

REGIONAL ROAD 25 & BRITANNIA ROAD PROPOSED MIXED-USE DEVELOPMENT

UPDATED Urban Transportation Considerations
Town of Milton

Prepared For: Mattamy (Milton West) Limited

January 2024





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;
- o 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 \pm 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 m² GFA of retail (437 m² on the south block and 483 m² 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

	South	Block	North	Block	Total	
Land Use	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
			Tota	l Future Potentia	al Development	1,571 units
Retail	454 m²	437 m ²	475 m²	483 m ²	929 m²	920 m ²
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**

		SOUTH	BLOCK		NORTH BLOCK			
Land Use	Building 1	Building 2	Building 3	Building 4	Building 5	Building 6	Building 7	Total Proposed
				Resident	tial	<u> </u>		
Residential (units)	231	189	155	217	238	188	209	
Total Residential Units	al 792 units			635 units			1,427 units	
			Block 8	"Hold Out I	Property" P	otential Dev	velopment	144 units
				Tot	tal Future P	otential Dev	velopment	1,571 units
				Non-Resid	ential			
Retail (GFA)	437 m ²				-	-	483 m²	222
Total Non- Residential GFA	Residential 437 m ²		483 m²			920 m²		
				Vehicle Pa	rking			
Resident (spaces)		792 s	paces		779 spaces		1,571 spaces	
Non-Resident (spaces)		174 s	paces		172 spaces		346 spaces	
Total Vehicle Parking (inclusive of Block 8)	966 spaces		951 spaces		1,917 spaces			
				Bicycle Pa	rking			
Resident (spaces)	422 spaces		398 spaces		820 spaces			
Non-Resident (spaces)	41 spaces			41 spaces		82 spaces		
Total Bicycle Parking (inclusive of Block 8) Notes:	463 spaces		439 spaces		902 spaces			



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

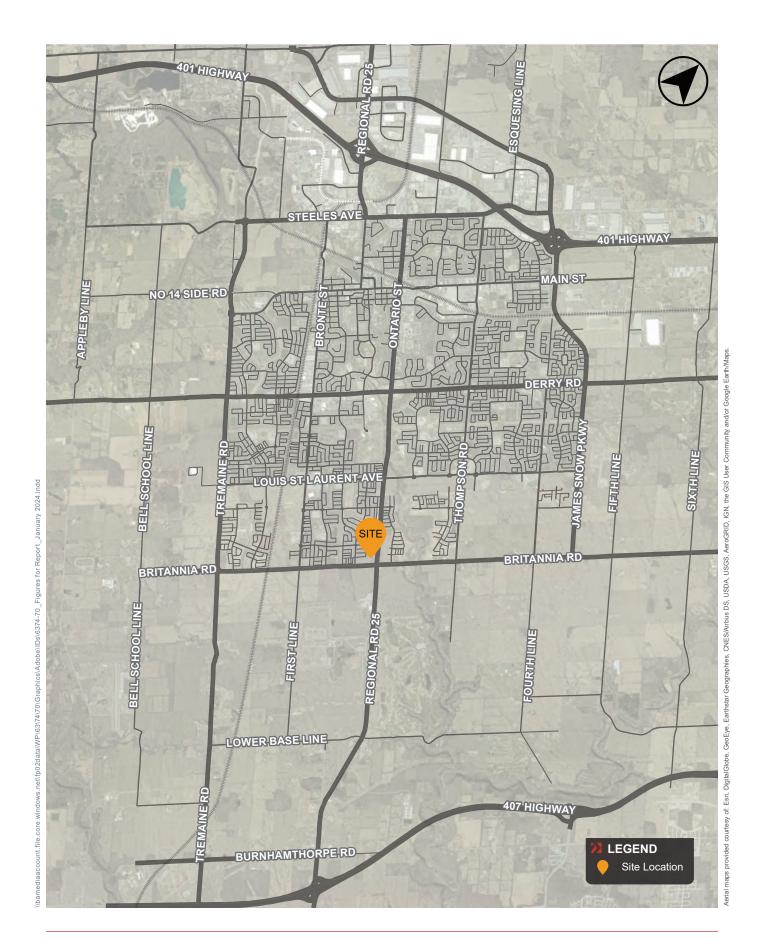


FIGURE 1 SITE LOCATION

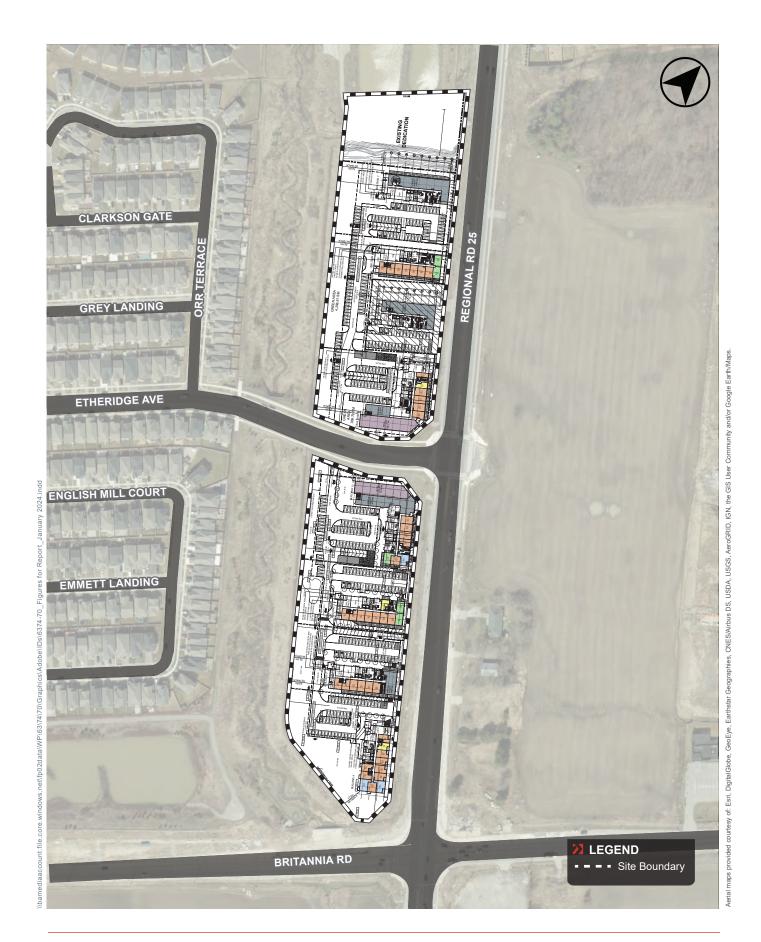


FIGURE 2 SITE PLAN

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 nonautomobile 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**.

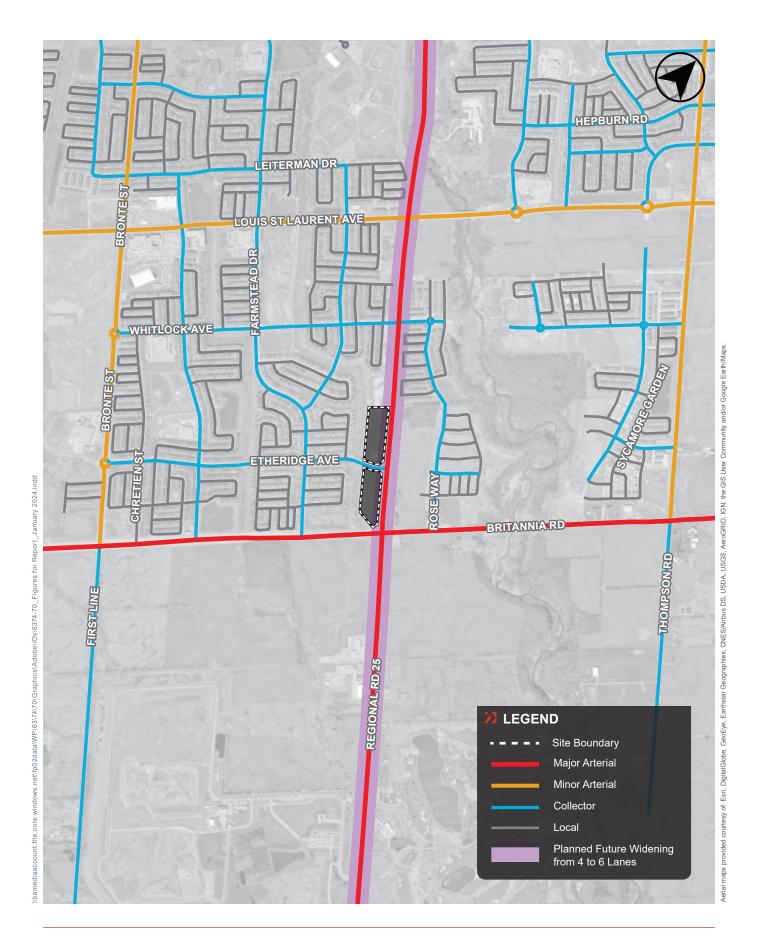
The existing area road network is illustrated in **Figure 3**. The existing area road lane configuration and traffic control are illustrated in **Figure 4**.

TABLE 3 AREA ROAD NETWORK

	fication ection	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.
PW	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	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.		from Main street in the north to Britannia Road in the south,	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.

	fication ection	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 multiuse paths in the boulevard on both sides of the road.	
			North to Steeles Avenue.	The posted speed limit is 70 km/h.	
	Louis St. Laurent Avenue	Louis St. Laurent Avenue extends from James Snow	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.		
		Louis St. Laurent Avenue	Parkway South in the east to west of Tremaine Road, where it becomes Pan Am Boulevard.	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.	
	orth-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.	
	Š			There is no posted speed limit so it is assumed that the statutory 50 km/h speed limit applies.	
Collector		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.	
0	West			There is no posted speed limit so it is assumed that the statutory 50 km/h speed limit applies.	
	East-West	Whitlock Avenue	Whitlock Avenue extends from Sweetfern Crescent / Basswood Drive east of Regional Road 25 to Bronte Street South in the	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.	
			west.	There is no posted speed limit so it is assumed that the statutory 50 km/h speed limit applies.	





