	61.4	43.4	123.0	37.6	60.7	44.4	74.7	18.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.4	43.4	123.0	37.6	60.7	44.4	74.7	18.3
LOS	E	D	F	D	E	D	E	B
Approach Delay		45.6		59.3		46.3		27.6
Approach LOS		D		E		D		C

Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 104 (80%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 140
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.98
Intersection Signal Delay: 45.1 Intersection LOS: D
Intersection Capacity Utilization 86.2% ICU Level of Service E
Analysis Period (min) 15

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Splits and Phases: 7: Regional Rd 25 & Britannia Rd



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	50	360	300	880	250	1930	185	940
v/c Ratio	0.25	0.40	0.98	0.89dr	0.61	0.95	0.53	0.48
Control Delay	61.4	43.4	123.0	37.6	60.7	44.4	74.7	18.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.4	43.4	123.0	37.6	60.7	44.4	74.7	18.3
Queue Length 50th (m)	6.7	33.5	44.6	47.0	33.4	205.0	26.4	38.1
Queue Length 95th (m)	13.7	42.4	#75.1	50.0	46.8	#280.5	40.3	44.6
Internal Link Dist (m)		377.9		190.1		165.3		161.9
Turn Bay Length (m)	60.0		120.0		90.0		90.0	
Base Capacity (vph)	203	1371	305	1484	419	2032	346	1962
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	0.25	0.26	0.98	0.59	0.60	0.95	0.53	0.48

Intersection Summary

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

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	320	40	300	500	380	250	1465	465	185	890	50
Future Volume (vph)	50	320	40	300	500	380	250	1465	465	185	890	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.5		3.0	6.5		3.0	6.7		3.0	6.7	
Lane Util. Factor	0.97	*0.80		0.97	*0.80		0.97	*0.80		0.97	*0.80	
Frt	1.00	0.98		1.00	0.94		1.00	0.96		1.00	0.99	
Flt Protected	0.95	1.00		1.00	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3303	4484		3614	4222		3502	4277		3467	4359	
Flt Permitted	0.95	1.00		1.00	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3303	4484		3614	4222		3502	4277		3467	4359	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	50	320	40	300	500	380	250	1465	465	185	890	50
RTOR Reduction (vph)	0	11	0	0	118	0	0	34	0	0	3	0
Lane Group Flow (vph)	50	349	0	300	762	0	250	1896	0	185	937	0
Heavy Vehicles (%)	6%	0%	0%	2%	1%	1%	0%	3%	2%	1%	4%	0%
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	5.6	25.9		10.0	30.3		14.3	58.9		12.0	56.6	
Effective Green, g (s)	6.6	26.9		11.0	31.3		15.3	59.9		13.0	57.6	
Actuated g/C Ratio	0.05	0.21		0.08	0.24		0.12	0.46		0.10	0.44	
Clearance Time (s)	4.0	7.5		4.0	7.5		4.0	7.7		4.0	7.7	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	167	927		305	1016		412	1970		346	1931	
v/s Ratio Prot	0.02	0.08		c0.08	c0.18		c0.07	c0.44		0.05	0.21	
v/s Ratio Perm												
v/c Ratio	0.30	0.38		0.98	0.89dr		0.61	0.96		0.53	0.49	
Uniform Delay, d1	59.5	44.3		59.4	45.7		54.5	34.0		55.6	25.7	
Progression Factor	1.00	1.00		1.33	0.87		1.00	1.00		1.25	0.65	
Incremental Delay, d2	1.0	0.3		45.8	3.0		2.5	13.2		1.5	0.8	
Delay (s)	60.5	44.6		124.7	42.9		57.0	47.1		70.9	17.6	
Level of Service	E	D		F	D		E	D		E	B	
Approach Delay (s)		46.5			63.7			48.3			26.4	
Approach LOS		D			E			D			C	

Intersection Summary				
HCM 2000 Control Delay	46.8	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.89			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	19.2	
Intersection Capacity Utilization	86.2%	ICU Level of Service	E	
Analysis Period (min)	15			

dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	100	10	85	175	75	15	0	35	35	0	10
Future Volume (Veh/h)	10	100	10	85	175	75	15	0	35	35	0	10
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	10	100	10	85	175	75	15	0	35	35	0	10
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					78							
pX, platoon unblocked	0.96						0.96	0.96		0.96	0.96	0.96
vC, conflicting volume	250			110			518	545	105	542	512	212
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	202			110			480	508	105	506	475	163
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			94			97	100	96	92	100	99
cM capacity (veh/h)	1331			1493			452	424	955	424	443	854

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	120	335	50	45
Volume Left	10	85	15	35
Volume Right	10	75	35	10
cSH	1331	1493	716	477
Volume to Capacity	0.01	0.06	0.07	0.09
Queue Length 95th (m)	0.2	1.4	1.8	2.5
Control Delay (s)	0.7	2.3	10.4	13.3
Lane LOS	A	A	B	B
Approach Delay (s)	0.7	2.3	10.4	13.3
Approach LOS			B	B

Intersection Summary					
Average Delay			3.6		
Intersection Capacity Utilization			37.6%	ICU Level of Service	A
Analysis Period (min)			15		

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	25	355	720	55	20
Future Volume (vph)	25	355	720	55	20
Turn Type	pm+pt	NA	NA	Prot	Perm
Protected Phases	5	2	6	8	
Permitted Phases	2				8
Detector Phase	5	2	6	8	8
Switch Phase					
Minimum Initial (s)	7.0	20.0	20.0	10.0	10.0
Minimum Split (s)	11.0	29.4	29.4	15.3	15.3
Total Split (s)	11.0	64.0	53.0	41.0	41.0
Total Split (%)	10.5%	61.0%	50.5%	39.0%	39.0%
Yellow Time (s)	3.0	4.2	4.2	3.3	3.3
All-Red Time (s)	1.0	2.2	2.2	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	5.4	5.4	4.3	4.3
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	None	None
Act Effct Green (s)	89.3	88.0	83.6	11.4	11.4
Actuated g/C Ratio	0.85	0.84	0.80	0.11	0.11
v/c Ratio	0.04	0.09	0.23	0.29	0.10
Control Delay	2.0	2.1	4.1	47.2	18.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	2.0	2.1	4.1	47.2	18.6
LOS	A	A	A	D	B
Approach Delay		2.1	4.1	39.6	
Approach LOS		A	A	D	

Intersection Summary			
Cycle Length: 105			
Actuated Cycle Length: 105			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.29			
Intersection Signal Delay: 5.6		Intersection LOS: A	
Intersection Capacity Utilization 37.2%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 10: Britannia Rd & Farmstead Dr

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	25	355	800	55	20
v/c Ratio	0.04	0.09	0.23	0.29	0.10
Control Delay	2.0	2.1	4.1	47.2	18.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	2.0	2.1	4.1	47.2	18.6
Queue Length 50th (m)	0.7	5.2	12.8	11.1	0.0
Queue Length 95th (m)	2.2	8.3	30.9	23.1	7.2
Internal Link Dist (m)		101.0	377.9	199.3	
Turn Bay Length (m)	20.0				
Base Capacity (vph)	561	3822	3549	606	577
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.04	0.09	0.23	0.09	0.03

Intersection Summary

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	25	355	720	80	55	20
Future Volume (vph)	25	355	720	80	55	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.4	5.4		4.3	4.3
Lane Util. Factor	1.00	*0.80	*0.80		1.00	1.00
Frt	1.00	1.00	0.98		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1805	4560	4452		1736	1615
Flt Permitted	0.29	1.00	1.00		0.95	1.00
Satd. Flow (perm)	548	4560	4452		1736	1615
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	25	355	720	80	55	20
RTOR Reduction (vph)	0	0	5	0	0	18
Lane Group Flow (vph)	25	355	795	0	55	2
Heavy Vehicles (%)	0%	0%	1%	0%	4%	0%
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		8	
Permitted Phases	2					8
Actuated Green, G (s)	84.9	84.9	78.1		8.4	8.4
Effective Green, g (s)	85.9	85.9	79.1		9.4	9.4
Actuated g/C Ratio	0.82	0.82	0.75		0.09	0.09
Clearance Time (s)	4.0	6.4	6.4		5.3	5.3
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	493	3730	3353		155	144
v/s Ratio Prot	0.00	c0.08	c0.18		c0.03	
v/s Ratio Perm	0.04					0.00
v/c Ratio	0.05	0.10	0.24		0.35	0.01
Uniform Delay, d1	1.8	1.9	3.9		44.9	43.6
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.0	0.1	0.2		1.4	0.0
Delay (s)	1.9	1.9	4.1		46.3	43.6
Level of Service	A	A	A		D	D
Approach Delay (s)		1.9	4.1		45.6	
Approach LOS		A	A		D	

Intersection Summary				
HCM 2000 Control Delay	5.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.24		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	12.7
Intersection Capacity Utilization	37.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	80	890	1130	30	50
Future Volume (vph)	80	890	1130	30	50
Turn Type	pm+pt	NA	NA	Prot	Perm
Protected Phases	5	2	6	4	
Permitted Phases	2				4
Detector Phase	5	2	6	4	4
Switch Phase					
Minimum Initial (s)	7.0	20.0	20.0	10.0	10.0
Minimum Split (s)	11.0	29.0	29.0	43.0	43.0
Total Split (s)	15.0	80.0	65.0	50.0	50.0
Total Split (%)	11.5%	61.5%	50.0%	38.5%	38.5%
Yellow Time (s)	3.0	4.0	4.0	3.0	3.0
All-Red Time (s)	1.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.0	6.0	5.0	5.0
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	None	None
Act Effct Green (s)	114.2	112.4	103.5	11.0	11.0
Actuated g/C Ratio	0.88	0.86	0.80	0.08	0.08
v/c Ratio	0.21	0.23	0.33	0.20	0.27
Control Delay	2.8	2.5	5.1	58.7	18.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	2.8	2.5	5.1	58.7	18.8
LOS	A	A	A	E	B
Approach Delay		2.5	5.1	33.8	
Approach LOS		A	A	C	

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 65 (50%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.33			
Intersection Signal Delay: 5.0		Intersection LOS: A	
Intersection Capacity Utilization 49.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 11: Britannia Rd & Rose Way

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	80	890	1190	30	50
v/c Ratio	0.21	0.23	0.33	0.20	0.27
Control Delay	2.8	2.5	5.1	58.7	18.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	2.8	2.5	5.1	58.7	18.8
Queue Length 50th (m)	2.6	17.9	40.1	7.7	0.0
Queue Length 95th (m)	m4.3	m23.9	47.8	18.0	13.0
Internal Link Dist (m)		190.1	148.0	92.6	
Turn Bay Length (m)	50.0			50.0	
Base Capacity (vph)	426	3941	3604	624	591
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.19	0.23	0.33	0.05	0.08

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

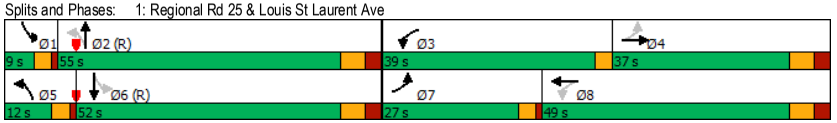
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	80	890	1130	60	30	50
Future Volume (vph)	80	890	1130	60	30	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0		5.0	5.0
Lane Util. Factor	1.00	*0.80	*0.80		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1805	4560	4526		1805	1615
Flt Permitted	0.17	1.00	1.00		0.95	1.00
Satd. Flow (perm)	331	4560	4526		1805	1615
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	80	890	1130	60	30	50
RTOR Reduction (vph)	0	0	2	0	0	47
Lane Group Flow (vph)	80	890	1188	0	30	3
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)	109.0	109.0	99.4		8.0	8.0
Effective Green, g (s)	110.0	110.0	100.4		9.0	9.0
Actuated g/C Ratio	0.85	0.85	0.77		0.07	0.07
Clearance Time (s)	4.0	7.0	7.0		6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	354	3858	3495		124	111
v/s Ratio Prot	0.01	c0.20	c0.26		c0.02	
v/s Ratio Perm	0.18					0.00
v/c Ratio	0.23	0.23	0.34		0.24	0.03
Uniform Delay, d1	1.9	1.9	4.6		57.3	56.4
Progression Factor	1.33	1.20	1.00		1.00	1.00
Incremental Delay, d2	0.2	0.1	0.3		1.0	0.1
Delay (s)	2.8	2.4	4.8		58.3	56.5
Level of Service	A	A	A		E	E
Approach Delay (s)		2.4	4.8		57.2	
Approach LOS		A	A		E	

Intersection Summary				
HCM 2000 Control Delay	5.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	49.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	270	535	495	560	115	1145	65	1285
Future Volume (vph)	270	535	495	560	115	1145	65	1285
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	5.0	10.0	10.0	10.0	5.0	20.0	5.0	20.0
Minimum Split (s)	9.0	30.0	14.0	30.0	9.0	32.2	9.0	32.2
Total Split (s)	27.0	37.0	39.0	49.0	12.0	55.0	9.0	52.0
Total Split (%)	19.3%	26.4%	27.9%	35.0%	8.6%	39.3%	6.4%	37.1%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	4.2	3.0	4.2
All-Red Time (s)	1.0	3.0	0.0	3.0	1.0	3.0	1.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.0	2.0	6.0	3.0	6.2	3.0	6.2
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	52.7	31.0	72.4	46.6	62.6	52.2	56.9	47.5
Actuated g/C Ratio	0.38	0.22	0.52	0.33	0.45	0.37	0.41	0.34
v/c Ratio	0.65	0.94	0.93	0.57	0.71	0.94	0.50	0.96
Control Delay	29.5	70.9	64.4	40.1	49.3	53.7	36.6	60.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.5	70.9	64.4	40.1	49.3	53.7	36.6	60.9
LOS	C	E	E	D	D	D	D	E
Approach Delay		59.7		50.6		53.4		59.8
Approach LOS		E		D		D		E