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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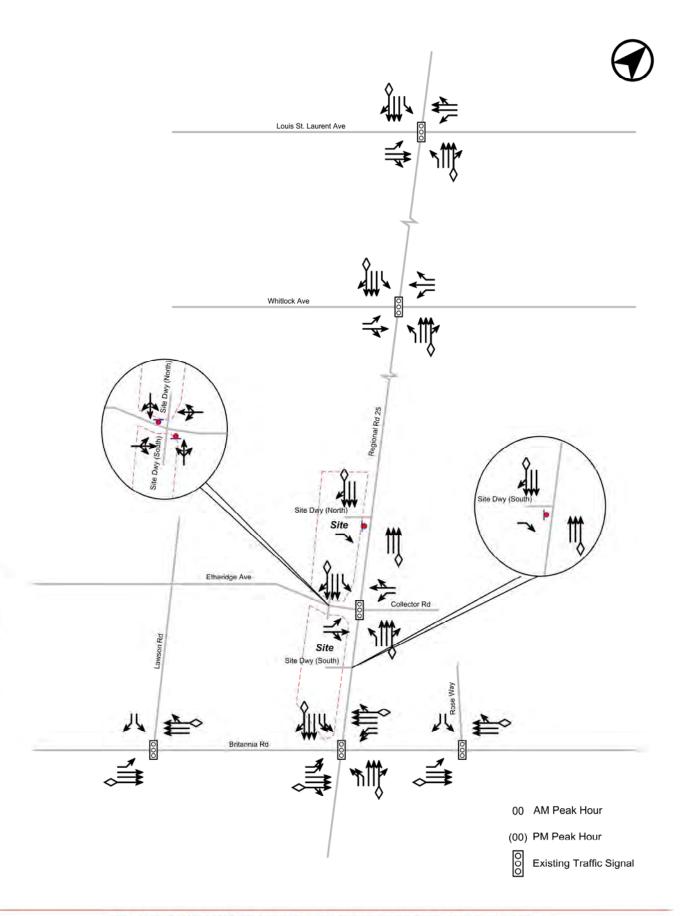


FIGURE 5 ULTIMATE LANE CONFIGURATION & TRAFFIC CONTROL

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.

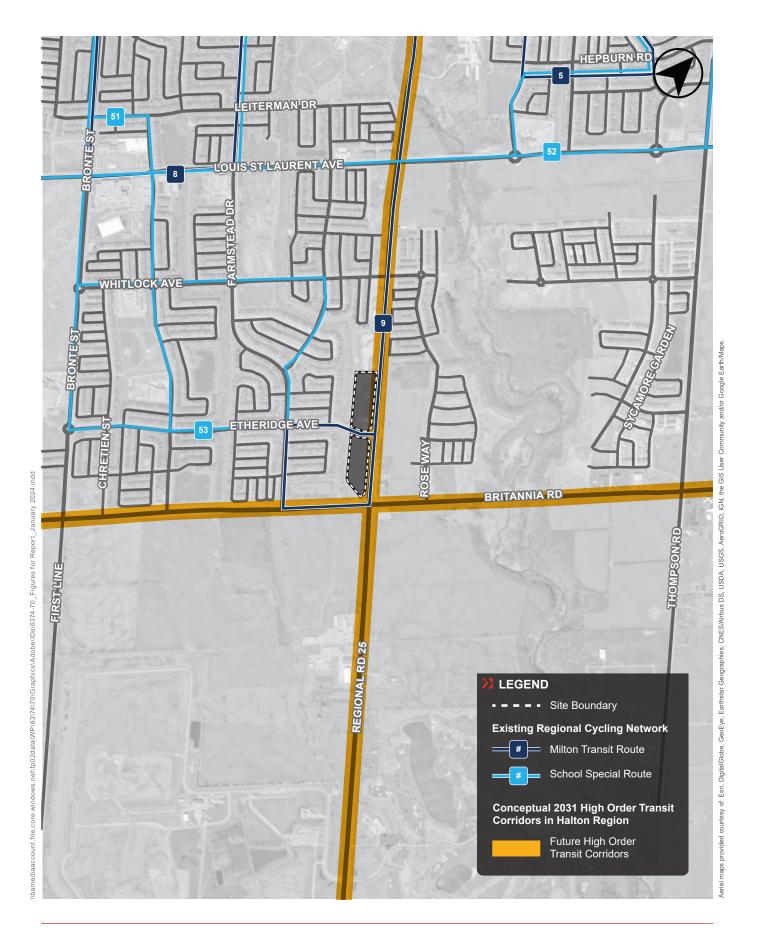
Currently, the Milton GO line operates peak direction peak period service between Milton and Union Station. On a typical weekday, six eastbound trains depart from Milton GO Station during the morning peak period, and six westbound trains arrive at Milton GO Station during the afternoon peak period. Outside 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	Louis St. Laurent Avenue / Leger Way	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		
	(60 min. off peak)	(1.8 Kilometres, 22 min. walk)	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.		
	(00 mm. on peak)	(30 metres, 1 min. waik)	The route was realigned in 2019 to serve a larger portion of Farmstead Road between Etheredge Avenue and Louis St. Laurent Avenue.		
50 School	_	Louis St. Laurent Avenue / Leger Way	Route 50, 51, and 52 are special secondary school connection routes provide student access to and from multiple secondary schools throughout Milton, during the		
Special		(1.8 Kilometres, 22 min. walk)	school year.		
51 School Special	_	Louis St. Laurent Avenue / Leger Way	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		
Special		(1.8 Kilometres, 22 min. walk)	Secondary School at Derry Road and Scott Boulevard, while the second trip leaves from Milton District High		
		Louis St. Laurent Avenue / Leger Way	School. Route 51 follows the same schedule but runs on a slightly		
52 School Special	_	Bronte Street South / Lemieux Court	different alignment serving neighbourhoods south of Derry Road.		
		(1.8 Kilometres, 22 min. walk)	Route 52 – only operates one afternoon trip between Jean Vanier Secondary School and Milton GO Station.		
53 School Special	_	Etheridge Avenue / Farmstead Drive	Route 53 – only operates one afternoon trip between Elsie Macgill Secondary School and Milton GO Station.		
		(300 metres, 4 min. walk)			



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)
 - o 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:

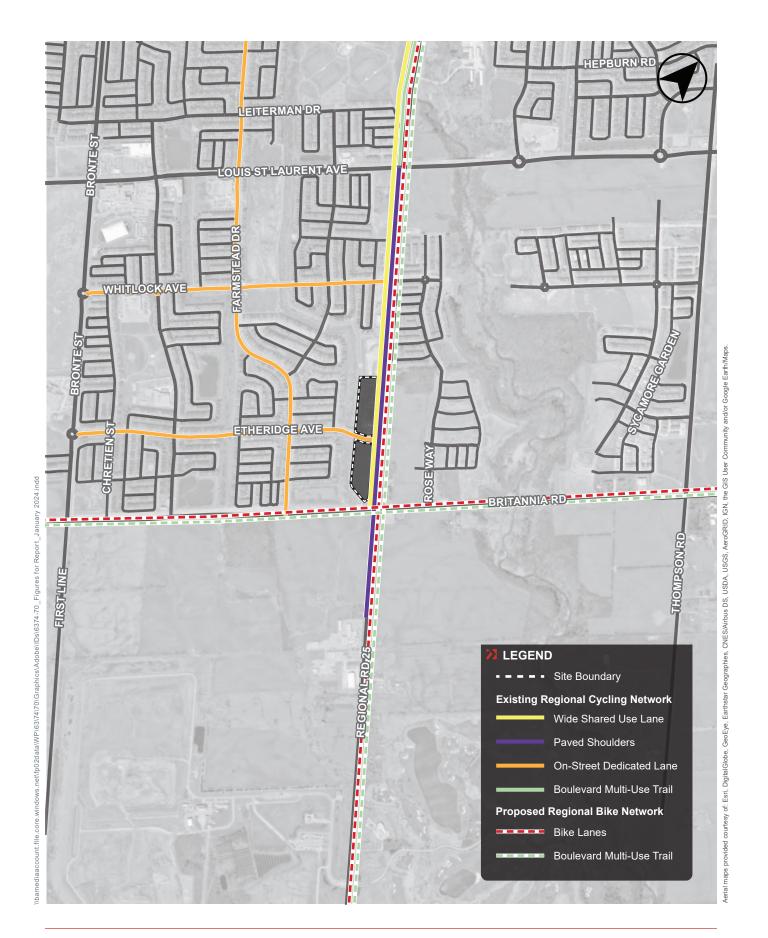
- Bike Lanes along Britannia Road, Regional Road 25 and Louis St Laurent Avenue; and
- Boulevard Multi-use Trail along Britannia Road and Regional Road 25.

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**.





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

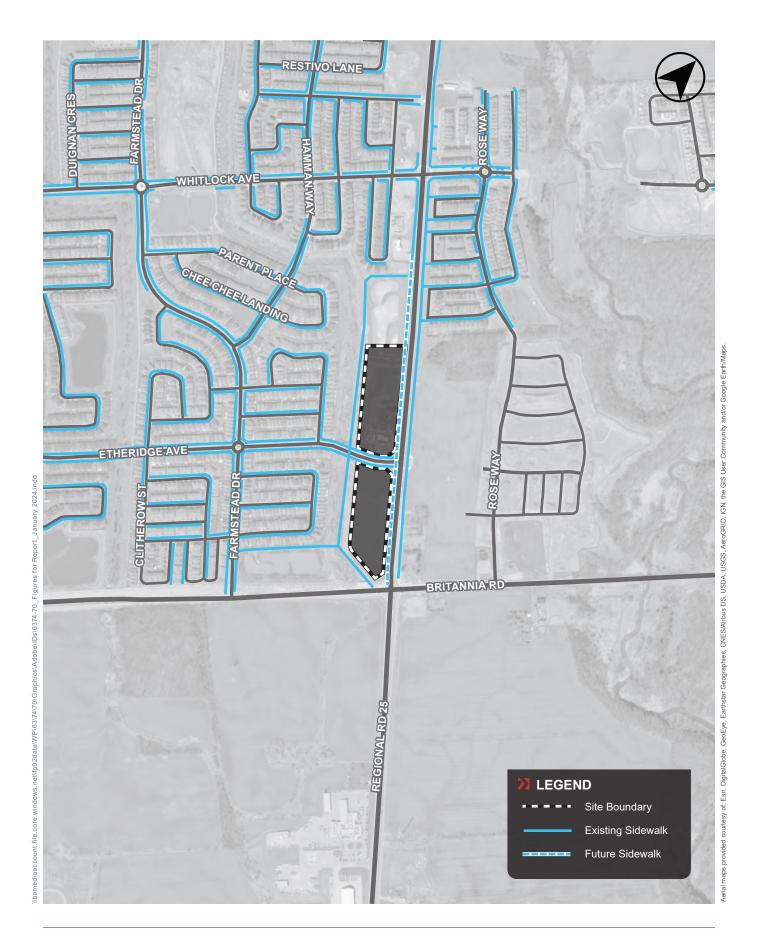
The development of the site includes walkways throughout both the north and south blocks that will connect to a future sidewalk on the west side of Regional Road 25 as well as to the existing sidewalks along Etheridge Avenue. The pedestrian linkages to Etheridge Avenue will provide connectivity to an 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**.





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	Phase 1 (South Block – Buildings 1-4)		Phase 2 (North Block – Buildings 5-8)		SITE TOTAL	
	Parking Requirement	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 m ² 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	
USE	Units/ GFA	Number of Parking Spaces	Units/ GFA	Number of Parking Spaces	Units/ GFA	Number of Parking Spaces
Danidant	792 units	792	779 units	779	1,571 units	1,571
Resident	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:

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**.



^{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").

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)	
	Soi	uth Block		
Resident	990	792	-198	
Non-resident	198	174	-24	
Sub-Total	1,188	966	-222	
	No	rth 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

	Phase 1 (South Block – Buildings 1-4)		Phas (North Block –		SITE TOTAL	
Use	Proposed Parking Supply (spaces)	Accessible Spaces	Proposed Parking Accessibl Supply Spaces (spaces)		Proposed Parking Supply (spaces)	Accessible Spaces
Dasidant	792	18	779	18	4 574	20
Resident	2 spaces + 2%		2 spaces + 2%		1,571	36
Nan Dasidant	174	7	172	7	0.40	4.4
Non-Resident	1 spaces + 3%		1 space + 3%		346	14
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		Peak Hour of	Site	Resident Parking Demand	
(Major Intersection)	Study Date	Parking Demand	Description	Demand (spaces)	Ratio (spaces/unit)
1105 Leger Way ¹	Friday, June 16, 2023	10:00 p.m.	213 units /	134	0.63
(Regional Road	Saturday, June 17, 2023	11:00 p.m.	234 resident	140	0.66
25 / Britannia Road)	Wednesday June 21 & Thursday June 22, 2023	3:00 a.m.	parking spaces (condominium)	204 ²	0.96 ²

Notes:

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.



^{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.

TABLE 10 RESIDENT PARKING DEMAND STUDIES - TOWN OF OAKVILLE

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

Notes:

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.



^{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.

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

	Study Date Peak Hour			Visitor Parking	
Address (Major Intersection)			Site Description	Demand (spaces)	Ratio (spaces / unit)
		Town of Milton			
1360 Main Street East.	Fri. Nov.3, 2023	8:00 & 9:00 p.m.	312 units/ 60 visitor parking	43	0.14
Milton	Sat.Nov 4, 2023	7:00 pm	spaces (condominium)	49	0.16
	Fri. June 16, 2023	8:00 & 9:00 p.m.		33	0.15
1105 Leger Way ³	Sat. June 17, 2023	8:00 p.m.	213 units / 49 parking	33	0.15
(Regional Road 25 / Britannia Road)	Wed. June 21 & Thu June 22, 2023	3:00 a.m.	spaces	144	0.074
		Town of Oakvill	е		
2379 Central Park Drive ¹	Tues, Nov. 27, 2018	6:00 a.m.	301 units /	20	0.07
(Dundas Street E / Sixth Line)	Sat, Dec. 1, 2018	6:00 a.m.	68 resident visitor parking	31	0.10
Line)	Sun, Dec. 2, 2018	6:00 a.m.	spaces	30	0.10
216 Oak Park	Tues, Nov. 27, 2018	5:30 p.m.	213 units /	30	0.14
Boulevard ² (Trafalgar Road /	Sat, Dec. 1, 2018	1:30 p.m.	38 resident visitor parking	29	0.14
Glenashton Drive)	Sun, Dec. 2, 2018	2:30 p.m.	spaces	29	0.14
	Fri, Oct. 25, 2019	3:00 a.m.		35	0.13
1297 Marlborough Court	Fri, Oct. 25, 2019	9:00 p.m.	263 units /	42	0.16
& 1360 White Oaks Boulevard ³	Sat, Oct. 26, 2019	3:00 a.m.	56 resident visitor parking	34	0.13
(Trafalgar Road / Upper Middle Road E)	Sat, Oct. 26, 2019	9:00 p.m.	spaces	33	0.13
Notes:	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	
use	Units/ GFA	Number of Parking Spaces	Units/ GFA	Number of Parking Spaces	Units/ GFA	Number of Parking Spaces
Desident	792 units	792	779 units	779	1,571 units	1,571
Resident	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:

^{2.} Site statistics based on site plans prepared by Core Architects dated January 18, 2024 and include Block 8 ("hold-out property").



^{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.

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

Notes:

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").

^{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:



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
- 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 programment to inform new residents of avertravel mode chand existing many apps providing transit information.		To be determined.	Travel mode information packages to be distributed at the sales office.
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 (not used)	Tuesday, December 6, 2016			
Regional Road 25 / Britannia Road (used)	Monday, December 9, 2019			



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FIGURE 10 BASELINE EXISTING TRAFFIC VOLUMES

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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 <i>all</i> movements		
Regional Road 25	2% for all movements	3.8% for <i>through</i> movements only 2% for <i>all other (i.e., not through)</i> 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	
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	TIS Report Excerpt
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	1,66	5 residential units	

Louis St. Laurent Ave

110(85)

(10)20

50 (30)

(25) 10 (100) 85 (45) 30

FIGURE 11 CORRIDOR GROWTH TRAFFIC VOLUMES (2029 HORIZON)

Louis St. Laurent Ave

250(160)

(10)25

60 (35)

FIGURE 12 CORRIDOR GROWTH TRAFFIC VOLUMES (2032 HORIZON)

590 (340)

FIGURE 13 CORRIDOR GROWTH TRAFFIC VOLUMES (2037 HORIZON)

WBESTANTONG AND INDICATED IN 19-004CG 2031 UNIT

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25(70) 5(20)

FIGURE 14 BACKGROUND DEVELOPMENT TRAFFIC VOLUMES

WESTANDER IN MERSANDING 14-00-BEHAN

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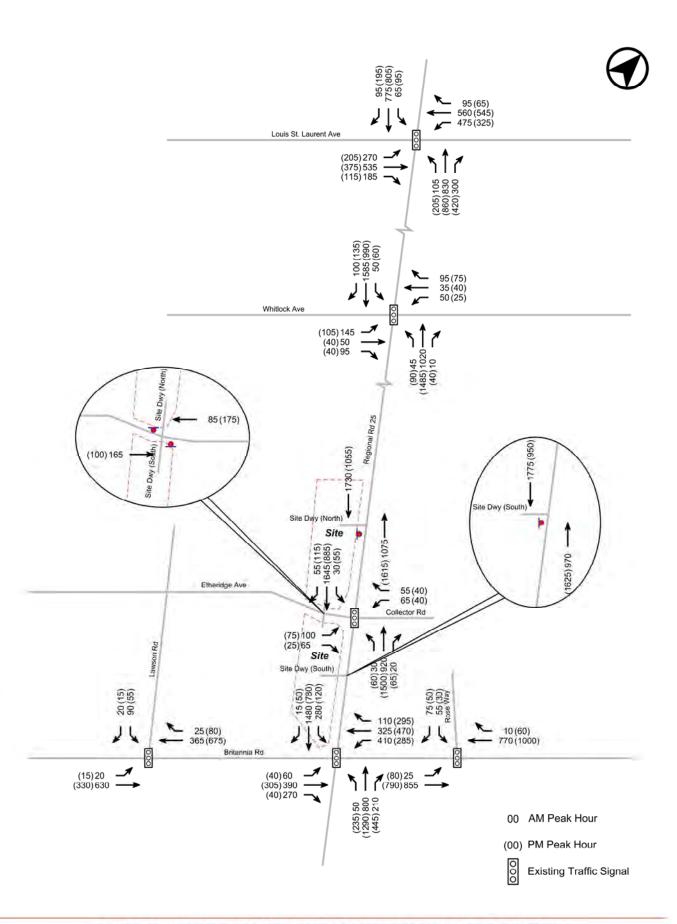


FIGURE 15 FUTURE BACKGROUND TRAFFIC VOLUMES (2029 HORIZON)

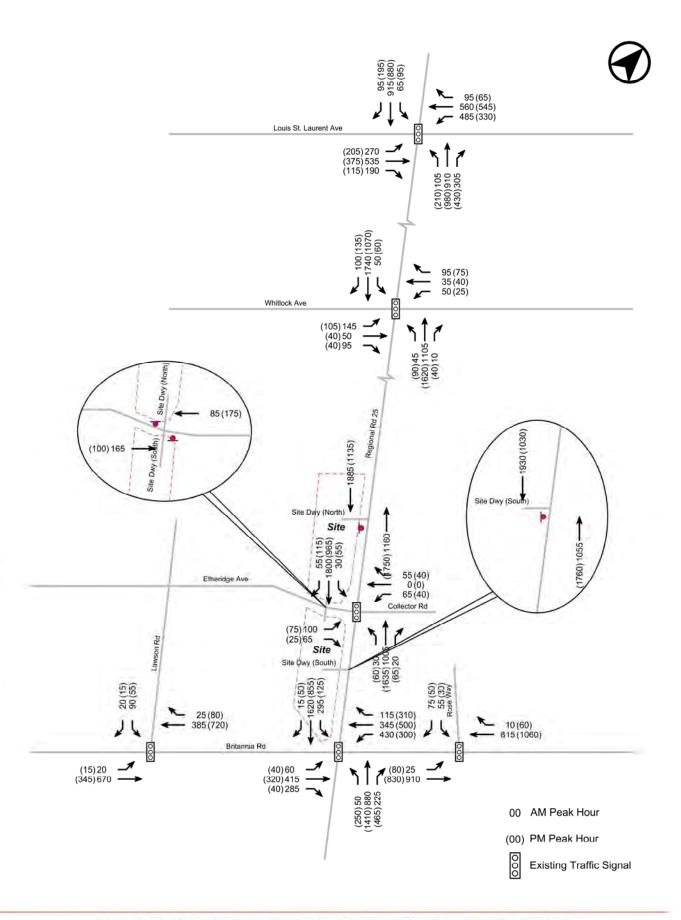


FIGURE 16 FUTURE BACKGROUND TRAFFIC VOLUMES (2032 HORIZON)