Intersection Summary
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.96
Intersection Signal Delay: 55.8 — Intersection LOS: E
Intersection Capacity Utilization 99.0% — ICU Level of Service F
Analysis Period (min) 15

Splits and Phases: 1: Regional Rd 25 & Louis St Laurent Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	270	730	495	655	115	1480	65	1380
v/c Ratio	0.65	0.94	0.93	0.57	0.71	0.94	0.50	0.96
Control Delay	29.5	70.9	64.4	40.1	49.3	53.7	36.6	60.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.5	70.9	64.4	40.1	49.3	53.7	36.6	60.9
Queue Length 50th (m)	43.2	106.4	120.2	79.1	20.0	~175.9	11.0	166.2
Queue Length 95th (m)	62.6	#145.4	#185.9	105.6	#46.0	#218.7	20.8	#207.8
Internal Link Dist (m)		126.1		117.1		481.0		113.5
Turn Bay Length (m)	90.0		35.0		65.0		80.0	
Base Capacity (vph)	481	786	548	1150	164	1577	130	1440
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	0.56	0.93	0.90	0.57	0.70	0.94	0.50	0.96

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	270	535	195	495	560	95	115	1145	335	65	1285	95
Future Volume (vph)	270	535	195	495	560	95	115	1145	335	65	1285	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0		2.0	6.0		3.0	6.2		3.0	6.2	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	*0.80		1.00	*0.80	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.98		1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00		1.00	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1767	3406		1863	3427		1703	4152		1719	4231	
Flt Permitted	0.40	1.00		0.12	1.00		0.08	1.00		0.08	1.00	
Satd. Flow (perm)	737	3406		226	3427		142	4152		153	4231	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	270	535	195	495	560	95	115	1145	335	65	1285	95
RTOR Reduction (vph)	0	26	0	0	9	0	0	30	0	0	5	0
Lane Group Flow (vph)	270	704	0	495	646	0	115	1450	0	65	1375	0
Confl. Peds. (#/hr)	5					5						
Heavy Vehicles (%)	2%	2%	1%	2%	2%	7%	6%	7%	3%	5%	7%	2%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	47.8	30.0		67.4	45.6		58.4	50.4		50.4	46.4	
Effective Green, g (s)	49.8	31.0		68.4	46.6		59.4	51.4		52.4	47.4	
Actuated g/C Ratio	0.36	0.22		0.49	0.33		0.42	0.37		0.37	0.34	
Clearance Time (s)	4.0	7.0		3.0	7.0		4.0	7.2		4.0	7.2	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	400	754		524	1140		160	1524		113	1432	
v/s Ratio Prot	0.09	c0.21		c0.24	0.19		c0.05	c0.35		0.02	0.32	
v/s Ratio Perm	0.15			0.22			0.26			0.19		
v/c Ratio	0.68	0.93		0.94	0.57		0.72	0.95		0.58	0.96	
Uniform Delay, d1	34.3	53.5		41.3	38.4		31.8	43.1		33.6	45.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.5	18.4		26.0	0.6		14.3	14.1		6.9	16.0	
Delay (s)	38.8	71.8		67.3	39.0		46.1	57.2		40.5	61.3	
Level of Service	D	E		E	D		D	E		D	E	
Approach Delay (s)		62.9			51.2			56.4			60.4	
Approach LOS		E			D			E			E	

Intersection Summary				
HCM 2000 Control Delay	57.6	HCM 2000 Level of Service	E	
HCM 2000 Volume to Capacity ratio	0.95			
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.2	
Intersection Capacity Utilization	99.0%	ICU Level of Service	F	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	145	50	50	35	95	45	1380	50	2125
Future Volume (vph)	145	50	50	35	95	45	1380	50	2125
Turn Type	Perm	NA	Perm	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases		4		8		5	2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	7.0	20.0	7.0	20.0
Minimum Split (s)	37.5	37.5	37.5	37.5	37.5	11.0	35.5	11.0	35.5
Total Split (s)	38.0	38.0	38.0	38.0	38.0	11.0	81.0	11.0	81.0
Total Split (%)	29.2%	29.2%	29.2%	29.2%	29.2%	8.5%	62.3%	8.5%	62.3%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.0	4.2	3.0	4.2
All-Red Time (s)	3.2	3.2	3.2	3.2	3.2	1.0	2.3	1.0	2.3
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	3.0	5.5	3.0	5.5
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	20.4	20.4	20.4	20.4	20.4	98.7	89.7	98.7	89.6
Actuated g/C Ratio	0.16	0.16	0.16	0.16	0.16	0.76	0.69	0.76	0.69
v/c Ratio	0.69	0.49	0.33	0.13	0.31	0.28	0.47	0.18	0.75
Control Delay	68.1	30.2	52.5	45.3	10.9	21.8	6.9	5.7	16.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.1	30.2	52.5	45.3	10.9	21.8	6.9	5.7	16.7
LOS	E	C	D	D	B	C	A	A	B
Approach Delay		49.2		29.2			7.4		16.4
Approach LOS		D		C			A		B

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 64 (49%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 105			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 16.1		Intersection LOS: B	
Intersection Capacity Utilization 76.8%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 2: Regional Rd 25 & Whitlock Ave

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	145	145	50	35	95	45	1390	50	2225
v/c Ratio	0.69	0.49	0.33	0.13	0.31	0.28	0.47	0.18	0.75
Control Delay	68.1	30.2	52.5	45.3	10.9	21.8	6.9	5.7	16.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.1	30.2	52.5	45.3	10.9	21.8	6.9	5.7	16.7
Queue Length 50th (m)	37.5	18.2	12.1	8.2	0.0	2.2	27.3	2.6	154.5
Queue Length 95th (m)	57.3	37.4	23.8	17.1	14.7	m7.8	154.9	7.2	218.5
Internal Link Dist (m)		62.9		68.1			497.5		481.0
Turn Bay Length (m)	35.0		65.0		65.0	100.0		100.0	
Base Capacity (vph)	333	431	241	439	435	159	2960	278	2973
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	0.44	0.34	0.21	0.08	0.22	0.28	0.47	0.18	0.75

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	145	50	95	50	35	95	45	1380	10	50	2125	100
Future Volume (vph)	145	50	95	50	35	95	45	1380	10	50	2125	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5		5.5	5.5	5.5	3.0	5.5		3.0	5.5	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	*0.80		1.00	*0.80	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.90		1.00	1.00	0.85	1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1725	1516		1727	1759	1455	1671	4292		1805	4310	
Flt Permitted	0.73	1.00		0.53	1.00	1.00	0.04	1.00		0.13	1.00	
Satd. Flow (perm)	1333	1516		965	1759	1455	79	4292		238	4310	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	145	50	95	50	35	95	45	1380	10	50	2125	100
RTOR Reduction (vph)	0	59	0	0	0	80	0	0	0	0	3	0
Lane Group Flow (vph)	145	86	0	50	35	15	45	1390	0	50	2222	0
Confl. Peds. (#/hr)	5		5	5		5						
Heavy Vehicles (%)	4%	32%	1%	4%	8%	9%	8%	6%	25%	0%	5%	7%
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	19.4	19.4		19.4	19.4	19.4	93.6	87.9		93.6	87.9	
Effective Green, g (s)	20.4	20.4		20.4	20.4	20.4	95.6	88.9		95.6	88.9	
Actuated g/C Ratio	0.16	0.16		0.16	0.16	0.16	0.74	0.68		0.74	0.68	
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	4.0	6.5		4.0	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	209	237		151	276	228	140	2935		255	2947	
v/s Ratio Prot		0.06			0.02		c0.02	0.32		0.01	c0.52	
v/s Ratio Perm	c0.11			0.05		0.01	0.22			0.13		
v/c Ratio	0.69	0.36		0.33	0.13	0.07	0.32	0.47		0.20	0.75	
Uniform Delay, d1	51.8	49.0		48.7	47.1	46.7	13.0	9.6		5.6	13.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00	2.23	0.61		1.00	1.00	
Incremental Delay, d2	9.6	0.9		1.3	0.2	0.1	1.2	0.5		0.4	1.8	
Delay (s)	61.4	49.9		50.0	47.3	46.8	30.1	6.4		6.0	15.3	
Level of Service	E	D		D	D	D	C	A		A	B	
Approach Delay (s)		55.7			47.8			7.1			15.1	
Approach LOS		E			D			A			B	

Intersection Summary				
HCM 2000 Control Delay	16.6	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.72			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	14.0	
Intersection Capacity Utilization	76.8%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	60	0	1435	2255	15
Future Volume (Veh/h)	0	60	0	1435	2255	15
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	60	0	1435	2255	15
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				199		
pX, platoon unblocked	0.92					
vC, conflicting volume	2741	759	2270			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2586	759	2270			
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	83	100			
cM capacity (veh/h)	20	353	228			

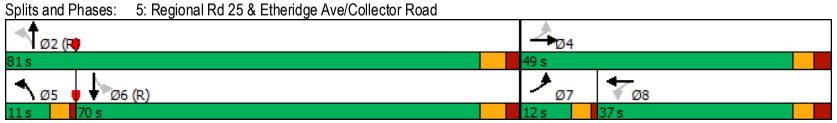
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	60	478	478	478	902	902	466
Volume Left	0	0	0	0	0	0	0
Volume Right	60	0	0	0	0	0	15
cSH	353	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.17	0.28	0.28	0.28	0.53	0.53	0.27
Queue Length 95th (m)	4.8	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	17.3	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	C						
Approach Delay (s)	17.3	0.0			0.0		
Approach LOS	C						

Intersection Summary				
Average Delay	0.3			
Intersection Capacity Utilization	54.3%	ICU Level of Service		A
Analysis Period (min)	15			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	185	0	65	0	70	1195	30	2220
Future Volume (vph)	185	0	65	0	70	1195	30	2220
Turn Type	pm+pt	NA	Perm	NA	pm+pt	NA	Perm	NA
Protected Phases	7	4		8	5	2		6
Permitted Phases	4		8		2		6	
Detector Phase	7	4	8	8	5	2	6	6
Switch Phase								
Minimum Initial (s)	7.0	10.0	10.0	10.0	7.0	20.0	20.0	20.0
Minimum Split (s)	11.0	36.2	36.2	36.2	11.0	38.4	38.4	38.4
Total Split (s)	12.0	49.0	37.0	37.0	11.0	81.0	70.0	70.0
Total Split (%)	9.2%	37.7%	28.5%	28.5%	8.5%	62.3%	53.8%	53.8%
Yellow Time (s)	3.0	3.3	3.3	3.3	3.0	4.2	4.2	4.2
All-Red Time (s)	1.0	2.9	2.9	2.9	1.0	2.2	2.2	2.2
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	5.2	5.2	5.2	3.0	5.4	5.4	5.4
Lead/Lag	Lead		Lag	Lag	Lead		Lag	Lag
Lead-Lag Optimize?	Yes		Yes	Yes	Yes		Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max
Act Effct Green (s)	25.3	23.1	13.5	13.5	98.7	96.3	86.9	86.9
Actuated g/C Ratio	0.19	0.18	0.10	0.10	0.76	0.74	0.67	0.67
v/c Ratio	0.70	0.25	0.47	0.21	0.41	0.38	0.13	0.79
Control Delay	61.1	6.9	65.8	2.0	42.9	2.3	3.7	10.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.1	6.9	65.8	2.0	42.9	2.3	3.7	10.4
LOS	E	A	E	A	D	A	A	B
Approach Delay		42.7		36.6		4.5		10.3
Approach LOS		D		D		A		B

Intersection Summary		
Cycle Length: 130		
Actuated Cycle Length: 130		
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green		
Natural Cycle: 130		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.79		
Intersection Signal Delay: 11.5	Intersection LOS: B	
Intersection Capacity Utilization 79.3%	ICU Level of Service D	
Analysis Period (min) 15		

Splits and Phases: 5: Regional Rd 25 & Etheridge Ave/Collector Road



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	185	95	65	55	70	1215	30	2285
v/c Ratio	0.70	0.25	0.47	0.21	0.41	0.38	0.13	0.79
Control Delay	61.1	6.9	65.8	2.0	42.9	2.3	3.7	10.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.1	6.9	65.8	2.0	42.9	2.3	3.7	10.4
Queue Length 50th (m)	44.5	0.0	16.9	0.0	7.9	11.1	0.8	202.2
Queue Length 95th (m)	65.7	11.0	31.7	0.7	m11.8	m15.6	m1.1	181.9
Internal Link Dist (m)		53.9		63.1		108.9		175.3
Turn Bay Length (m)	40.0		40.0		70.0		70.0	
Base Capacity (vph)	263	617	322	473	172	3182	233	2892
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	0.70	0.15	0.20	0.12	0.41	0.38	0.13	0.79

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	185	0	95	65	0	55	70	1195	20	30	2220	65
Future Volume (vph)	185	0	95	65	0	55	70	1195	20	30	2220	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.2		5.2	5.2		3.0	5.4		5.4	5.4	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	*0.80		1.00	*0.80	
Frt	1.00	0.85		1.00	0.85		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1787	1615		1805	1615		1752	4295		1805	4323	
Flt Permitted	0.57	1.00		0.70	1.00		0.05	1.00		0.18	1.00	
Satd. Flow (perm)	1076	1615		1321	1615		84	4295		349	4323	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	185	0	95	65	0	55	70	1195	20	30	2220	65
RTOR Reduction (vph)	0	77	0	0	50	0	0	1	0	0	1	0
Lane Group Flow (vph)	185	18	0	65	5	0	70	1214	0	30	2284	0
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	3%	6%	0%	0%	5%	6%
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases	7	4			8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	23.3	23.3		10.5	10.5		94.1	94.1		84.0	84.0	
Effective Green, g (s)	24.3	24.3		11.5	11.5		95.1	95.1		85.0	85.0	
Actuated g/C Ratio	0.19	0.19		0.09	0.09		0.73	0.73		0.65	0.65	
Clearance Time (s)	4.0	6.2		6.2	6.2		4.0	6.4		6.4	6.4	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	254	301		116	142		152	3141		228	2826	
v/s Ratio Prot	c0.05	0.01			0.00		c0.03	0.28			c0.53	
v/s Ratio Perm	c0.08			0.05			0.31			0.09		
v/c Ratio	0.73	0.06		0.56	0.03		0.46	0.39		0.13	0.81	
Uniform Delay, d1	48.6	43.5		56.8	54.2		19.2	6.5		8.5	16.5	
Progression Factor	1.00	1.00		1.00	1.00		3.01	0.30		0.26	0.48	
Incremental Delay, d2	10.0	0.1		6.1	0.1		1.3	0.2		0.8	1.8	
Delay (s)	58.6	43.5		62.9	54.3		59.2	2.2		3.0	9.8	
Level of Service	E	D		E	D		E	A		A	A	
Approach Delay (s)		53.5			58.9			5.3			9.7	
Approach LOS		D			E			A			A	

Intersection Summary				
HCM 2000 Control Delay	12.9	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.79			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	16.6	
Intersection Capacity Utilization	79.3%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	65	0	1285	2360	20
Future Volume (Veh/h)	0	65	0	1285	2360	20
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	65	0	1285	2360	20
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				183	133	
pX, platoon unblocked	0.74	0.62	0.62			
vC, conflicting volume	2798	797	2380			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0	1077			
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	90	100			
cM capacity (veh/h)	763	676	406			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	65	428	428	428	944	944	492
Volume Left	0	0	0	0	0	0	0
Volume Right	65	0	0	0	0	0	20
cSH	676	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.10	0.25	0.25	0.25	0.56	0.56	0.29
Queue Length 95th (m)	2.5	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	10.9	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B						
Approach Delay (s)	10.9	0.0			0.0		
Approach LOS	B						

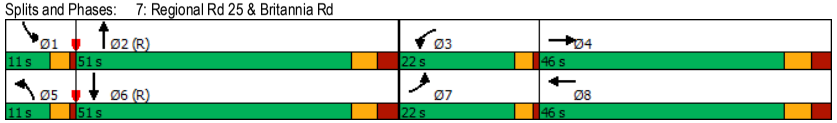
Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	56.7%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	65	455	465	380	55	1070	420	1980
Future Volume (vph)	65	455	465	380	55	1070	420	1980
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases								
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	7.0	10.0	7.0	10.0	7.0	20.0	7.0	20.0
Minimum Split (s)	11.0	45.5	11.0	45.5	11.0	49.7	11.0	49.7
Total Split (s)	22.0	46.0	22.0	46.0	11.0	51.0	11.0	51.0
Total Split (%)	16.9%	35.4%	16.9%	35.4%	8.5%	39.2%	8.5%	39.2%
Yellow Time (s)	3.0	4.2	3.0	4.2	3.0	4.2	3.0	4.2
All-Red Time (s)	1.0	3.3	1.0	3.3	1.0	3.5	1.0	3.5
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.5	3.0	6.5	3.0	6.7	3.0	6.7
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	9.2	27.8	19.0	39.8	8.8	44.3	19.7	57.3
Actuated g/C Ratio	0.07	0.21	0.15	0.31	0.07	0.34	0.15	0.44
v/c Ratio	0.28	0.87dr	0.92	0.39	0.24	0.90	0.79	1.05
Control Delay	60.0	45.9	75.9	29.5	59.7	49.0	60.5	78.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.0	45.9	75.9	29.5	59.7	49.0	60.5	78.1
LOS	E	D	E	C	E	D	E	E
Approach Delay		47.0		51.2		49.5		75.0
Approach LOS		D		D		D		E

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 104 (80%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.05
Intersection Signal Delay: 60.4 — Intersection LOS: E
Intersection Capacity Utilization 91.4% — ICU Level of Service F
Analysis Period (min) 15
dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Splits and Phases: 7: Regional Rd 25 & Britannia Rd



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	65	770	465	530	55	1315	420	2005
v/c Ratio	0.28	0.87dr	0.92	0.39	0.24	0.90	0.79	1.05
Control Delay	60.0	45.9	75.9	29.5	59.7	49.0	60.5	78.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.0	45.9	75.9	29.5	59.7	49.0	60.5	78.1
Queue Length 50th (m)	8.7	70.3	64.6	42.3	7.4	136.9	62.1	~247.9
Queue Length 95th (m)	16.3	83.0	#97.3	55.8	14.3	#162.0 m	#105.0	#317.4
Internal Link Dist (m)		377.9		182.4		165.3		159.1
Turn Bay Length (m)	60.0		120.0		90.0		90.0	
Base Capacity (vph)	482	1368	503	1407	229	1463	530	1907
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	0.13	0.56	0.92	0.38	0.24	0.90	0.79	1.05

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.
dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	455	315	465	380	150	55	1070	245	420	1980	25
Future Volume (vph)	65	455	315	465	380	150	55	1070	245	420	1980	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.5		3.0	6.5		3.0	6.7		3.0	6.7	
Lane Util. Factor	0.97	*0.80		0.97	*0.80		0.97	*0.80		0.97	*0.80	
Frt	1.00	0.94		1.00	0.96		1.00	0.97		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3303	4238		3445	4311		3367	4229		3502	4323	
Flt Permitted	0.95	1.00		1.00	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3303	4238		3445	4311		3367	4229		3502	4323	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	65	455	315	465	380	150	55	1070	245	420	1980	25
RTOR Reduction (vph)	0	90	0	0	55	0	0	23	0	0	1	0
Lane Group Flow (vph)	65	680	0	465	475	0	55	1292	0	420	2004	0
Heavy Vehicles (%)	6%	1%	1%	7%	1%	2%	4%	5%	4%	0%	5%	27%
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	6.8	27.6		18.0	38.8		6.4	42.5		18.7	54.8	
Effective Green, g (s)	7.8	28.6		19.0	39.8		7.4	43.5		19.7	55.8	
Actuated g/C Ratio	0.06	0.22		0.15	0.31		0.06	0.33		0.15	0.43	
Clearance Time (s)	4.0	7.5		4.0	7.5		4.0	7.7		4.0	7.7	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	198	932		503	1319		191	1415		530	1855	
v/s Ratio Prot	0.02	c0.16		c0.13	0.11		0.02	0.31		c0.12	c0.46	
v/s Ratio Perm												
v/c Ratio	0.33	0.87dr		0.92	0.36		0.29	0.91		0.79	1.08	
Uniform Delay, d1	58.6	47.1		54.8	35.2		58.8	41.4		53.2	37.1	
Progression Factor	1.00	1.00		0.93	0.96		1.00	1.00		0.97	1.34	
Incremental Delay, d2	1.0	2.9		22.5	0.2		0.8	10.6		5.4	43.5	
Delay (s)	59.6	50.0		73.3	33.8		59.6	52.0		57.2	93.3	
Level of Service	E	D		E	C		E	D		E	F	
Approach Delay (s)		50.7			52.3			52.3			87.0	
Approach LOS		D			D			D			F	

Intersection Summary				
HCM 2000 Control Delay	67.0	HCM 2000 Level of Service	E	
HCM 2000 Volume to Capacity ratio	0.95			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	19.2	
Intersection Capacity Utilization	91.4%	ICU Level of Service	F	
Analysis Period (min)	15			

dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	165	5	25	85	25	20	0	60	55	0	20
Future Volume (Veh/h)	5	165	5	25	85	25	20	0	60	55	0	20
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	5	165	5	25	85	25	20	0	60	55	0	20
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					78							
pX, platoon unblocked												
vC, conflicting volume	110			170			345	338	168	385	328	98
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	110			170			345	338	168	385	328	98
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			97	100	93	90	100	98
cM capacity (veh/h)	1493			1420			591	575	882	529	582	964

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	175	135	80	75
Volume Left	5	25	20	55
Volume Right	5	25	60	20
cSH	1493	1420	785	602
Volume to Capacity	0.00	0.02	0.10	0.12
Queue Length 95th (m)	0.1	0.4	2.7	3.4
Control Delay (s)	0.2	1.5	10.1	11.8
Lane LOS	A	A	B	B
Approach Delay (s)	0.2	1.5	10.1	11.8
Approach LOS			B	B

Intersection Summary				
Average Delay	4.2			
Intersection Capacity Utilization	36.0%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	20	745	435	90	30
Future Volume (vph)	20	745	435	90	30
Turn Type	pm+pt	NA	NA	Prot	Perm
Protected Phases	5	2	6	8	
Permitted Phases	2				8
Detector Phase	5	2	6	8	8
Switch Phase					
Minimum Initial (s)	7.0	20.0	20.0	10.0	10.0
Minimum Split (s)	11.0	29.4	29.4	15.3	15.3
Total Split (s)	11.0	64.0	53.0	41.0	41.0
Total Split (%)	10.5%	61.0%	50.5%	39.0%	39.0%
Yellow Time (s)	3.0	4.2	4.2	3.3	3.3
All-Red Time (s)	1.0	2.2	2.2	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	5.4	5.4	4.3	4.3
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	None	None
Act Effct Green (s)	88.0	86.7	82.3	12.8	12.8
Actuated g/C Ratio	0.84	0.83	0.78	0.12	0.12
v/c Ratio	0.03	0.20	0.14	0.43	0.14
Control Delay	2.4	2.8	4.4	49.0	15.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	2.4	2.8	4.4	49.0	15.4
LOS	A	A	A	D	B
Approach Delay		2.8	4.4	40.6	
Approach LOS		A	A	D	

Intersection Summary			
Cycle Length: 105			
Actuated Cycle Length: 105			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.43			
Intersection Signal Delay: 6.7		Intersection LOS: A	
Intersection Capacity Utilization 33.1%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 10: Britannia Rd & Farmstead Dr

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	20	745	460	90	30
v/c Ratio	0.03	0.20	0.14	0.43	0.14
Control Delay	2.4	2.8	4.4	49.0	15.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	2.4	2.8	4.4	49.0	15.4
Queue Length 50th (m)	0.6	12.9	7.3	18.4	0.0
Queue Length 95th (m)	2.3	21.1	19.7	33.1	8.5
Internal Link Dist (m)		101.0	377.9	199.3	
Turn Bay Length (m)	20.0				
Base Capacity (vph)	698	3653	3296	595	557
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.03	0.20	0.14	0.15	0.05

Intersection Summary

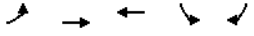
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	20	745	435	25	90	30
Future Volume (vph)	20	745	435	25	90	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.4	5.4		4.3	4.3
Lane Util. Factor	1.00	*0.80	*0.80		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1656	4427	4205		1703	1538
Flt Permitted	0.43	1.00	1.00		0.95	1.00
Satd. Flow (perm)	752	4427	4205		1703	1538
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	20	745	435	25	90	30
RTOR Reduction (vph)	0	0	2	0	0	27
Lane Group Flow (vph)	20	745	458	0	90	3
Heavy Vehicles (%)	9%	3%	8%	0%	6%	5%
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		8	
Permitted Phases	2					8
Actuated Green, G (s)	83.5	83.5	76.7		9.8	9.8
Effective Green, g (s)	84.5	84.5	77.7		10.8	10.8
Actuated g/C Ratio	0.80	0.80	0.74		0.10	0.10
Clearance Time (s)	4.0	6.4	6.4		5.3	5.3
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	637	3562	3111		175	158
v/s Ratio Prot	0.00	c0.17	0.11		c0.05	
v/s Ratio Perm	0.02					0.00
v/c Ratio	0.03	0.21	0.15		0.51	0.02
Uniform Delay, d1	2.1	2.4	4.0		44.6	42.3
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.0	0.1	0.1		2.5	0.0
Delay (s)	2.1	2.5	4.1		47.2	42.4
Level of Service	A	A	A		D	D
Approach Delay (s)		2.5	4.1		46.0	
Approach LOS		A	A		D	

Intersection Summary				
HCM 2000 Control Delay	6.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.25		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	12.7
Intersection Capacity Utilization	33.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	25	1095	920	55	75
Future Volume (vph)	25	1095	920	55	75
Turn Type	pm+pt	NA	NA	Prot	Perm
Protected Phases	5	2	6	4	
Permitted Phases	2				4
Detector Phase	5	2	6	4	4
Switch Phase					
Minimum Initial (s)	7.0	20.0	20.0	10.0	10.0
Minimum Split (s)	11.0	29.0	29.0	43.0	43.0
Total Split (s)	15.0	80.0	65.0	50.0	50.0
Total Split (%)	11.5%	61.5%	50.0%	38.5%	38.5%
Yellow Time (s)	3.0	4.0	4.0	3.0	3.0
All-Red Time (s)	1.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.0	6.0	5.0	5.0
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	None	None
Act Effct Green (s)	110.2	107.2	100.6	11.8	11.8
Actuated g/C Ratio	0.85	0.82	0.77	0.09	0.09
v/c Ratio	0.05	0.29	0.26	0.34	0.35
Control Delay	3.6	5.5	4.8	61.1	16.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	3.6	5.5	4.8	61.1	16.3
LOS	A	A	A	E	B
Approach Delay		5.5	4.8	35.2	
Approach LOS		A	A	D	

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.35			
Intersection Signal Delay: 7.0		Intersection LOS: A	
Intersection Capacity Utilization 38.7%		ICU Level of Service A	
Analysis Period (min) 15			

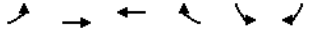
Splits and Phases: 11: Britannia Rd & Rose Way



Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	25	1095	930	55	75
v/c Ratio	0.05	0.29	0.26	0.34	0.35
Control Delay	3.6	5.5	4.8	61.1	16.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	3.6	5.5	4.8	61.1	16.3
Queue Length 50th (m)	1.7	46.0	29.2	14.3	0.0
Queue Length 95th (m)	m2.4	m52.8	39.1	27.8	15.3
Internal Link Dist (m)		182.4	155.7	76.0	
Turn Bay Length (m)	50.0			50.0	
Base Capacity (vph)	517	3761	3523	624	608
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.05	0.29	0.26	0.09	0.12

Intersection Summary

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



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	25	1095	920	10	55	75
Future Volume (vph)	25	1095	920	10	55	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0		5.0	5.0
Lane Util. Factor	1.00	*0.80	*0.80		1.00	1.00
Frt	1.00	1.00	1.00		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1805	4560	4553		1805	1615
Flt Permitted	0.24	1.00	1.00		0.95	1.00
Satd. Flow (perm)	464	4560	4553		1805	1615
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	25	1095	920	10	55	75
RTOR Reduction (vph)	0	0	0	0	0	68
Lane Group Flow (vph)	25	1095	930	0	55	7
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)	106.2	106.2	98.0		10.8	10.8
Effective Green, g (s)	107.2	107.2	99.0		11.8	11.8
Actuated g/C Ratio	0.82	0.82	0.76		0.09	0.09
Clearance Time (s)	4.0	7.0	7.0		6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	436	3760	3467		163	146
v/s Ratio Prot	0.00	c0.24	0.20		c0.03	
v/s Ratio Perm	0.04					0.00
v/c Ratio	0.06	0.29	0.27		0.34	0.05
Uniform Delay, d1	2.2	2.6	4.6		55.4	54.0
Progression Factor	2.06	2.01	1.00		1.00	1.00
Incremental Delay, d2	0.0	0.1	0.2		1.2	0.1
Delay (s)	4.5	5.4	4.8		56.7	54.1
Level of Service	A	A	A		E	D
Approach Delay (s)		5.4	4.8		55.2	
Approach LOS		A	A		E	

Intersection Summary				
HCM 2000 Control Delay	8.1	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.30			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	14.0	
Intersection Capacity Utilization	38.7%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	205	375	370	545	220	1305	95	1135
Future Volume (vph)	205	375	370	545	220	1305	95	1135
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	5.0	10.0	10.0	10.0	5.0	20.0	5.0	20.0
Minimum Split (s)	9.0	30.0	14.0	30.0	9.0	32.2	9.0	32.2
Total Split (s)	22.0	30.0	32.0	40.0	22.0	68.0	10.0	56.0
Total Split (%)	15.7%	21.4%	22.9%	28.6%	15.7%	48.6%	7.1%	40.0%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	4.2	3.0	4.2
All-Red Time (s)	1.0	3.0	0.0	3.0	1.0	3.0	1.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.0	2.0	6.0	3.0	6.2	3.0	6.2
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	43.1	23.4	55.9	32.2	79.1	65.1	67.3	56.4
Actuated g/C Ratio	0.31	0.17	0.40	0.23	0.56	0.46	0.48	0.40
v/c Ratio	0.67	0.84	0.86	0.74	0.82	0.89	0.61	0.76
Control Delay	41.1	66.4	55.3	55.3	58.3	39.9	40.5	40.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.1	66.4	55.3	55.3	58.3	39.9	40.5	40.3
LOS	D	E	E	E	E	D	D	D
Approach Delay		59.0		55.3		42.0		40.3
Approach LOS		E		E		D		D

Intersection Summary

Cycle Length: 140
Actuated Cycle Length: 140
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.89
Intersection Signal Delay: 46.4 — Intersection LOS: D
Intersection Capacity Utilization 93.2% — ICU Level of Service F
Analysis Period (min) 15

Splits and Phases: 1: Regional Rd 25 & Louis St Laurent Ave

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	205	500	370	610	220	1755	95	1330
v/c Ratio	0.67	0.84	0.86	0.74	0.82	0.89	0.61	0.76
Control Delay	41.1	66.4	55.3	55.3	58.3	39.9	40.5	40.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.1	66.4	55.3	55.3	58.3	39.9	40.5	40.3
Queue Length 50th (m)	39.3	69.7	80.3	84.4	45.6	193.6	12.9	145.0
Queue Length 95th (m)	58.3	#93.7	117.9	106.9	#82.9	#225.6	#37.1	171.5
Internal Link Dist (m)		126.1		117.1		481.0		113.5
Turn Bay Length (m)	90.0		35.0		65.0		80.0	
Base Capacity (vph)	333	620	468	868	297	1977	157	1744
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	0.62	0.81	0.79	0.70	0.74	0.89	0.61	0.76

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	205	375	125	370	545	65	220	1305	450	95	1135	195
Future Volume (vph)	205	375	125	370	545	65	220	1305	450	95	1135	195
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0		2.0	6.0		3.0	6.2		3.0	6.2	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	*0.80		1.00	*0.80	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.98		1.00	0.96		1.00	0.98	
Flt Protected	0.95	1.00		1.00	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1768	3431		1899	3537		1787	4165		1805	4300	
Flt Permitted	0.27	1.00		0.17	1.00		0.07	1.00		0.07	1.00	
Satd. Flow (perm)	496	3431		331	3537		129	4165		135	4300	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	205	375	125	370	545	65	220	1305	450	95	1135	195
RTOR Reduction (vph)	0	23	0	0	7	0	0	40	0	0	13	0
Lane Group Flow (vph)	205	477	0	370	603	0	220	1715	0	95	1317	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Heavy Vehicles (%)	2%	1%	0%	0%	0%	2%	1%	6%	1%	0%	4%	0%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	38.1	22.4		50.9	31.2		74.9	64.1		62.2	55.4	
Effective Green, g (s)	40.1	23.4		51.9	32.2		75.9	65.1		64.2	56.4	
Actuated g/C Ratio	0.29	0.17		0.37	0.23		0.54	0.46		0.46	0.40	
Clearance Time (s)	4.0	7.0		3.0	7.0		4.0	7.2		4.0	7.2	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	293	573		419	813		265	1936		154	1732	
v/s Ratio Prot	0.08	c0.14		c0.17	0.17		c0.10	c0.41		0.03	0.31	
v/s Ratio Perm	0.12			0.16			0.35			0.25		
v/c Ratio	0.70	0.83		0.88	0.74		0.83	0.89		0.62	0.76	
Uniform Delay, d1	40.7	56.4		38.1	50.0		39.4	34.1		28.0	36.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	7.1	10.0		19.2	3.7		19.3	6.4		7.2	3.2	
Delay (s)	47.8	66.4		57.3	53.7		58.7	40.5		35.1	39.2	
Level of Service	D	E		E	D		E	D		D	D	
Approach Delay (s)		61.0			55.1			42.5			38.9	
Approach LOS		E			E			D			D	

Intersection Summary				
HCM 2000 Control Delay	46.5	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.89			
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.2	
Intersection Capacity Utilization	93.2%	ICU Level of Service	F	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	105	40	25	40	75	90	1975	60	1375
Future Volume (vph)	105	40	25	40	75	90	1975	60	1375
Turn Type	Perm	NA	Perm	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases		4		8		5	2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	7.0	20.0	7.0	20.0
Minimum Split (s)	37.5	37.5	37.5	37.5	37.5	11.0	35.5	11.0	35.5
Total Split (s)	38.0	38.0	38.0	38.0	38.0	11.0	81.0	11.0	81.0
Total Split (%)	29.2%	29.2%	29.2%	29.2%	29.2%	8.5%	62.3%	8.5%	62.3%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.0	4.2	3.0	4.2
All-Red Time (s)	3.2	3.2	3.2	3.2	3.2	1.0	2.3	1.0	2.3
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	3.0	5.5	3.0	5.5
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	16.6	16.6	16.6	16.6	16.6	102.5	93.2	102.0	91.1
Actuated g/C Ratio	0.13	0.13	0.13	0.13	0.13	0.79	0.72	0.78	0.70
v/c Ratio	0.60	0.32	0.15	0.17	0.29	0.35	0.65	0.34	0.50
Control Delay	67.4	31.8	50.2	50.0	13.0	6.0	7.9	12.6	10.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.4	31.8	50.2	50.0	13.0	6.0	7.9	12.6	10.1
LOS	E	C	D	D	B	A	A	B	B
Approach Delay		52.0		30.2			7.8		10.2
Approach LOS		D		C			A		B

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 40 (31%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 95			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.65			
Intersection Signal Delay: 11.6		Intersection LOS: B	
Intersection Capacity Utilization 72.2%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Regional Rd 25 & Whitlock Ave

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	105	80	25	40	75	90	2015	60	1510
v/c Ratio	0.60	0.32	0.15	0.17	0.29	0.35	0.65	0.34	0.50
Control Delay	67.4	31.8	50.2	50.0	13.0	6.0	7.9	12.6	10.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.4	31.8	50.2	50.0	13.0	6.0	7.9	12.6	10.1
Queue Length 50th (m)	27.2	10.6	6.1	9.8	0.0	1.3	69.4	2.6	69.0
Queue Length 95th (m)	45.1	25.0	14.4	20.3	14.0	m3.8	182.6	12.2	100.0
Internal Link Dist (m)		62.9		68.1			503.8		481.0
Turn Bay Length (m)	35.0		65.0		65.0	100.0		100.0	
Base Capacity (vph)	341	452	333	475	441	258	3106	179	2995
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	0.31	0.18	0.08	0.08	0.17	0.35	0.65	0.34	0.50

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	40	40	25	40	75	90	1975	40	60	1375	135
Future Volume (vph)	105	40	40	25	40	75	90	1975	40	60	1375	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5		5.5	5.5	5.5	3.0	5.5		3.0	5.5	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	*0.80		1.00	*0.80	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		0.99	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.93		1.00	1.00	0.85	1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1776	1699		1795	1900	1539	1787	4331		1770	4266	
Flt Permitted	0.73	1.00		0.70	1.00	1.00	0.11	1.00		0.05	1.00	
Satd. Flow (perm)	1367	1699		1332	1900	1539	198	4331		92	4266	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	105	40	40	25	40	75	90	1975	40	60	1375	135
RTOR Reduction (vph)	0	32	0	0	0	65	0	1	0	0	5	0
Lane Group Flow (vph)	105	48	0	25	40	10	90	2014	0	60	1505	0
Confl. Peds. (#/hr)	5		5	5		5			5	5		
Heavy Vehicles (%)	1%	5%	0%	0%	0%	3%	1%	5%	0%	2%	6%	0%
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	15.6	15.6		15.6	15.6	15.6	98.8	91.4		96.0	90.0	
Effective Green, g (s)	16.6	16.6		16.6	16.6	16.6	100.8	92.4		98.0	91.0	
Actuated g/C Ratio	0.13	0.13		0.13	0.13	0.13	0.78	0.71		0.75	0.70	
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	4.0	6.5		4.0	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	174	216		170	242	196	256	3078		159	2986	
v/s Ratio Prot		0.03			0.02		c0.02	c0.47		0.02	0.35	
v/s Ratio Perm	c0.08			0.02		0.01	0.25			0.26		
v/c Ratio	0.60	0.22		0.15	0.17	0.05	0.35	0.65		0.38	0.50	
Uniform Delay, d1	53.6	50.9		50.4	50.5	49.8	5.2	10.2		8.9	9.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.02	0.63		1.00	1.00	
Incremental Delay, d2	5.8	0.5		0.4	0.3	0.1	0.6	0.8		1.5	0.6	
Delay (s)	59.4	51.4		50.8	50.9	49.9	5.9	7.3		10.5	9.6	
Level of Service	E	D		D	D	D	A	A		B	A	
Approach Delay (s)		55.9			50.3			7.2			9.7	
Approach LOS		E			D			A			A	

Intersection Summary				
HCM 2000 Control Delay	11.9	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.63			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	14.0	
Intersection Capacity Utilization	72.2%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	35	0	2105	1390	50
Future Volume (Veh/h)	0	35	0	2105	1390	50
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	35	0	2105	1390	50
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				193		
pX, platoon unblocked	0.73					
vC, conflicting volume	2117	488	1440			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1250	488	1440			
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	93	100			
cM capacity (veh/h)	123	531	477			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	35	702	702	702	556	556	328
Volume Left	0	0	0	0	0	0	0
Volume Right	35	0	0	0	0	0	50
cSH	531	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.07	0.41	0.41	0.41	0.33	0.33	0.19
Queue Length 95th (m)	1.7	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	12.3	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B						
Approach Delay (s)	12.3	0.0			0.0		
Approach LOS	B						

Intersection Summary			
Average Delay		0.1	
Intersection Capacity Utilization		44.0%	ICU Level of Service A
Analysis Period (min)		15	

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	125	0	40	0	195	1940	55	1230
Future Volume (vph)	125	0	40	0	195	1940	55	1230
Turn Type	pm+pt	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases	7	4		8	5	2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	7	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	7.0	10.0	10.0	10.0	7.0	20.0	7.0	20.0
Minimum Split (s)	11.0	36.2	36.2	36.2	11.0	38.4	11.0	38.4
Total Split (s)	12.0	49.0	37.0	37.0	11.0	70.0	11.0	70.0
Total Split (%)	9.2%	37.7%	28.5%	28.5%	8.5%	53.8%	8.5%	53.8%
Yellow Time (s)	3.0	3.3	3.3	3.3	3.0	4.2	3.0	4.2
All-Red Time (s)	1.0	2.9	2.9	2.9	1.0	2.2	1.0	2.2
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	5.2	5.2	5.2	3.0	5.4	3.0	5.4
Lead/Lag	Lead		Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	23.6	21.4	11.8	11.8	100.4	88.9	91.1	80.4
Actuated g/C Ratio	0.18	0.16	0.09	0.09	0.77	0.68	0.70	0.62
v/c Ratio	0.52	0.12	0.32	0.14	0.57	0.67	0.31	0.51
Control Delay	53.8	0.6	62.2	1.0	23.3	8.7	31.7	7.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.8	0.6	62.2	1.0	23.3	8.7	31.7	7.8
LOS	D	A	E	A	C	A	C	A
Approach Delay		39.7		31.6		10.0		8.7
Approach LOS		D		C		B		A