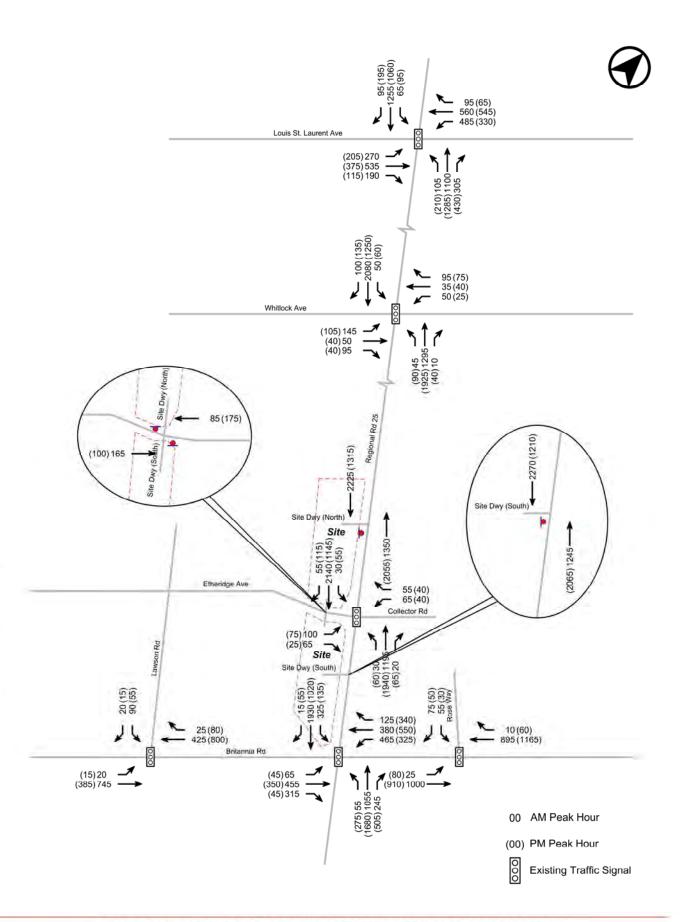


FIGURE 17 FUTURE BACKGROUND TRAFFIC VOLUMES (2037 HORIZON)

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

	Δ	M Peak Hou	ır	P	M Peak Hou	ır
	In	Out	2-Way	In	Out	2-Way
ITE LUC 222 (Multifamily Housing, H	ligh-Rise, G	eneral Urba	n / Suburba	n) – Not Clo	ose to Rail 1	ransit
Fitted Curve Trip Equation	T =	0.22(X) + 18	3.85	T =	0.26(X) + 23	3.12
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

	Д	ιΜ Peak Hoι	ır	F	M Peak Hou	ır
	ln	Out	2-Way	ln	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

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.

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.

8.4.2 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

Pinating	Resid	ential
Directions	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.

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

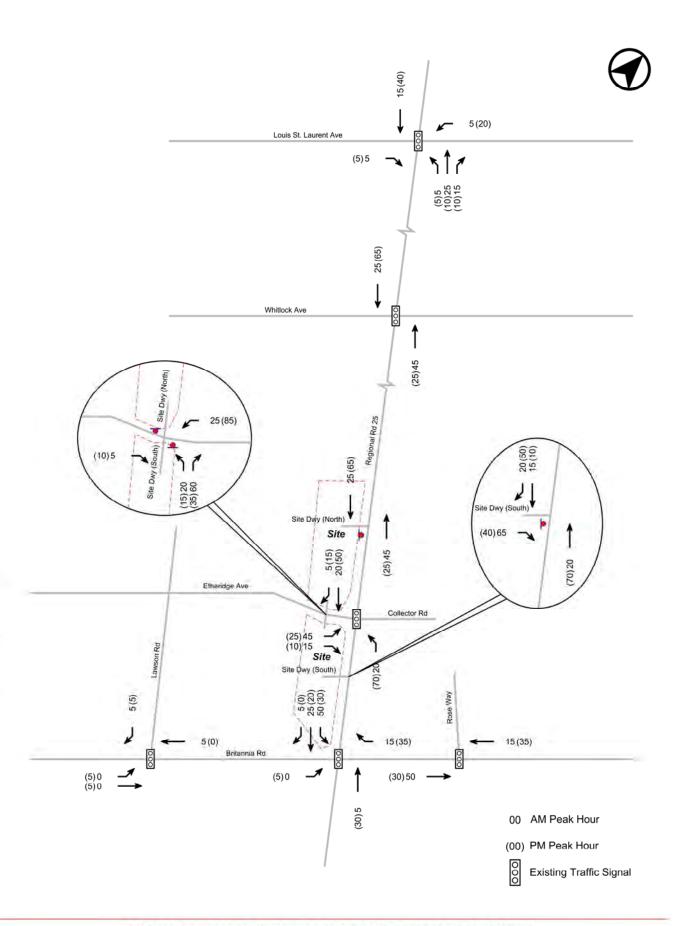
8.5 FUTURE TOTAL TRAFFIC VOLUMES

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.



^{2.} Based upon weekday afternoon, peak period, inbound, home-based trip data.

^{3.} Based on trip data within TTS zones 4104, 4105 and 4108.



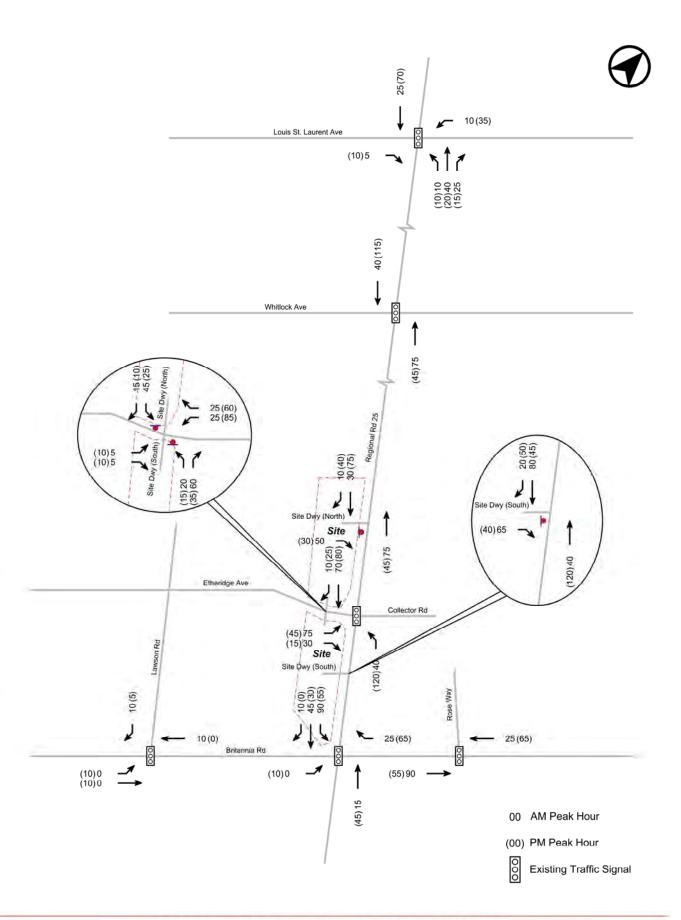
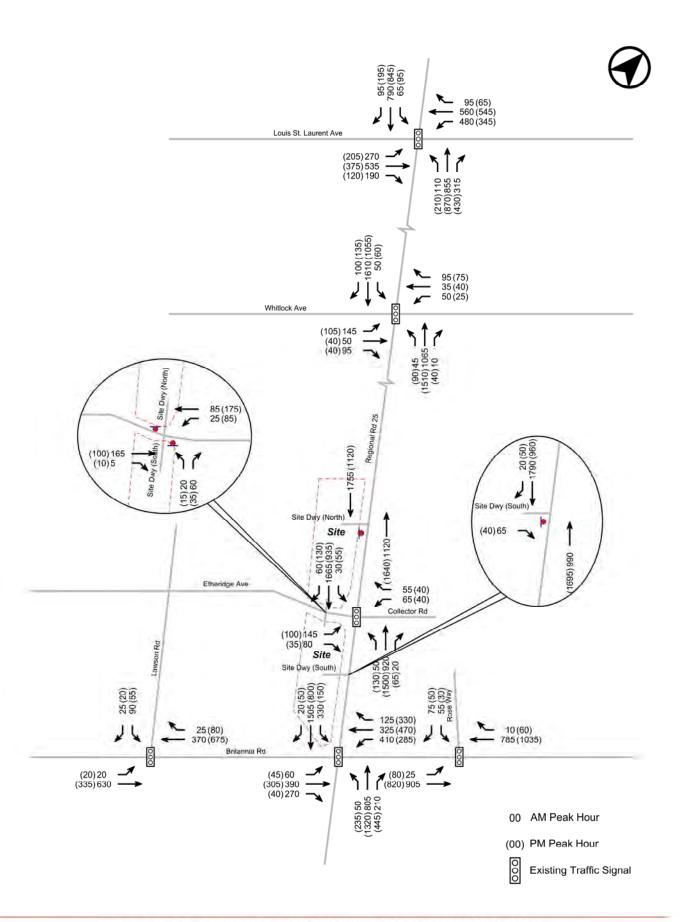
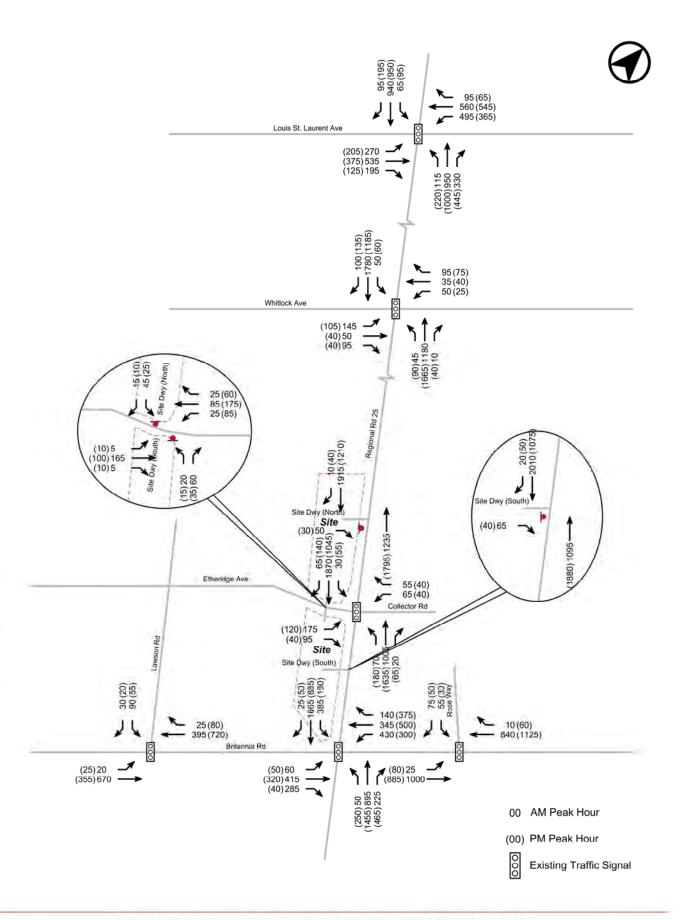


FIGURE 19 FULL BUILDOUT SITE TRAFFIC VOLUMES





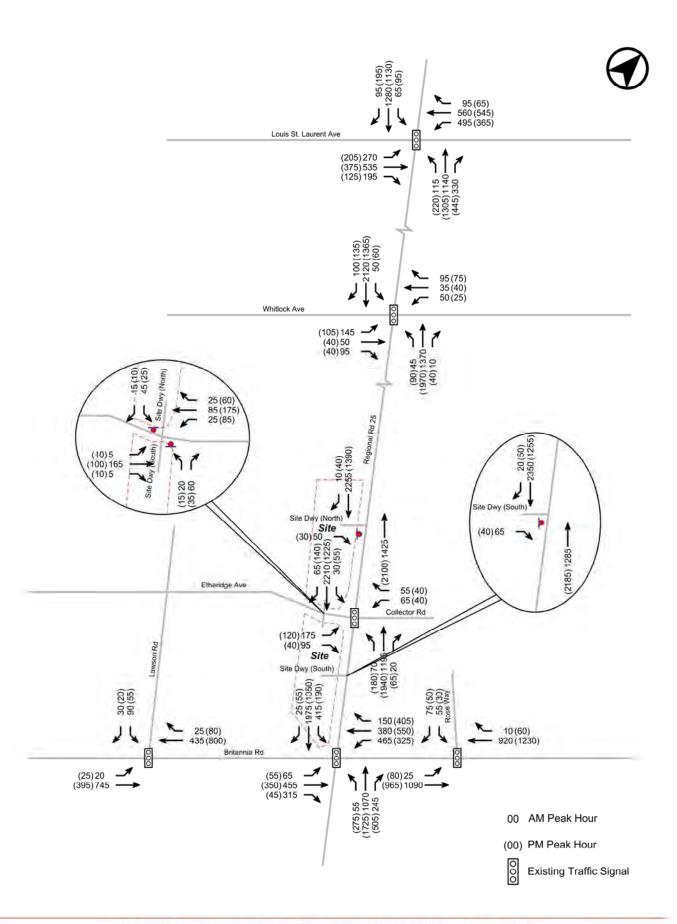


FIGURE 22 FUTURE TOTAL TRAFFIC VOLUMES (2037 HORIZON)

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

				2029 Hor	izon Year			2032 Hor	izon Year			2037 Hor	izon Year	
Movement	Exis	ting		ure Iround		ure tal	Fut Backg	ure round	Fut To		Fut Backg	ure round		ure tal
	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)



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^{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

				2029 Hor	izon Year			2032 Hor	izon Year			2037 Hor	izon Year	
Movement	Exis	sting	Fut Backg	ure round		ture otal	Fut Backg	ure round	Fut To	ure tal		ture Jround		ure tal
	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)



				2029 Hor	izon Year		l	2032 Hor	izon Year			2037 Hor	izon Year	
Movement -	Exis	sting		ure Iround		ure tal		ure round		ure tal		ure round	Fut To	ure tal
	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

				2029 Hor	izon Year			2032 Hor	izon Year			2037 Hor	izon Year	
Movement	Exis	ting		ure Iround		ure tal	Fut Backg	ure round	Fut To		Fut Backg	ure round	Fut To	
	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 Notes:	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)



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

	Exis	sting		Hor	29 izon ear			Hor)32 rizon ear			Hor	37 izon ear	
Movement			Fut Backg	ure round	Fut To		Fut Backg		Fut To		Fut Backg	ure round	Fut To	
	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	D	0.84	D	0.85	D	0.79	D	0.82	D	0.92	E	0.94	E
	(0.71)	(D)	(0.76)	(D)	(0.78)	(D)	(0.85)	(D)	(0.89)	(D)	(0.97)	(E)	(1.01)	(E)

Notes: 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

				2029 Hor	izon Year			2032 Hor	izon Year			2037 Hor	izon Year	
Movement	Exis	sting		ure Iround		ure tal	Fut Backg	ure round	Fut To	ure tal	Fut Backg	ure round		ure tal
	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS
EBL	0.03	A	0.03	A	0.03	A	0.03	A	0.03	A	0.03	A	0.03	A
	(0.03)	(A)	(0.03)	(A)	(0.04)	(A)	(0.03)	(A)	(0.05)	(A)	(0.03)	(A)	(0.06)	(A)
EBT	0.14	A	0.18	A	0.18	A	0.19	A	0.19	A	0.21	A	0.21	A
	(0.07)	(A)	(0.09)	(A)	(0.09)	(A)	(0.09)	(A)	(0.10)	(A)	(0.10)	(A)	(0.11)	(A)
WBTR	0.09	A	0.12	A	0.13	A	0.13	A	0.13	A	0.14	A	0.15	A
	(0.18)	(A)	(0.22)	(A)	(0.22)	(A)	(0.24)	(A)	(0.24)	(A)	(0.26)	(A)	(0.26)	(A)
SBL	0.53	D	0.51	D	0.51	D	0.51	D	0.51	D	0.51	D	0.51	D
	(0.37)	(D)	(0.35)	(D)	(0.35)	(D)	(0.35)	(D)	(0.35)	(D)	(0.35)	(D)	(0.35)	(D)
SBR	0.01	D	0.01	D	0.02	D	0.01	D	0.02	D	0.01	D	0.02	D
	(0.01)	(D)	(0.01)	(D)	(0.01)	(D)	(0.01)	(D)	(0.01)	(D)	(0.01)	(D)	(0.01)	(D)
Overall	0.19	A	0.22	A	0.22	A	0.23	A	0.23	A	0.25	A	0.25	A
	(0.20)	(A)	(0.23)	(A)	(0.23)	(A)	(0.24)	(A)	(0.24)	(A)	(0.26)	(A)	(0.26)	(A)

^{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

				2029 Hor	izon Year			2032 Hor	izon Year			2037 Hor	izon Year	
Movement	Exis	sting		ure Iround	Fut To	ure tal	Fut Backg	ure round		ure tal	Fut Backg		Fut To	ure tal
	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)

^{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

				2029 Hor	izon Year			2032 Hor	izon Year			2037 Hor	izon Year	
Movement	Exis	sting		ure Iround		ture otal		ture Jround		ture tal		ture pround		ure tal
	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
			Reg	ional Roa	d 25 / No	rth Block	Site Acce	ss (Right	-In / Righ	t-Out)				
EBR									B (B)	14.7 (11.5)			C (B)	16.8 (12.1)
			Regi	ional Roa	d 25 / Sou	ıth Block	Site Acce	ess (Right	-In / Righ	t-Out)		<u> </u>		
EBR					B (B)	10.7 (10.8)			A (A)	9.9 (8.9)			B (A)	10.9 (9.1)
				Etheridge	e Avenue	/ Site Acc	ess Poin	ts (Full M	ovements	s)		·		
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			-1		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)

^{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

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

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

2. All queue lengths are in metres.

Base case includes one right-in/ right-out movement along Regional Road 25 on each of the north and south blocks. 3.

TABLE 33 NO RIRO SCENARIO – SITE ACCESS ONTO ETHERIDGE AVENUE

	2037 Horizon Year								
Movement	Base Case	e – With Access	onto RR25	Supplementary Case – No Access onto RR25					
	V/C	LOS	95 th % Queue	V/C	LOS	95 th % 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:

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

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

	2037 Horizon Year					
Intersection	Future To	tal - 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)		

TABLE 36 SENSITIVITY ANALYSIS – UNSIGNALIZED INTERSECTION TRAFFIC OPERATIONS

	2037 Horizon Year					
Intersection	Future To	otal - 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)		

^{1.} XX (XX) – Weekday Morning Peak Hour (Weekday Afternoon Peak Hour).

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

		2037 Horizon Year							
Movement	Future Total - Base		Future Total (6 lanes on RF lane	25 - no HOV	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)			

^{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)

		Minimum		Compliance	
1	Description	Requirement	Sect		
Justification	(Average Hourly Values³)	(1 lane each direction/ restricted flow)	Actual Traffic Volumes	% of Required	Entire % (≥150)²
	Etheridge A	venue / Site Access	es		
1. Minimum Vehicular	A. Vehicle volume, all approaches	720	320	44%	44%
Verlicular	B. Vehicle volume, along minor streets	170	103	60%	44 70
2. Delay to	A. Vehicle volume, major street	720	218	30%	20%
Cross Traffic	B. Combined volume crossing artery from minor streets	75	55	73%	30%

- 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).
- 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 carlength 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				2029 Ho	rizon Year			2032 Ho	rizon Year		2037 Horizon Year			
(Available Storage	Exis	ting		ure round			Future Background		Future Total		Future Background			ture otal
Length)	50 th %	95 th %	50 th %	95 th %	50 th %	95 th %	50 th %	95 th %	50 th %	95 th %	50 th %	95 th %	50 th %	95 th %
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)	le .			-	-			
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)	N .			-	-		,	

^{1.}

^{2.}

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



REGIONAL ROAD 25 / WHITLOCK AVENUE QUEUING SUMMARY TABLE 40

Movement				2029 Hor	izon Year			2032 Hor	izon Year			2037 Hor	izon Year	
(Available Storage	Exis	sting	Future Background		Future Total		Future Background		Future Total		Future Background		Future Total	
Length)	50 th %	95 th %	50 th %	95 th %	50 th %	95 th %	50 th %	95 th %	50 th %	95 th %	50 th %	95 th %	50 th %	95 th %
EBL	29.5	47.6	37.5	57.3	37.5	57.3	37.5	57.3	37.5	57.3	37.5	57.3	37.5	57.3
(35m)	(21.3)	(37.2)	(27.2)	(45.1)	(27.2)	(45.1)	(27.2)	(45.1)	(27.2)	(45.1)	(27.2)	(45.1)	(27.2)	(45.1)
WBL	13.4	26.0	12.1	23.8	12.1	23.8	12.1	23.8	12.1	23.8	12.1	23.8	12.1	23.8
(65m)	(6.5)	(15.3)	(6.1)	(14.4)	(6.1)	(14.4)	(6.1)	(14.4)	(6.1)	(14.4)	(6.1)	(14.4)	(6.1)	(14.4)
WBR	0.0	16.1	0.0	14.7	0.0	14.7	0.0	14.7	0.0	14.7	0.0	14.7	0.0	14.7
(65m)	(0.0)	(14.7)	(0.0)	(14.0)	(0.0)	(14.0)	(0.0)	(14.0)	(0.0)	(14.0)	(0.0)	(14.0)	(0.0)	(14.0)
NBL	0.0	1.8	0.8	3.7	0.9	3.2	1.6	6.9	1.5	6.0	2.9	9.6	2.3	8.1
(100m)	(3.7)	(6.9)	(1.4)	(3.4)	(1.4)	(3.1)	(1.6)	(4.5)	(1.6)	(4.3)	(1.4)	(3.4)	(1.3)	(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	2.5	6.7	2.6	7.2	2.6	7.2	2.6	7.2	2.6	7.2	2.6	7.2	2.6	7.2
(100m)	(2.3)	(6.2)	(2.6)	(6.9)	(2.6)	(6.9)	(2.6)	(6.9)	(2.6)	(6.9)	(2.6)	(10.1)	(2.6)	(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)				-	-			



^{1.}

^{2.}

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

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				2029 Horizo				2032 Hor	032 Horizon Year			2037 Horizon Year			
(Available Storage	Exis	ting	Future Background		Future Total		Future Background		Future Total		Future Background		Future Total		
Length)	50 th %	95 th %	50 th %	95 th %	50 th %	95 th %	50 th %	95 th %	50 th %	95 th %	50 th %	95 th %	50 th %	95 th %	
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)	

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

^{2.}

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				2029 Hor	izon Year			2032 Ho	rizon Year		2037 Horizon Year			
(Available Storage	Exis	sting	Future Background		Future Total		Future Background		Future Total		Future Background		Future Total	
Length)	50 th %	95 th %	50 th %	95 th %	50 th %	95 th %	50 th %	95 th %	50 th %	95 th %	50 th %	95 th %	50 th %	95 th %
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.