Intersection Summary		
Cycle Length: 130		
Actuated Cycle Length: 130		
Offset: 103 (79%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green		
Natural Cycle: 110		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.67		
Intersection Signal Delay: 11.3	Intersection LOS: B	
Intersection Capacity Utilization 70.5%	ICU Level of Service C	
Analysis Period (min) 15		

Splits and Phases: 5: Regional Rd 25 & Etheridge Ave/Collector Road

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	125	45	40	40	195	2005	55	1370
v/c Ratio	0.52	0.12	0.32	0.14	0.57	0.67	0.31	0.51
Control Delay	53.8	0.6	62.2	1.0	23.3	8.7	31.7	7.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.8	0.6	62.2	1.0	23.3	8.7	31.7	7.8
Queue Length 50th (m)	29.6	0.0	10.4	0.0	25.5	70.2	3.3	85.6
Queue Length 95th (m)	48.0	0.0	22.4	0.0	m27.5	m66.1	15.2	115.7
Internal Link Dist (m)		53.9		63.5		106.2		169.0
Turn Bay Length (m)	40.0		40.0		70.0		70.0	
Base Capacity (vph)	241	638	338	513	344	2990	177	2684
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	0.52	0.07	0.12	0.08	0.57	0.67	0.31	0.51

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	125	0	45	40	0	40	195	1940	65	55	1230	140
Future Volume (vph)	125	0	45	40	0	40	195	1940	65	55	1230	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.2		5.2	5.2		3.0	5.4		3.0	5.4	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	*0.80		1.00	*0.80	
Frt	1.00	0.85		1.00	0.85		1.00	1.00		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1752	1615		1805	1615		1805	4369		1805	4326	
Flt Permitted	0.56	1.00		0.73	1.00		0.11	1.00		0.05	1.00	
Satd. Flow (perm)	1032	1615		1383	1615		215	4369		96	4326	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	125	0	45	40	0	40	195	1940	65	55	1230	140
RTOR Reduction (vph)	0	37	0	0	37	0	0	2	0	0	7	0
Lane Group Flow (vph)	125	8	0	40	3	0	195	2003	0	55	1363	0
Heavy Vehicles (%)	3%	0%	0%	0%	0%	0%	0%	4%	0%	0%	4%	2%
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	21.6	21.6		8.8	8.8		95.8	85.9		84.1	78.2	
Effective Green, g (s)	22.6	22.6		9.8	9.8		96.8	86.9		86.1	79.2	
Actuated g/C Ratio	0.17	0.17		0.08	0.08		0.74	0.67		0.66	0.61	
Clearance Time (s)	4.0	6.2		6.2	6.2		4.0	6.4		4.0	6.4	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	233	280		104	121		338	2920		154	2635	
v/s Ratio Prot	c0.04	0.00			0.00		c0.06	c0.46		0.02	0.32	
v/s Ratio Perm	c0.05			0.03			0.36			0.22		
v/c Ratio	0.54	0.03		0.38	0.02		0.58	0.69		0.36	0.52	
Uniform Delay, d1	47.8	44.6		57.2	55.7		10.0	13.2		11.4	14.5	
Progression Factor	1.00	1.00		1.00	1.00		2.53	0.63		2.70	0.49	
Incremental Delay, d2	2.4	0.0		2.4	0.1		0.2	0.1		1.3	0.7	
Delay (s)	50.2	44.6		59.6	55.8		25.6	8.5		32.0	7.8	
Level of Service	D	D		E	E		C	A		C	A	
Approach Delay (s)		48.7			57.7			10.0			8.7	
Approach LOS		D			E			B			A	

Intersection Summary				
HCM 2000 Control Delay	12.2	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.67			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	16.6	
Intersection Capacity Utilization	70.5%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	40	0	2200	1265	50
Future Volume (Veh/h)	0	40	0	2200	1265	50
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	40	0	2200	1265	50
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				186	130	
pX, platoon unblocked	0.67	0.84	0.84			
vC, conflicting volume	2023	447	1315			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0	722			
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	96	100			
cM capacity (veh/h)	690	920	750			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	40	733	733	733	506	506	303
Volume Left	0	0	0	0	0	0	0
Volume Right	40	0	0	0	0	0	50
cSH	920	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.04	0.43	0.43	0.43	0.30	0.30	0.18
Queue Length 95th (m)	1.1	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	9.1	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	A						
Approach Delay (s)	9.1	0.0			0.0		
Approach LOS	A						

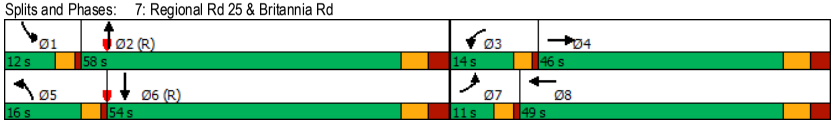
Intersection Summary				
Average Delay		0.1		
Intersection Capacity Utilization		45.8%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	55	350	325	550	275	1735	195	1055
Future Volume (vph)	55	350	325	550	275	1735	195	1055
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases								
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	7.0	10.0	7.0	10.0	7.0	20.0	7.0	20.0
Minimum Split (s)	11.0	45.5	11.0	45.5	11.0	49.7	11.0	49.7
Total Split (s)	11.0	46.0	14.0	49.0	16.0	58.0	12.0	54.0
Total Split (%)	8.5%	35.4%	10.8%	37.7%	12.3%	44.6%	9.2%	41.5%
Yellow Time (s)	3.0	4.2	3.0	4.2	3.0	4.2	3.0	4.2
All-Red Time (s)	1.0	3.3	1.0	3.3	1.0	3.5	1.0	3.5
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.5	3.0	6.5	3.0	6.7	3.0	6.7
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	8.0	28.5	11.0	33.7	15.6	58.6	12.7	55.7
Actuated g/C Ratio	0.06	0.22	0.08	0.26	0.12	0.45	0.10	0.43
v/c Ratio	0.27	0.40	1.07	0.92dr	0.66	1.14	0.58	0.59
Control Delay	61.9	41.6	139.7	37.3	62.6	104.0	76.2	20.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.9	41.6	139.7	37.3	62.6	104.0	76.2	20.5
LOS	E	D	F	D	E	F	E	C
Approach Delay		44.1		63.2		99.5		28.8
Approach LOS		D		E		F		C

Intersection Summary		
Cycle Length: 130		
Actuated Cycle Length: 130		
Offset: 104 (80%), Referenced to phase 2:NBT and 6:SBT, Start of Green		
Natural Cycle: 150		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 1.14		
Intersection Signal Delay: 70.0	Intersection LOS: E	
Intersection Capacity Utilization 93.9%	ICU Level of Service F	
Analysis Period (min) 15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Splits and Phases: 7: Regional Rd 25 & Britannia Rd



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	55	395	325	960	275	2240	195	1110
v/c Ratio	0.27	0.40	1.07	0.92dr	0.66	1.14	0.58	0.59
Control Delay	61.9	41.6	139.7	37.3	62.6	104.0	76.2	20.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.9	41.6	139.7	37.3	62.6	104.0	76.2	20.5
Queue Length 50th (m)	7.4	35.8	~51.3	50.0	36.7	~305.7	28.5	44.6
Queue Length 95th (m)	14.6	44.5	#83.6	52.7	52.7	#354.0	42.0	55.2
Internal Link Dist (m)		377.9		190.1		165.3		161.9
Turn Bay Length (m)	60.0		120.0		90.0		90.0	
Base Capacity (vph)	203	1372	305	1484	420	1960	338	1872
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	0.27	0.29	1.07	0.65	0.65	1.14	0.58	0.59

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	350	45	325	550	410	275	1735	505	195	1055	55
Future Volume (vph)	55	350	45	325	550	410	275	1735	505	195	1055	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.5		3.0	6.5		3.0	6.7		3.0	6.7	
Lane Util. Factor	0.97	*0.80		0.97	*0.80		0.97	*0.80		0.97	*0.80	
Frt	1.00	0.98		1.00	0.94		1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00		1.00	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3303	4482		3614	4226		3502	4287		3467	4360	
Flt Permitted	0.95	1.00		1.00	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3303	4482		3614	4226		3502	4287		3467	4360	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	55	350	45	325	550	410	275	1735	505	195	1055	55
RTOR Reduction (vph)	0	12	0	0	113	0	0	30	0	0	3	0
Lane Group Flow (vph)	55	383	0	325	847	0	275	2210	0	195	1107	0
Heavy Vehicles (%)	6%	0%	0%	2%	1%	1%	0%	3%	2%	1%	4%	0%
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	5.6	28.3		10.0	32.7		14.6	56.8		11.7	53.9	
Effective Green, g (s)	6.6	29.3		11.0	33.7		15.6	57.8		12.7	54.9	
Actuated g/C Ratio	0.05	0.23		0.08	0.26		0.12	0.44		0.10	0.42	
Clearance Time (s)	4.0	7.5		4.0	7.5		4.0	7.7		4.0	7.7	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	167	1010		305	1095		420	1906		338	1841	
v/s Ratio Prot	0.02	0.09		c0.09	c0.20		c0.08	c0.52		0.06	0.25	
v/s Ratio Perm												
v/c Ratio	0.33	0.38		1.07	0.92dr		0.65	1.16		0.58	0.60	
Uniform Delay, d1	59.6	42.7		59.5	44.6		54.6	36.1		56.1	29.1	
Progression Factor	1.00	1.00		1.32	0.87		1.00	1.00		1.24	0.64	
Incremental Delay, d2	1.2	0.2		68.8	3.3		3.7	78.1		2.1	1.3	
Delay (s)	60.7	42.9		147.4	42.1		58.3	114.2		71.7	19.8	
Level of Service	E	D		F	D		E	F		E	B	
Approach Delay (s)		45.1			68.7			108.1			27.6	
Approach LOS		D			E			F			C	

Intersection Summary				
HCM 2000 Control Delay	75.0	HCM 2000 Level of Service	E	
HCM 2000 Volume to Capacity ratio	1.01			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	19.2	
Intersection Capacity Utilization	93.9%	ICU Level of Service	F	
Analysis Period (min)	15			

dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	100	10	85	175	75	15	0	35	35	0	10
Future Volume (Veh/h)	10	100	10	85	175	75	15	0	35	35	0	10
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	10	100	10	85	175	75	15	0	35	35	0	10
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					78							
pX, platoon unblocked	0.96						0.96	0.96		0.96	0.96	0.96
vC, conflicting volume	250			110			518	545	105	542	512	212
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	202			110			480	508	105	506	475	163
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			94			97	100	96	92	100	99
cM capacity (veh/h)	1331			1493			452	424	955	424	443	854

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	120	335	50	45
Volume Left	10	85	15	35
Volume Right	10	75	35	10
cSH	1331	1493	716	477
Volume to Capacity	0.01	0.06	0.07	0.09
Queue Length 95th (m)	0.2	1.4	1.8	2.5
Control Delay (s)	0.7	2.3	10.4	13.3
Lane LOS	A	A	B	B
Approach Delay (s)	0.7	2.3	10.4	13.3
Approach LOS			B	B

Intersection Summary					
Average Delay			3.6		
Intersection Capacity Utilization			37.6%	ICU Level of Service	A
Analysis Period (min)			15		

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	25	395	800	55	20
Future Volume (vph)	25	395	800	55	20
Turn Type	pm+pt	NA	NA	Prot	Perm
Protected Phases	5	2	6	8	
Permitted Phases	2				8
Detector Phase	5	2	6	8	8
Switch Phase					
Minimum Initial (s)	7.0	20.0	20.0	10.0	10.0
Minimum Split (s)	11.0	29.4	29.4	15.3	15.3
Total Split (s)	11.0	64.0	53.0	41.0	41.0
Total Split (%)	10.5%	61.0%	50.5%	39.0%	39.0%
Yellow Time (s)	3.0	4.2	4.2	3.3	3.3
All-Red Time (s)	1.0	2.2	2.2	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	5.4	5.4	4.3	4.3
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	None	None
Act Effct Green (s)	89.3	88.0	83.6	11.4	11.4
Actuated g/C Ratio	0.85	0.84	0.80	0.11	0.11
v/c Ratio	0.05	0.10	0.25	0.29	0.10
Control Delay	2.0	2.2	4.2	47.2	18.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	2.0	2.2	4.2	47.2	18.6
LOS	A	A	A	D	B
Approach Delay		2.2	4.2	39.6	
Approach LOS		A	A	D	

Intersection Summary			
Cycle Length: 105			
Actuated Cycle Length: 105			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.29			
Intersection Signal Delay: 5.5		Intersection LOS: A	
Intersection Capacity Utilization 37.2%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 10: Britannia Rd & Farmstead Dr

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	25	395	880	55	20
v/c Ratio	0.05	0.10	0.25	0.29	0.10
Control Delay	2.0	2.2	4.2	47.2	18.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	2.0	2.2	4.2	47.2	18.6
Queue Length 50th (m)	0.7	5.9	14.5	11.1	0.0
Queue Length 95th (m)	2.2	9.2	34.6	23.1	7.2
Internal Link Dist (m)		101.0	377.9	199.3	
Turn Bay Length (m)	20.0				
Base Capacity (vph)	519	3822	3552	606	577
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.05	0.10	0.25	0.09	0.03