2.

XX (XX) – Weekday Morning Peak Hour (Weekday Afternoon Peak Hour). All values shown above are in metres (m) 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			2029 Horiz					2032 Horizon Year				2037 Horizon Year						
(Available Storage	Existing				e Ba			Future Background		Future Total		Future Background		Future Total		Future Background		ure tal
Length)	50 th %	95 th %	50 th %	95 th %	50 th %	95 th %	50 th %	95 th %										
EBL	0.6	2.4	0.6	2.3	0.6	2.3	0.6	2.3	0.6	2.3	0.6	2.3	0.6	2.3				
(20m)	(0.5)	(1.7)	(0.4)	(1.6)	(0.6)	(1.9)	(0.4)	(1.6)	(0.7)	(2.2)	(0.4)	(1.6)	(0.7)	(2.2)				
SBL	19.0	33.9	18.4	33.1	18.4	33.1	18.4	33.1	18.4	33.1	18.4	33.1	18.4	33.1				
	(12.0)	(24.5)	(11.1)	(23.1)	(11.1)	(23.1)	(11.1)	(23.1)	(11.1)	(23.1)	(11.1)	(23.1)	(11.1)	(23.1)				
SBR	0.0	7.2	0.0	7.0	0.0	7.7	0.0	7.0	0.0	8.5	0.0	7.0	0.0	8.5				
	(0.0)	(6.6)	(0.0)	(6.3)	(0.0)	(7.2)	(0.0)	(6.3)	(0.0)	(7.2)	(0.0)	(6.3)	(0.0)	(7.2)				

- 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		2029 Horiz			izon Year			2032 Horizon Year				2037 Horizon Year			
(Available Storage	Existing		Future Background		Future Total		Future Background		Future Total		Future Background		Future Total		
Length)	50 th %	95 th %	50 th %	95 th %	50 th %	95 th %	50 th %	95 th %	50 th %	95 th %	50 th %	95 th %	50 th %	95 th %	
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)	

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

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)
	EBLTR	1	0.1 (0.2)	0.1 (0.2)
Etheridge Avenue / Site	WBLTR	0.4 (1.4)	0.4 (1.4)	0.4 (1.4)
Accesses (Full Moves)	NBLTR	2.6 (1.6)	2.7 (1.8)	2.7 (1.8)
	SBLTR		2.7 (1.8)	2.7 (1.8)

^{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 carlength 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:
 - o 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;
 - o Reduced risk of neighbourhood shortcutting in the adjacent residential area;
 - o Provides an alternate access in the event of urgent road closures and emergencies; and
 - o 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.

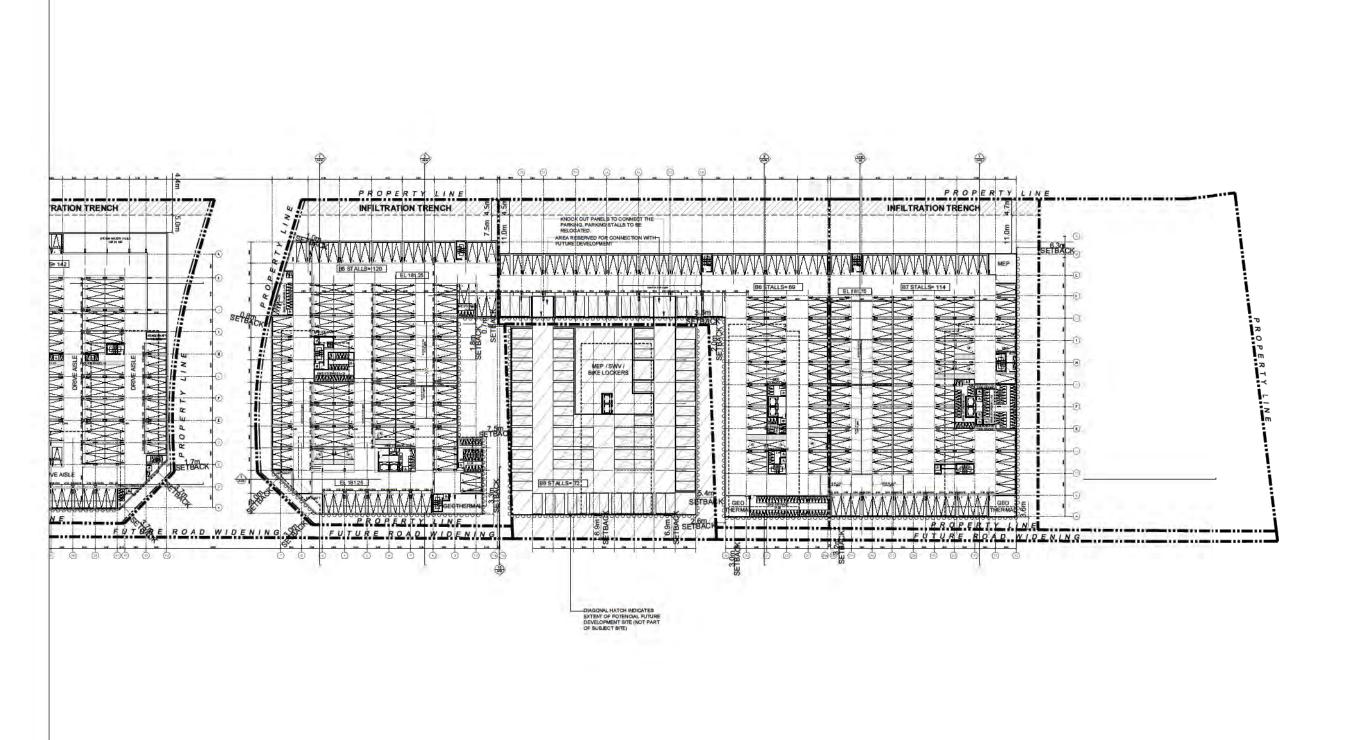


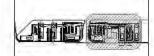
- A total supply of 902 bicycle parking spaces is proposed for the site, inclusive of 463 and 439 spaces for
 the south and north blocks, respectively. The proposed bicycle parking supply exceeds the Zoning By-law
 minimum requirements and will meet the needs of the site.
- The proposed Transportation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





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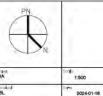
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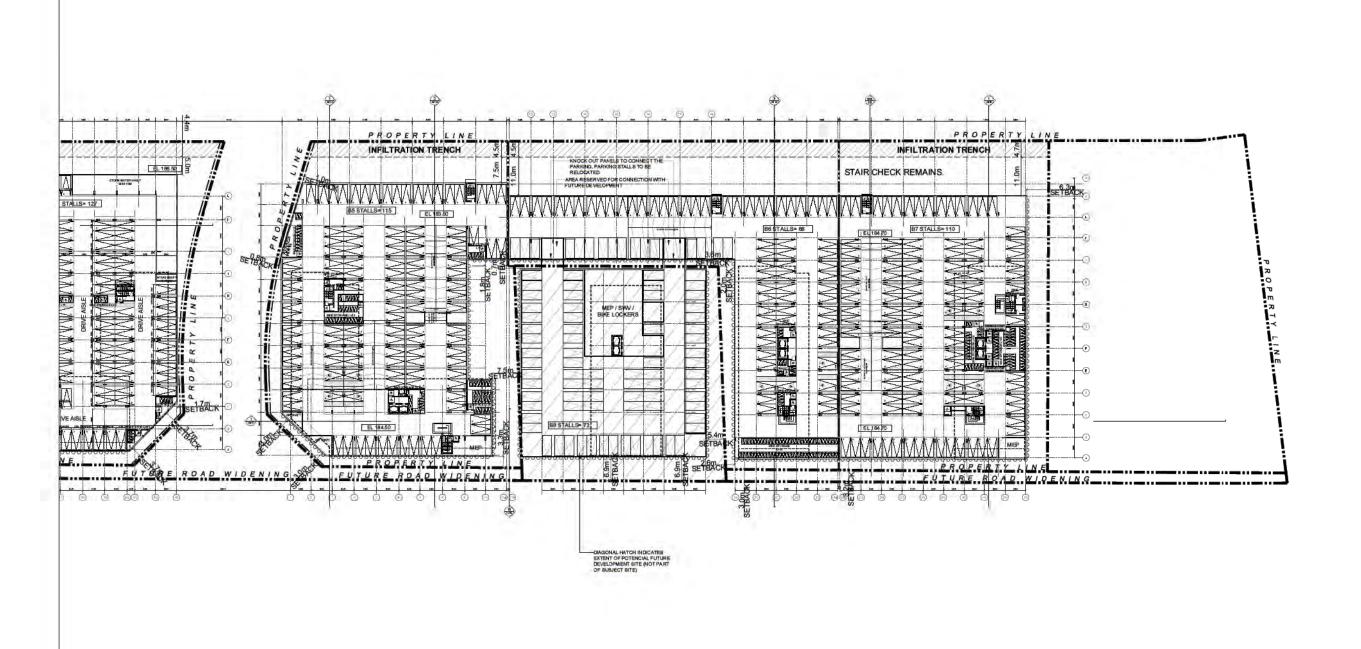
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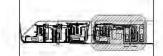
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NORTH BLOCK PARKING LEVEL P2