Intersection Summary

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	25	395	800	80	55	20
Future Volume (vph)	25	395	800	80	55	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.4	5.4		4.3	4.3
Lane Util. Factor	1.00	*0.80	*0.80		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1805	4560	4457		1736	1615
Flt Permitted	0.26	1.00	1.00		0.95	1.00
Satd. Flow (perm)	494	4560	4457		1736	1615
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	25	395	800	80	55	20
RTOR Reduction (vph)	0	0	4	0	0	18
Lane Group Flow (vph)	25	395	876	0	55	2
Heavy Vehicles (%)	0%	0%	1%	0%	4%	0%
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		8	
Permitted Phases	2					8
Actuated Green, G (s)	84.9	84.9	78.1		8.4	8.4
Effective Green, g (s)	85.9	85.9	79.1		9.4	9.4
Actuated g/C Ratio	0.82	0.82	0.75		0.09	0.09
Clearance Time (s)	4.0	6.4	6.4		5.3	5.3
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	451	3730	3357		155	144
v/s Ratio Prot	0.00	c0.09	c0.20		c0.03	
v/s Ratio Perm	0.04					0.00
v/c Ratio	0.06	0.11	0.26		0.35	0.01
Uniform Delay, d1	1.9	1.9	4.0		44.9	43.6
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.1	0.1	0.2		1.4	0.0
Delay (s)	1.9	2.0	4.2		46.3	43.6
Level of Service	A	A	A		D	D
Approach Delay (s)		2.0	4.2		45.6	
Approach LOS		A	A		D	

Intersection Summary				
HCM 2000 Control Delay	5.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.26		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	12.7
Intersection Capacity Utilization	37.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	80	970	1235	30	50
Future Volume (vph)	80	970	1235	30	50
Turn Type	pm+pt	NA	NA	Prot	Perm
Protected Phases	5	2	6	4	
Permitted Phases	2				4
Detector Phase	5	2	6	4	4
Switch Phase					
Minimum Initial (s)	7.0	20.0	20.0	10.0	10.0
Minimum Split (s)	11.0	29.0	29.0	43.0	43.0
Total Split (s)	15.0	80.0	65.0	50.0	50.0
Total Split (%)	11.5%	61.5%	50.0%	38.5%	38.5%
Yellow Time (s)	3.0	4.0	4.0	3.0	3.0
All-Red Time (s)	1.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.0	6.0	5.0	5.0
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	None	None
Act Effct Green (s)	114.2	112.4	103.5	11.0	11.0
Actuated g/C Ratio	0.88	0.86	0.80	0.08	0.08
v/c Ratio	0.23	0.25	0.36	0.20	0.27
Control Delay	3.0	2.6	5.3	58.7	18.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	3.0	2.6	5.3	58.7	18.8
LOS	A	A	A	E	B
Approach Delay		2.6	5.3	33.8	
Approach LOS		A	A	C	

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 65 (50%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.36			
Intersection Signal Delay: 5.1		Intersection LOS: A	
Intersection Capacity Utilization 51.9%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 11: Britannia Rd & Rose Way

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	80	970	1295	30	50
v/c Ratio	0.23	0.25	0.36	0.20	0.27
Control Delay	3.0	2.6	5.3	58.7	18.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	3.0	2.6	5.3	58.7	18.8
Queue Length 50th (m)	2.8	21.4	45.0	7.7	0.0
Queue Length 95th (m)	m4.1	m24.2	53.4	18.0	13.0
Internal Link Dist (m)		190.1	148.0	92.6	
Turn Bay Length (m)	50.0			50.0	
Base Capacity (vph)	392	3941	3607	624	591
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.20	0.25	0.36	0.05	0.08

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

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	80	970	1235	60	30	50
Future Volume (vph)	80	970	1235	60	30	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0		5.0	5.0
Lane Util. Factor	1.00	*0.80	*0.80		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1805	4560	4528		1805	1615
Flt Permitted	0.15	1.00	1.00		0.95	1.00
Satd. Flow (perm)	287	4560	4528		1805	1615
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	80	970	1235	60	30	50
RTOR Reduction (vph)	0	0	1	0	0	47
Lane Group Flow (vph)	80	970	1294	0	30	3
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)	109.0	109.0	99.4		8.0	8.0
Effective Green, g (s)	110.0	110.0	100.4		9.0	9.0
Actuated g/C Ratio	0.85	0.85	0.77		0.07	0.07
Clearance Time (s)	4.0	7.0	7.0		6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	319	3858	3497		124	111
v/s Ratio Prot	0.01	c0.21	c0.29		c0.02	
v/s Ratio Perm	0.20					0.00
v/c Ratio	0.25	0.25	0.37		0.24	0.03
Uniform Delay, d1	2.1	2.0	4.7		57.3	56.4
Progression Factor	1.45	1.22	1.00		1.00	1.00
Incremental Delay, d2	0.3	0.1	0.3		1.0	0.1
Delay (s)	3.3	2.5	5.0		58.3	56.5
Level of Service	A	A	A		E	E
Approach Delay (s)		2.5	5.0		57.2	
Approach LOS		A	A		E	

Intersection Summary			
HCM 2000 Control Delay	5.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	51.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

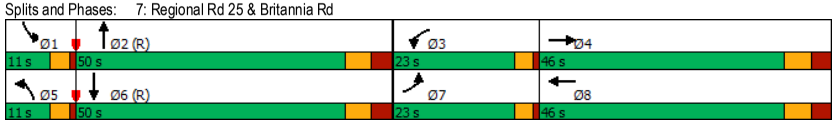
Testing Road Improvements - Option 1
Standard Six Lane Cross Section (No HOV Lanes)

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	65	455	465	380	55	1070	415	1975
Future Volume (vph)	65	455	465	380	55	1070	415	1975
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases								
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	7.0	10.0	7.0	10.0	7.0	20.0	7.0	20.0
Minimum Split (s)	11.0	45.5	11.0	45.5	11.0	49.7	11.0	49.7
Total Split (s)	23.0	46.0	23.0	46.0	11.0	50.0	11.0	50.0
Total Split (%)	17.7%	35.4%	17.7%	35.4%	8.5%	38.5%	8.5%	38.5%
Yellow Time (s)	3.0	4.2	3.0	4.2	3.0	4.2	3.0	4.2
All-Red Time (s)	1.0	3.3	1.0	3.3	1.0	3.5	1.0	3.5
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.5	3.0	6.5	3.0	6.7	3.0	6.7
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	9.2	27.8	19.8	40.6	8.8	43.3	19.9	56.5
Actuated g/C Ratio	0.07	0.21	0.15	0.31	0.07	0.33	0.15	0.43
v/c Ratio	0.28	0.86dr	0.88	0.38	0.24	0.81	0.78	0.94
Control Delay	60.0	45.9	69.1	28.8	59.7	42.8	59.6	54.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.0	45.9	69.1	28.8	59.7	42.8	59.6	54.8
LOS	E	D	E	C	E	D	E	D
Approach Delay		47.0		47.7		43.5		55.6
Approach LOS		D		D		D		E

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 104 (80%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 140
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.94
Intersection Signal Delay: 50.0 — Intersection LOS: D
Intersection Capacity Utilization 91.3% — ICU Level of Service F
Analysis Period (min) 15
dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Splits and Phases: 7: Regional Rd 25 & Britannia Rd



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	65	770	465	530	55	1315	415	2000
v/c Ratio	0.28	0.86dr	0.88	0.38	0.24	0.81	0.78	0.94
Control Delay	60.0	45.9	69.1	28.8	59.7	42.8	59.6	54.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.0	45.9	69.1	28.8	59.7	42.8	59.6	54.8
Queue Length 50th (m)	8.7	70.2	64.0	41.8	7.4	114.7	61.4	171.9
Queue Length 95th (m)	16.3	82.9	#93.4	55.2	14.3	134.1 m	#104.1	#259.1
Internal Link Dist (m)		377.9		182.4		165.3		159.1
Turn Bay Length (m)	60.0		120.0		90.0		90.0	
Base Capacity (vph)	508	1369	530	1420	229	1630	535	2139
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	0.13	0.56	0.88	0.37	0.24	0.81	0.78	0.94

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.
dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	455	315	465	380	150	55	1070	245	415	1975	25
Future Volume (vph)	65	455	315	465	380	150	55	1070	245	415	1975	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.5		3.0	6.5		3.0	6.7		3.0	6.7	
Lane Util. Factor	0.97	*0.80		0.97	*0.80		0.97	0.91		0.97	0.91	
Frt	1.00	0.94		1.00	0.96		1.00	0.97		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3303	4238		3445	4311		3367	4810		3502	4918	
Flt Permitted	0.95	1.00		1.00	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3303	4238		3445	4311		3367	4810		3502	4918	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	65	455	315	465	380	150	55	1070	245	415	1975	25
RTOR Reduction (vph)	0	91	0	0	54	0	0	29	0	0	1	0
Lane Group Flow (vph)	65	679	0	465	476	0	55	1286	0	415	1999	0
Heavy Vehicles (%)	6%	1%	1%	7%	1%	2%	4%	5%	4%	0%	5%	27%
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	6.8	27.6		18.8	39.6		6.4	41.5		18.9	54.0	
Effective Green, g (s)	7.8	28.6		19.8	40.6		7.4	42.5		19.9	55.0	
Actuated g/C Ratio	0.06	0.22		0.15	0.31		0.06	0.33		0.15	0.42	
Clearance Time (s)	4.0	7.5		4.0	7.5		4.0	7.7		4.0	7.7	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	198	932		524	1346		191	1572		536	2080	
v/s Ratio Prot	0.02	c0.16		c0.13	0.11		0.02	0.27		c0.12	c0.41	
v/s Ratio Perm												
v/c Ratio	0.33	0.86dr		0.89	0.35		0.29	0.82		0.77	0.96	
Uniform Delay, d1	58.6	47.1		54.0	34.6		58.8	40.2		52.9	36.5	
Progression Factor	1.00	1.00		0.93	0.95		1.00	1.00		0.97	1.38	
Incremental Delay, d2	1.0	2.9		16.2	0.2		0.8	4.9		4.7	9.4	
Delay (s)	59.6	50.0		66.2	33.1		59.6	45.1		56.2	59.7	
Level of Service	E	D		E	C		E	D		E	E	
Approach Delay (s)		50.7			48.6			45.6			59.1	
Approach LOS		D			D			D			E	

Intersection Summary				
HCM 2000 Control Delay	52.7	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.88			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	19.2	
Intersection Capacity Utilization	91.3%	ICU Level of Service	F	
Analysis Period (min)	15			

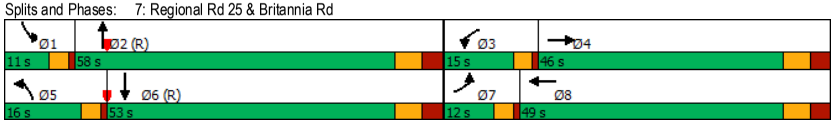
dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	55	350	325	550	275	1725	190	1050
Future Volume (vph)	55	350	325	550	275	1725	190	1050
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases								
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	7.0	10.0	7.0	10.0	7.0	20.0	7.0	20.0
Minimum Split (s)	11.0	45.5	11.0	45.5	11.0	49.7	11.0	49.7
Total Split (s)	12.0	46.0	15.0	49.0	16.0	58.0	11.0	53.0
Total Split (%)	9.2%	35.4%	11.5%	37.7%	12.3%	44.6%	8.5%	40.8%
Yellow Time (s)	3.0	4.2	3.0	4.2	3.0	4.2	3.0	4.2
All-Red Time (s)	1.0	3.3	1.0	3.3	1.0	3.5	1.0	3.5
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.5	3.0	6.5	3.0	6.7	3.0	6.7
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)	8.5	28.2	12.0	33.9	15.6	58.0	12.6	55.0
Actuated g/C Ratio	0.07	0.22	0.09	0.26	0.12	0.45	0.10	0.42
v/c Ratio	0.25	0.40	0.98	0.91dr	0.66	1.01	0.57	0.53
Control Delay	60.7	41.9	96.6	37.3	62.5	56.5	80.3	18.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.7	41.9	96.6	37.3	62.5	56.5	80.3	18.1
LOS	E	D	F	D	E	E	F	B
Approach Delay		44.2		52.4		57.2		27.2
Approach LOS		D		D		E		C

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 140			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.01			
Intersection Signal Delay: 48.0		Intersection LOS: D	
Intersection Capacity Utilization 93.6%		ICU Level of Service F	
Analysis Period (min) 15			

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Splits and Phases: 7: Regional Rd 25 & Britannia Rd



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	55	395	325	955	275	2230	190	1105
v/c Ratio	0.25	0.40	0.98	0.91dr	0.66	1.01	0.57	0.53
Control Delay	60.7	41.9	96.6	37.3	62.5	56.5	80.3	18.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.7	41.9	96.6	37.3	62.5	56.5	80.3	18.1
Queue Length 50th (m)	7.3	36.0	45.8	85.7	36.7	~242.2	21.7	85.4
Queue Length 95th (m)	14.5	44.6	#77.5	98.7	52.7	#282.8	#40.0	103.5
Internal Link Dist (m)		377.9		190.1		165.3		161.9
Turn Bay Length (m)	60.0		120.0		90.0		90.0	
Base Capacity (vph)	228	1372	333	1483	421	2212	336	2104
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	0.24	0.29	0.98	0.64	0.65	1.01	0.57	0.53

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	350	45	325	550	405	275	1725	505	190	1050	55
Future Volume (vph)	55	350	45	325	550	405	275	1725	505	190	1050	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.5		3.0	6.5		3.0	6.7		3.0	6.7	
Lane Util. Factor	0.97	*0.80		0.97	*0.80		0.97	0.91		0.97	0.91	
Frt	1.00	0.98		1.00	0.94		1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00		1.00	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3303	4482		3614	4228		3502	4876		3467	4960	
Flt Permitted	0.95	1.00		1.00	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3303	4482		3614	4228		3502	4876		3467	4960	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	55	350	45	325	550	405	275	1725	505	190	1050	55
RTOR Reduction (vph)	0	12	0	0	112	0	0	38	0	0	4	0
Lane Group Flow (vph)	55	383	0	325	843	0	275	2192	0	190	1101	0
Heavy Vehicles (%)	6%	0%	0%	2%	1%	1%	0%	3%	2%	1%	4%	0%
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	6.1	28.0		11.0	32.9		14.6	56.2		11.6	53.2	
Effective Green, g (s)	7.1	29.0		12.0	33.9		15.6	57.2		12.6	54.2	
Actuated g/C Ratio	0.05	0.22		0.09	0.26		0.12	0.44		0.10	0.42	
Clearance Time (s)	4.0	7.5		4.0	7.5		4.0	7.7		4.0	7.7	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	180	999		333	1102		420	2145		336	2067	
v/s Ratio Prot	0.02	0.09		c0.09	c0.20		c0.08	c0.45		0.05	0.22	
v/s Ratio Perm												
v/c Ratio	0.31	0.38		0.98	0.91dr		0.65	1.02		0.57	0.53	
Uniform Delay, d1	59.1	42.9		58.9	44.4		54.6	36.4		56.1	28.4	
Progression Factor	1.00	1.00		0.92	0.87		1.00	1.00		1.32	0.59	
Incremental Delay, d2	1.0	0.2		41.4	3.1		3.7	25.2		2.0	0.9	
Delay (s)	60.0	43.2		95.2	41.8		58.3	61.6		76.0	17.6	
Level of Service	E	D		F	D		E	E		E	B	
Approach Delay (s)		45.2			55.4			61.3			26.2	
Approach LOS		D			E			E			C	

Intersection Summary

HCM 2000 Control Delay	50.4	HCM 2000 Level of Service	D			
HCM 2000 Volume to Capacity ratio	0.93					
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	19.2			
Intersection Capacity Utilization	93.6%	ICU Level of Service	F			
Analysis Period (min)	15					

dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group

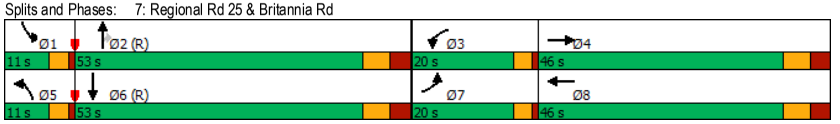
Testing Road Improvements - Option 2
Regional Road 25 / Britannia Road - With Northbound Right Turn Lane

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	65	455	465	380	55	1070	245	415	1975
Future Volume (vph)	65	455	465	380	55	1070	245	415	1975
Turn Type	Prot	NA	Prot	NA	Prot	NA	Perm	Prot	NA
Protected Phases	7	4	3	8	5	2		1	6
Permitted Phases							2		
Detector Phase	7	4	3	8	5	2	2	1	6
Switch Phase									
Minimum Initial (s)	7.0	10.0	7.0	10.0	7.0	20.0	20.0	7.0	20.0
Minimum Split (s)	11.0	45.5	11.0	45.5	11.0	49.7	49.7	11.0	49.7
Total Split (s)	20.0	46.0	20.0	46.0	11.0	53.0	53.0	11.0	53.0
Total Split (%)	15.4%	35.4%	15.4%	35.4%	8.5%	40.8%	40.8%	8.5%	40.8%
Yellow Time (s)	3.0	4.2	3.0	4.2	3.0	4.2	4.2	3.0	4.2
All-Red Time (s)	1.0	3.3	1.0	3.3	1.0	3.5	3.5	1.0	3.5
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.5	3.0	6.5	3.0	6.7	6.7	3.0	6.7
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	None	C-Max
Act Effct Green (s)	9.2	27.9	17.0	37.9	8.8	46.3	46.3	19.6	59.3
Actuated g/C Ratio	0.07	0.21	0.13	0.29	0.07	0.36	0.36	0.15	0.46
v/c Ratio	0.28	0.87dr	1.03	0.40	0.24	0.69	0.41	0.79	1.01
Control Delay	60.0	46.0	102.0	31.0	59.7	38.6	5.6	60.3	65.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.0	46.0	102.0	31.0	59.7	38.6	5.6	60.3	65.4
LOS	E	D	F	C	E	D	A	E	E
Approach Delay		47.1		64.2		33.6			64.5
Approach LOS		D		E		C			E

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 104 (80%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.03	
Intersection Signal Delay: 54.3	Intersection LOS: D
Intersection Capacity Utilization 91.3%	ICU Level of Service F
Analysis Period (min) 15	

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Splits and Phases: 7: Regional Rd 25 & Britannia Rd



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	65	770	465	530	55	1070	245	415	2000
v/c Ratio	0.28	0.87dr	1.03	0.40	0.24	0.69	0.41	0.79	1.01
Control Delay	60.0	46.0	102.0	31.0	59.7	38.6	5.6	60.3	65.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.0	46.0	102.0	31.0	59.7	38.6	5.6	60.3	65.4
Queue Length 50th (m)	8.7	70.6	~69.2	43.2	7.4	102.2	0.0	61.4	~238.7
Queue Length 95th (m)	16.3	83.2	#105.2	57.0	14.3	121.8	23.2 m	#104.5	#308.5
Internal Link Dist (m)		377.9		182.4		165.3			159.1
Turn Bay Length (m)	60.0		120.0		90.0		90.0	90.0	
Base Capacity (vph)	431	1367	450	1382	229	1546	600	528	1972
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	0.15	0.56	1.03	0.38	0.24	0.69	0.41	0.79	1.01

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.
dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	455	315	465	380	150	55	1070	245	415	1975	25
Future Volume (vph)	65	455	315	465	380	150	55	1070	245	415	1975	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.5		3.0	6.5		3.0	6.7	6.7	3.0	6.7	
Lane Util. Factor	0.97	*0.80		0.97	*0.80		0.97	*0.80	*0.80	0.97	*0.80	
Frt	1.00	0.94		1.00	0.96		1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3303	4238		3445	4311		3367	4343	1242	3502	4323	
Flt Permitted	0.95	1.00		1.00	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3303	4238		3445	4311		3367	4343	1242	3502	4323	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	65	455	315	465	380	150	55	1070	245	415	1975	25
RTOR Reduction (vph)	0	89	0	0	56	0	0	0	159	0	1	0
Lane Group Flow (vph)	65	681	0	465	474	0	55	1070	86	415	1999	0
Heavy Vehicles (%)	6%	1%	1%	7%	1%	2%	4%	5%	4%	0%	5%	27%
Turn Type	Prot	NA		Prot	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			
Actuated Green, G (s)	6.8	27.7		16.0	36.9		6.4	44.5	44.5	18.6	56.7	
Effective Green, g (s)	7.8	28.7		17.0	37.9		7.4	45.5	45.5	19.6	57.7	
Actuated g/C Ratio	0.06	0.22		0.13	0.29		0.06	0.35	0.35	0.15	0.44	
Clearance Time (s)	4.0	7.5		4.0	7.5		4.0	7.7	7.7	4.0	7.7	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	198	935		450	1256		191	1520	434	527	1918	
v/s Ratio Prot	0.02	c0.16		c0.13	0.11		0.02	0.25		c0.12	c0.46	
v/s Ratio Perm									0.07			
v/c Ratio	0.33	0.87dr		1.03	0.38		0.29	0.70	0.20	0.79	1.04	
Uniform Delay, d1	58.6	47.0		56.5	36.7		58.8	36.4	29.5	53.2	36.1	
Progression Factor	1.00	1.00		0.93	0.96		1.00	1.00	1.00	0.97	1.32	
Incremental Delay, d2	1.0	2.9		50.9	0.2		0.8	2.8	1.0	5.3	29.2	
Delay (s)	59.6	49.9		103.4	35.4		59.6	39.2	30.5	57.0	77.1	
Level of Service	E	D		F	D		E	D	C	E	E	
Approach Delay (s)		50.7			67.2			38.5			73.7	
Approach LOS		D			E			D			E	

Intersection Summary				
HCM 2000 Control Delay	60.5	HCM 2000 Level of Service	E	
HCM 2000 Volume to Capacity ratio	0.95			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	19.2	
Intersection Capacity Utilization	91.3%	ICU Level of Service	F	
Analysis Period (min)	15			

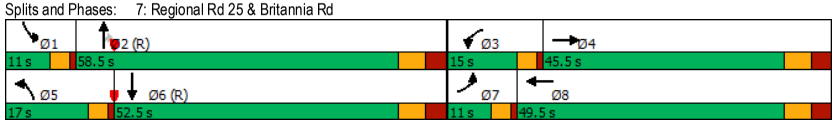
dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	55	350	325	550	275	1725	505	190	1050
Future Volume (vph)	55	350	325	550	275	1725	505	190	1050
Turn Type	Prot	NA	Prot	NA	Prot	NA	Perm	Prot	NA
Protected Phases	7	4	3	8	5	2		1	6
Permitted Phases							2		
Detector Phase	7	4	3	8	5	2	2	1	6
Switch Phase									
Minimum Initial (s)	7.0	10.0	7.0	10.0	7.0	20.0	20.0	7.0	20.0
Minimum Split (s)	11.0	45.5	11.0	45.5	11.0	49.7	49.7	11.0	49.7
Total Split (s)	11.0	45.5	15.0	49.5	17.0	58.5	58.5	11.0	52.5
Total Split (%)	8.5%	35.0%	11.5%	38.1%	13.1%	45.0%	45.0%	8.5%	40.4%
Yellow Time (s)	3.0	4.2	3.0	4.2	3.0	4.2	4.2	3.0	4.2
All-Red Time (s)	1.0	3.3	1.0	3.3	1.0	3.5	3.5	1.0	3.5
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.5	3.0	6.5	3.0	6.7	6.7	3.0	6.7
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	None	C-Max
Act Effct Green (s)	8.0	27.7	12.0	33.9	15.7	58.3	58.3	12.8	55.5
Actuated g/C Ratio	0.06	0.21	0.09	0.26	0.12	0.45	0.45	0.10	0.43
v/c Ratio	0.27	0.41	0.98	0.91dr	0.65	0.87	0.68	0.56	0.59
Control Delay	61.9	42.5	118.1	37.1	62.1	39.5	15.9	75.3	20.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.9	42.5	118.1	37.1	62.1	39.5	15.9	75.3	20.8
LOS	E	D	F	D	E	D	B	E	C
Approach Delay		44.8		57.6		37.2			28.8
Approach LOS		D		E		D			C

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 104 (80%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.98
Intersection Signal Delay: 40.6 Intersection LOS: D
Intersection Capacity Utilization 82.4% ICU Level of Service E
Analysis Period (min) 15
dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Splits and Phases: 7: Regional Rd 25 & Britannia Rd



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	55	395	325	955	275	1725	505	190	1105
v/c Ratio	0.27	0.41	0.98	0.91dr	0.65	0.87	0.68	0.56	0.59
Control Delay	61.9	42.5	118.1	37.1	62.1	39.5	15.9	75.3	20.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.9	42.5	118.1	37.1	62.1	39.5	15.9	75.3	20.8
Queue Length 50th (m)	7.4	36.2	48.3	51.1	36.7	181.7	49.5	27.5	45.6
Queue Length 95th (m)	14.6	45.1	#79.4	54.2	52.0	#232.2	111.7	41.2	54.8
Internal Link Dist (m)		377.9		190.1		165.3			161.9
Turn Bay Length (m)	60.0		120.0		90.0		90.0	90.0	
Base Capacity (vph)	203	1355	333	1499	430	1985	746	342	1864
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	0.27	0.29	0.98	0.64	0.64	0.87	0.68	0.56	0.59

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	350	45	325	550	405	275	1725	505	190	1050	55
Future Volume (vph)	55	350	45	325	550	405	275	1725	505	190	1050	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.5		3.0	6.5		3.0	6.7	6.7	3.0	6.7	
Lane Util. Factor	0.97	*0.80		0.97	*0.80		0.97	*0.80	*0.80	0.97	*0.80	
Frt	1.00	0.98		1.00	0.94		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		1.00	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3303	4482		3614	4228		3502	4427	1267	3467	4360	
Flt Permitted	0.95	1.00		1.00	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3303	4482		3614	4228		3502	4427	1267	3467	4360	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	55	350	45	325	550	405	275	1725	505	190	1050	55
RTOR Reduction (vph)	0	12	0	0	112	0	0	0	180	0	3	0
Lane Group Flow (vph)	55	383	0	325	843	0	275	1725	325	190	1102	0
Heavy Vehicles (%)	6%	0%	0%	2%	1%	1%	0%	3%	2%	1%	4%	0%
Turn Type	Prot	NA		Prot	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			
Actuated Green, G (s)	5.6	27.5		11.0	32.9		14.7	56.5	56.5	11.8	53.6	
Effective Green, g (s)	6.6	28.5		12.0	33.9		15.7	57.5	57.5	12.8	54.6	
Actuated g/C Ratio	0.05	0.22		0.09	0.26		0.12	0.44	0.44	0.10	0.42	
Clearance Time (s)	4.0	7.5		4.0	7.5		4.0	7.7	7.7	4.0	7.7	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	167	982		333	1102		422	1958	560	341	1831	
v/s Ratio Prot	0.02	0.09		c0.09	c0.20		c0.08	c0.39		0.05	0.25	
v/s Ratio Perm									0.26			
v/c Ratio	0.33	0.39		0.98	0.91dr		0.65	0.88	0.58	0.56	0.60	
Uniform Delay, d1	59.6	43.3		58.9	44.4		54.5	33.1	27.2	55.9	29.3	
Progression Factor	1.00	1.00		1.32	0.87		1.00	1.00	1.00	1.24	0.64	
Incremental Delay, d2	1.2	0.3		41.4	3.1		3.6	6.1	4.3	1.8	1.3	
Delay (s)	60.7	43.6		119.2	41.6		58.1	39.2	31.5	70.9	20.1	
Level of Service	E	D		F	D		E	D	C	E	C	
Approach Delay (s)		45.7			61.3			39.8			27.6	
Approach LOS		D			E			D			C	