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FRAMGARD MATTAMY

MILTON WEST, ONTARIO



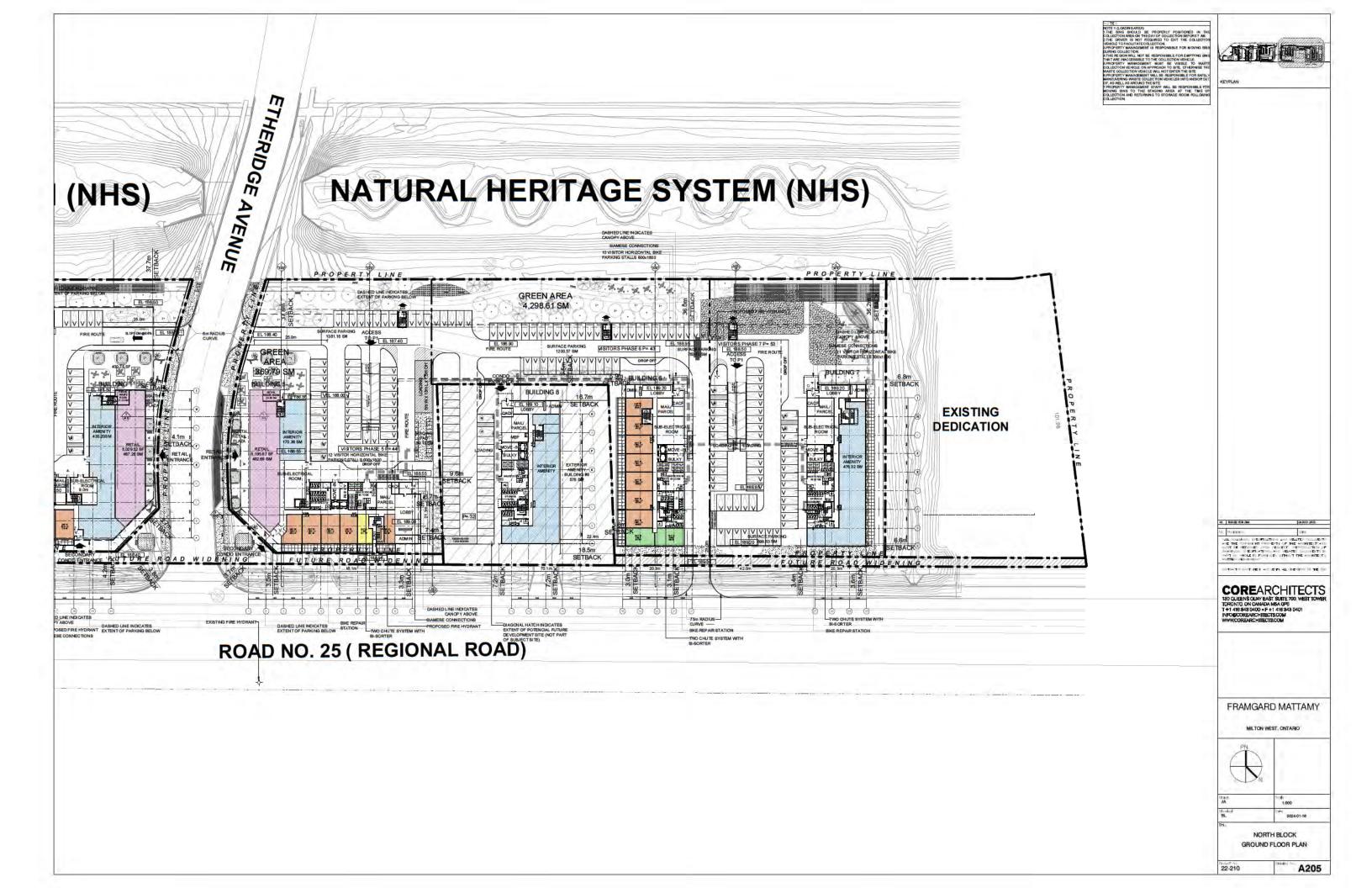
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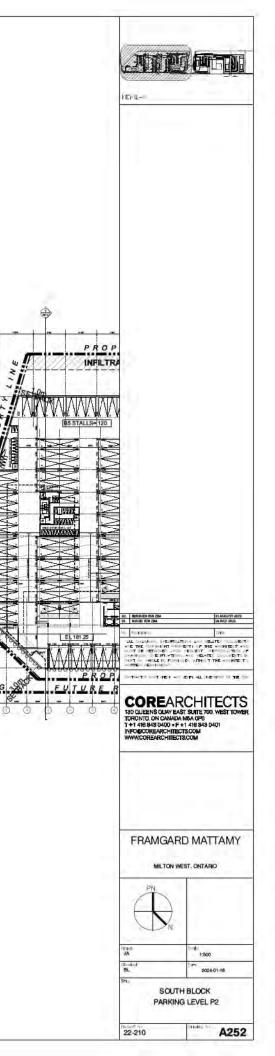
NORTH BLOCK PARKING LEVEL P1

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PROPERTY LINE

B2 STALLS= 105

EL 181.05

INFILTRATION TRENCH

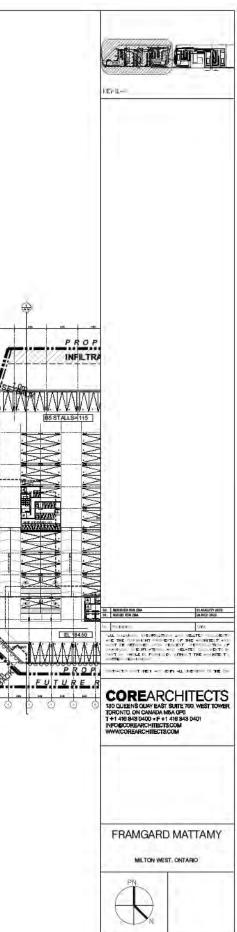
B1 STALLS= 142

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PROPERTY LINE

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B1 STALLS= 127

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INFIL RATION TRENCH

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B3 STALLS= 62

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SOUTH BLOCK

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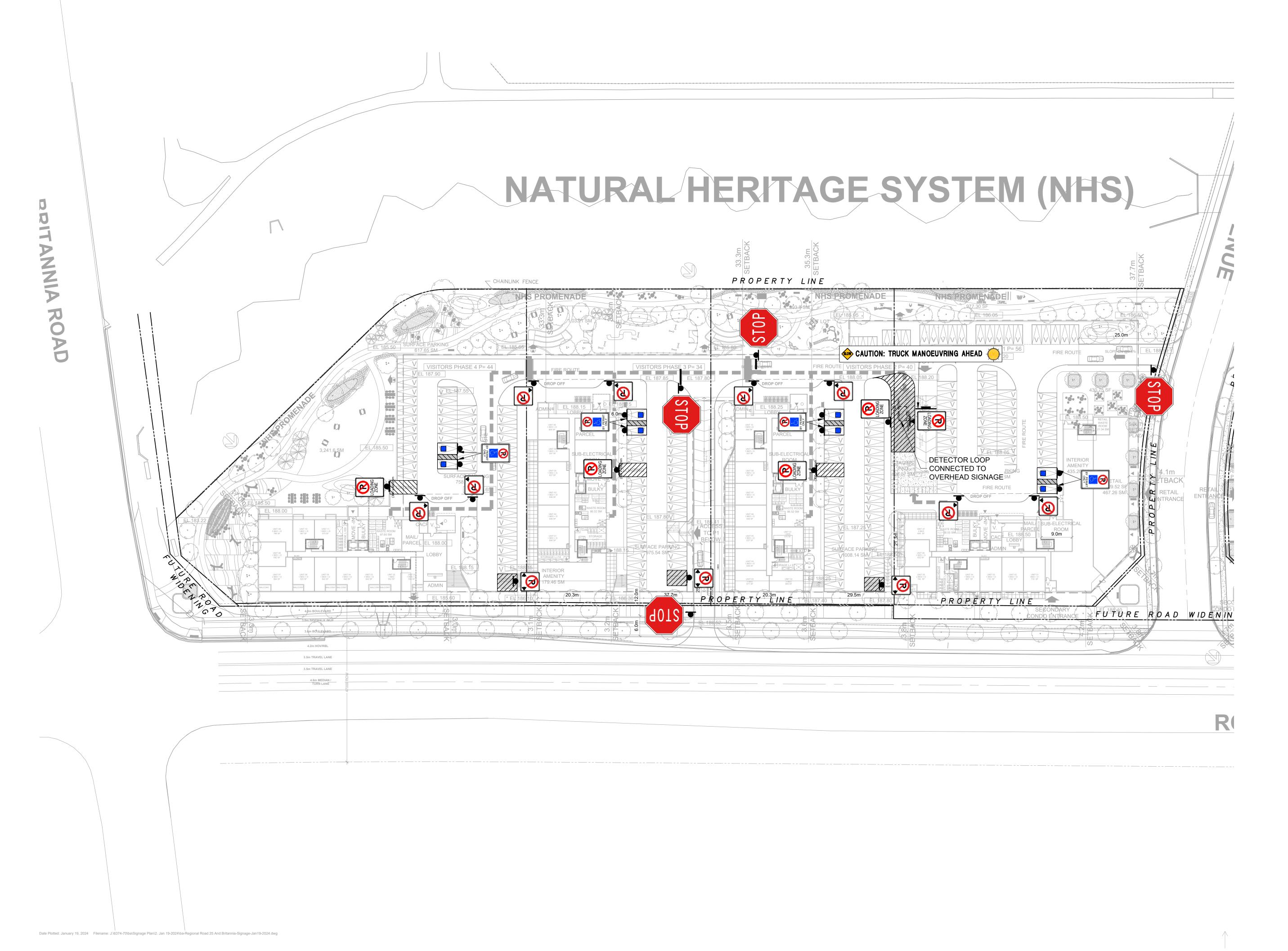
PARKING LEVEL P1

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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

PEDESTRIAN CROSSING - COLD PLASTIC "POLYMERIC" - WIDTH AS SHOWN - PATTERN: 60cm PAINTED, 60cm GAP - TRAFFIC WHITE

INTERNATIONAL SYMBOL OF

- 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.