Intersection Summary			
HCM 2000 Control Delay	42.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	19.2
Intersection Capacity Utilization	82.4%	ICU Level of Service	E
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group

APPENDIX L: SENSITIVITY CAPACITY TABLES

1 Regional Rd 25 & Louis St Laurent Ave

Lane Group	FT2032		FT2037	
	V/C	LOS	V/C	LOS
EBL	0.68 (0.70)	D (D)	0.68 (0.70)	D (D)
EBTR	0.93 (0.83)	E (E)	0.93 (0.83)	E (E)
WBL	0.94 (0.88)	E (E)	0.94 (0.88)	E (E)
WBTR	0.57 (0.74)	D (D)	0.57 (0.74)	D (D)
NBL	0.65 (0.75)	D (D)	0.72 (0.83)	D (E)
NBTR	0.82 (0.73)	D (C)	0.95 (0.89)	E (D)
SBL	0.58 (0.58)	D (C)	0.58 (0.62)	D (D)
SBTR	0.72 (0.65)	D (D)	0.96 (0.76)	E (D)
Overall	**0.89 (0.81)**	**D (D)**	**0.95 (0.89)**	**E (D)**

2 Regional Rd 25 & Whitlock Ave

Lane Group	FT2032		FT2037	
	V/C	LOS	V/C	LOS
EBL	0.69 (0.60)	E (E)	0.69 (0.60)	E (E)
EBTR	0.36 (0.22)	D (D)	0.36 (0.22)	D (D)
WBL	0.33 (0.15)	D (D)	0.33 (0.15)	D (D)
WBT	0.13 (0.17)	D (D)	0.13 (0.17)	D (D)
WBR	0.07 (0.05)	D (D)	0.07 (0.05)	D (D)
NBL	0.29 (0.30)	B (A)	0.32 (0.35)	C (A)
NBTR	0.41 (0.55)	A (A)	0.47 (0.65)	A (A)
SBL	0.16 (0.30)	A (A)	0.20 (0.38)	A (B)
SBTR	0.64 (0.44)	B (A)	0.75 (0.50)	B (A)
Overall	**0.63 (0.55)**	**B (B)**	**0.72 (0.63)**	**B (B)**

5 Regional Rd 25 & Etheridge Ave/Collector Road

Lane Group	FT2032		FT2037	
	V/C	LOS	V/C	LOS
EBL	0.73 (0.54)	E (D)	0.73 (0.54)	E (D)
EBTR	0.06 (0.03)	D (D)	0.06 (0.03)	D (D)
WBL	0.56 (0.38)	E (E)	0.56 (0.38)	E (E)
WBTR	0.03 (0.02)	D (E)	0.03 (0.02)	D (E)
NBL	0.46 (0.55)	D (C)	0.46 (0.58)	E (C)
NBTR	0.33 (0.58)	A (A)	0.39 (0.69)	A (A)
SBL	0.10 (0.29)	A (C)	0.13 (0.36)	A (C)
SBTR	0.69 (0.43)	A (A)	0.81 (0.52)	A (A)
Overall	**0.70 (0.60)**	**B (B)**	**0.79 (0.67)**	**B (B)**

7 Regional Rd 25 & Britannia Rd

Lane Group	FT2032		FT2037	
	V/C	LOS	V/C	LOS
EBL	0.31 (0.30)	E (E)	0.33 (0.33)	E (E)
EBTR	0.71 (0.38)	D (D)	0.87 (0.38)	D (D)
WBL	0.86 (0.98)	E (F)	0.92 (1.07)	E (F)
WBTR	0.35 (0.89)	C (D)	0.36 (0.92)	C (D)
NBL	0.26 (0.61)	E (E)	0.29 (0.65)	E (E)
NBTR	0.77 (0.96)	D (D)	0.91 (1.16)	D (F)
SBL	0.64 (0.53)	D (E)	0.79 (0.58)	E (E)
SBTR	0.87 (0.49)	D (B)	1.08 (0.60)	F (B)
Overall	**0.82 (0.89)**	**D (D)**	**0.95 (1.01)**	**E (E)**

10 Britannia Rd & Farmstead Dr

Lane Group	FT2032		FT2037	
	V/C	LOS	V/C	LOS
EBL	0.03 (0.05)	A (A)	0.03 (0.06)	A (A)
EBT	0.19 (0.10)	A (A)	0.21 (0.11)	A (A)
WBTR	0.13 (0.24)	A (A)	0.15 (0.26)	A (A)
SBL	0.51 (0.35)	D (D)	0.51 (0.35)	D (D)
SBR	0.02 (0.01)	D (D)	0.02 (0.01)	D (D)
Overall	**0.23 (0.24)**	**A (A)**	**0.25 (0.26)**	**A (A)**

11 Britannia Rd & Rose Way

Lane Group	FT2032		FT2037	
	V/C	LOS	V/C	LOS
EBL	0.05 (0.23)	A (A)	0.06 (0.25)	A (A)
EBT	0.27 (0.23)	A (A)	0.29 (0.25)	A (A)
WBTR	0.25 (0.34)	A (A)	0.27 (0.37)	A (A)
SBL	0.34 (0.24)	E (E)	0.34 (0.24)	E (E)
SBR	0.05 (0.03)	D (E)	0.05 (0.03)	D (E)
Overall	**0.28 (0.33)**	**A (A)**	**0.30 (0.35)**	**A (A)**

3 Regional Rd 25 & Site Dwy (North)

Lane Group	FT2032		FT2037	
	LOS	Delay	LOS	Delay
EBR	C (B)	15.0 (11.6)	C (B)	17.3 (12.3)
NBT	A (A)	0.0 (0.0)	A (A)	0.0 (0.0)
SBT	A (A)	0.0 (0.0)	A (A)	0.0 (0.0)
SBTR	A (A)	0.0 (0.0)	A (A)	0.0 (0.0)

6 Regional Rd 25 & Site Dwy (South)

Lane Group	FT2032		FT2037	
	LOS	Delay	LOS	Delay
EBR	A (A)	9.9 (8.9)	B (A)	10.9 (9.1)
NBT	A (A)	0.0 (0.0)	A (A)	0.0 (0.0)
SBT	A (A)	0.0 (0.0)	A (A)	0.0 (0.0)
SBTR	A (A)	0.0 (0.0)	A (A)	0.0 (0.0)

8 Site Dwy (South)/Site Dwy (North) & Etheridge Ave

Lane Group	FT2032		FT2037	
	LOS	Delay	LOS	Delay
EBTLR	A (A)	0.2 (0.7)	A (A)	0.2 (0.7)
WBTLR	A (A)	1.5 (2.3)	A (A)	1.5 (2.3)
NBTLR	B (B)	10.1 (10.4)	B (B)	10.1 (10.4)
SBTLR	B (B)	11.8 (13.3)	B (B)	11.8 (13.3)

1 Regional Rd 25 & Louis St Laurent Ave

Lane Group	FT2032		FT2037	
	50th Percentile Queue	95th Percentile Queue	50th Percentile Queue	95th Percentile Queue
EBL	43.2 (39.3)	62.6 (58.3)	43.2 (39.3)	62.6 (58.3)
EBT	106.4 (69.7)	145.4 (93.7)	106.4 (69.7)	145.4 (93.7)
WBL	120.2 (80.3)	185.9 (117.9)	120.2 (80.3)	185.9 (117.9)
WBT	79.1 (84.4)	105.6 (106.9)	79.1 (84.4)	105.6 (106.9)
NBL	20.0 (34.5)	34.2 (65.1)	20.0 (45.6)	46.0 (82.9)
NBT	139.9 (137.7)	164.2 (160.7)	175.9 (193.6)	218.7 (225.6)
SBL	11.0 (12.9)	20.8 (32.6)	11.0 (12.9)	20.8 (37.1)
SBT	111.4 (115.8)	132.1 (140.5)	166.2 (145.0)	207.8 (171.5)

2 Regional Rd 25 & Whitlock Ave

Lane Group	FT2032		FT2037	
	50th Percentile Queue	95th Percentile Queue	50th Percentile Queue	95th Percentile Queue
EBL	37.5 (27.2)	57.3 (45.1)	37.5 (27.2)	57.3 (45.1)
EBT	18.2 (10.6)	37.4 (25.0)	18.2 (10.6)	37.4 (25.0)
WBL	12.1 (6.1)	23.8 (14.4)	12.1 (6.1)	23.8 (14.4)
WBT	8.2 (9.8)	17.1 (20.3)	8.2 (9.8)	17.1 (20.3)
WBR	0.0 (0.0)	14.7 (14.0)	0.0 (0.0)	14.7 (14.0)
NBL	1.5 (1.6)	5.8 (4.3)	2.2 (1.3)	7.8 (3.8)
NBT	20.3 (56.8)	117.8 (69.4)	27.3 (69.4)	154.9 (182.6)
SBL	2.6 (2.6)	7.2 (6.9)	2.6 (2.6)	7.2 (12.2)
SBT	112.4 (56.7)	159.7 (83.0)	154.5 (69.0)	218.5 (100.0)

5 Regional Rd 25 & Etheridge Ave/Collector Road

Lane Group	FT2032		FT2037	
	50th Percentile Queue	95th Percentile Queue	50th Percentile Queue	95th Percentile Queue
EBL	44.5 (29.6)	65.7 (48.0)	44.5 (29.6)	65.7 (48.0)
EBT	0.0 (0.0)	10.4 (0.0)	0.0 (0.0)	11.0 (0.0)
WBL	16.9 (10.4)	31.7 (22.4)	16.9 (10.4)	31.7 (22.4)
WBT	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.7 (0.0)
NBL	7.6 (13.0)	14.9 (26.1)	7.9 (25.5)	11.8 (27.5)
NBT	9.4 (57.7)	14.5 (68.3)	11.1 (70.2)	15.6 (66.1)
SBL	0.9 (2.4)	1.3 (8.9)	0.8 (3.3)	1.1 (15.2)
SBT	150.3 (66.7)	171.2 (79.5)	202.2 (85.6)	181.9 (115.7)

7 Regional Rd 25 & Britannia Rd

Lane Group	FT2032		FT2037	
	50th Percentile Queue	95th Percentile Queue	50th Percentile Queue	95th Percentile Queue
EBL	8.0 (6.7)	15.3 (13.7)	8.7 (7.4)	16.3 (14.6)
EBT	62.7 (33.5)	76.0 (42.4)	70.3 (35.8)	83.0 (44.5)
WBL	59.0 (44.6)	86.3 (75.1)	64.6 (51.3)	97.3 (83.6)
WBT	37.4 (47.0)	51.0 (50.0)	42.3 (50.0)	55.8 (52.7)
NBL	6.7 (33.4)	13.4 (46.8)	7.4 (36.7)	14.3 (52.7)
NBT	108.3 (205.0)	129.5 (280.5)	136.9 (305.7)	162.0 (354.0)
SBL	57.6 (26.4)	84.8 (40.3)	62.1 (28.5)	105.0 (42.0)
SBT	155.7 (38.1)	230.0 (44.6)	247.9 (44.6)	317.4 (55.2)

10 Britannia Rd & Farmstead Dr

Lane Group	FT2032		FT2037	
	50th Percentile Queue	95th Percentile Queue	50th Percentile Queue	95th Percentile Queue
EBL	0.6 (0.7)	2.3 (2.2)	0.6 (0.7)	2.3 (2.2)
EBT	11.4 (5.2)	18.8 (8.3)	12.9 (5.9)	21.1 (9.2)
WBT	6.5 (12.8)	18.0 (30.9)	7.3 (14.5)	19.7 (34.6)
SBL	18.4 (11.1)	33.1 (23.1)	18.4 (11.1)	33.1 (23.1)
SBR	0.0 (0.0)	8.5 (7.2)	0.0 (0.0)	8.5 (7.2)

11 Britannia Rd & Rose Way

Lane Group	FT2032		FT2037	
	50th Percentile Queue	95th Percentile Queue	50th Percentile Queue	95th Percentile Queue
EBL	1.8 (2.6)	3.1 (4.3)	1.7 (2.8)	2.4 (4.1)
EBT	41.5 (17.9)	49.0 (23.9)	46.0 (21.4)	52.8 (24.2)
WBT	26.0 (40.1)	35.2 (47.8)	29.2 (45.0)	39.1 (53.4)
SBL	14.3 (7.7)	27.8 (18.0)	14.3 (7.7)	27.8 (18.0)
SBR	0.0 (0.0)	15.3 (13.0)	0.0 (0.0)	15.3 (13.0)

3 Regional Rd 25 & Site Dwy (North)

Lane Group	FT2032 95th Percentile Queue	FT2037 95th Percentile Queue
EBR	4.0 (1.5)	4.8 (1.7)

6 Regional Rd 25 & Site Dwy (South)

Lane Group	FT2032 95th Percentile Queue	FT2037 95th Percentile Queue
EBR	2.1 (1.0)	2.5 (1.1)

8 Site Dwy (South)/Site Dwy (North) & Etheridge Ave

Lane Group	FT2032 95th Percentile Queue	FT2037 95th Percentile Queue
EBTLR	0.1 (0.2)	0.1 (0.2)
WBTLR	0.4 (1.4)	0.4 (1.4)
NBTLR	2.7 (1.8)	2.7 (1.8)
SBTLR	3.4 (2.5)	3.4 (2.5)