T 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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ROAD

300 - 45 St. Clair Ave. W. Toronto ON M4V 1K9 TEL 416 961 7110

REGIONAL ROAD 25 & BRITANNIA

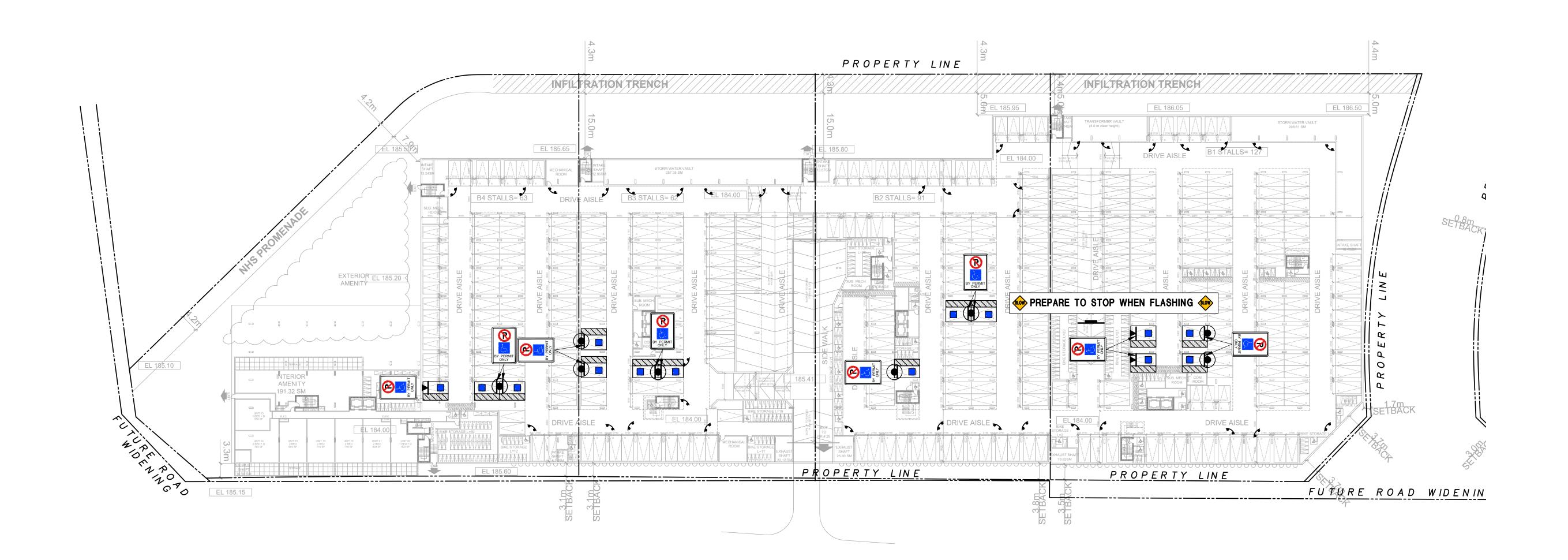
SIGNAGE AND PAVEMENT MARKING PLAN

SOUTH BLOCK - GROUND FLOOR

January 19, 2024







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 - 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.

T PROPOSED POST

PROPOSED POST PROTECTION

PROPOSED WALL/COLUMN MOUNT SIGN

PROPOSED WALL/COLUMN PERPENDICULAR

____SUSPENDED SIGN

CONVEX MIRROR

SIGNAGE LEGEND:

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REGIONAL ROAD 25 & BRITANNIA ROAD

SIGNAGE AND PAVEMENT MARKING PLAN

SOUTH BLOCK - P1 LEVEL

January 19, 2024







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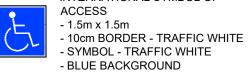
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ZONE PAINTING
- 10cm SOLID TRAFFIC YELLOW
- 45° ANGLE

PEDESTRIAN CROSSING
- COLD PLASTIC "POLYMERIC"
- WIDTH AS SHOWN
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- WIDTH AS SHOWN
- PATTERN: 60cm PAINTED, 60cm GAP
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INTERNATIONAL SYMBOL OF



SIGN MOUNT LEGEND:

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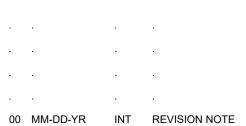
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CAUTION: TRUCK MANOEUVRING AHEAD









BA Consulting Group Ltd.
300 - 45 St. Clair Ave. W.
Toronto ON M4V 1K9
TEL 416 961 7110

Toronto ON M4V 1K9
TEL 416 961 7110
EMAIL bagroup@bagroup.com

REGIONAL ROAD 25 & BRITANNIA ROAD

SIGNAGE AND PAVEMENT MARKING PLAN

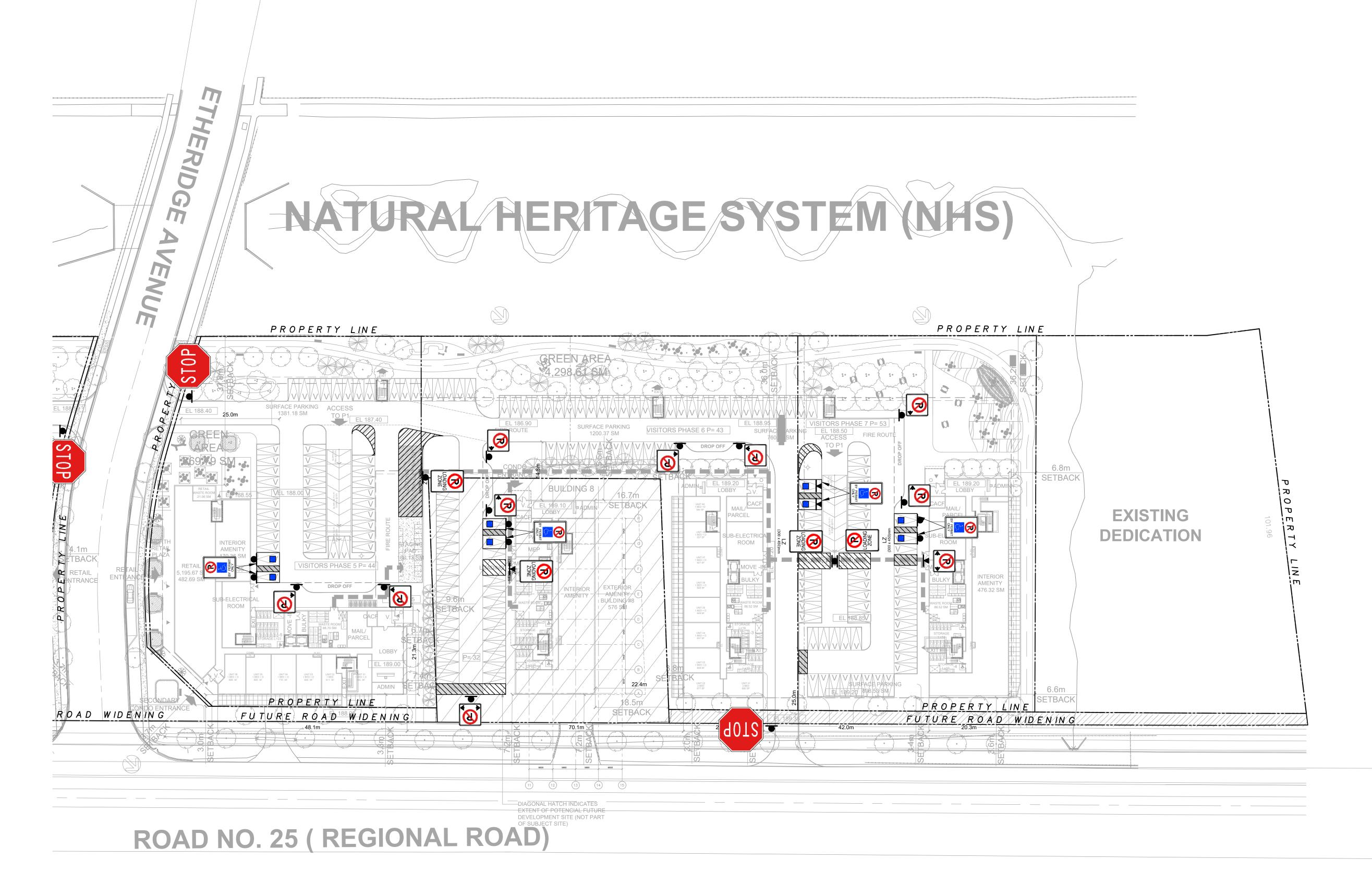
SOUTH BLOCK - P2 LEVEL

Date: January 19, 2024

Project No.: 6374-70







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REGIONAL ROAD 25 & BRITANNIA ROAD

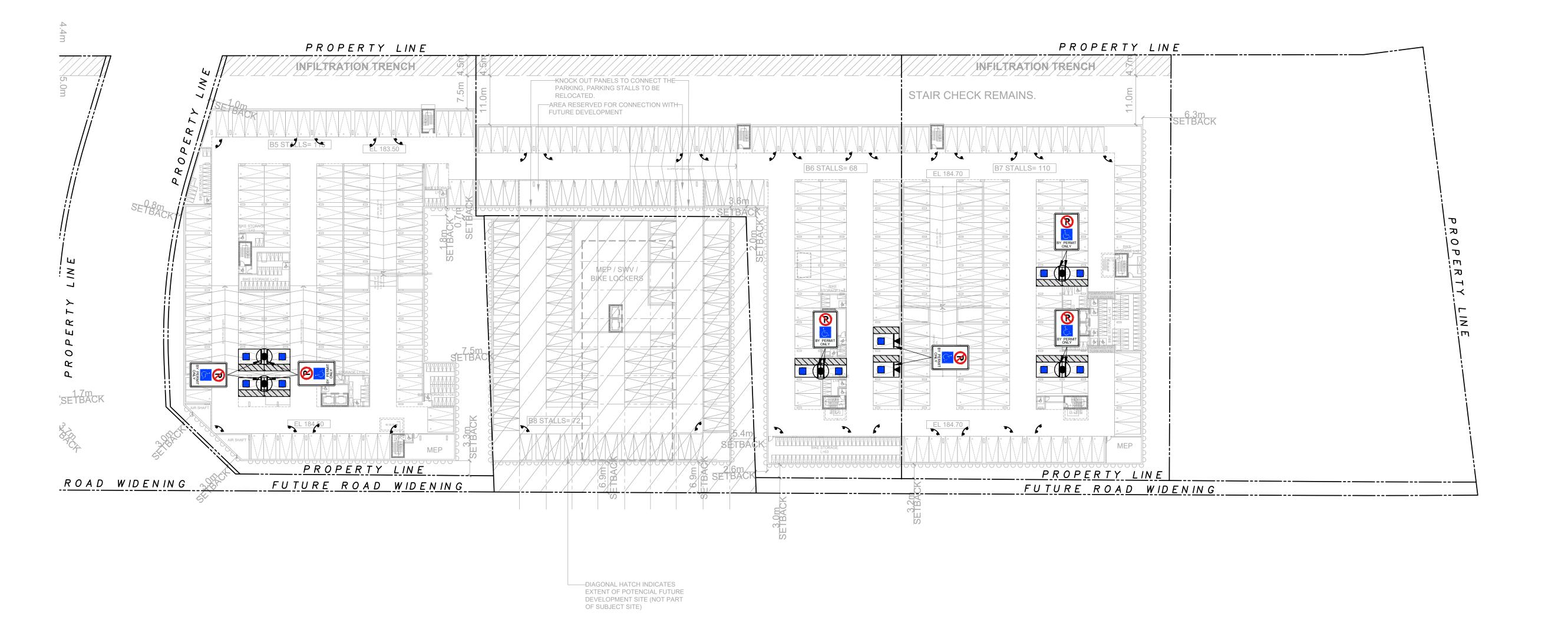
SIGNAGE AND PAVEMENT MARKING PLAN

NORTH BLOCK - GROUND FLOOR

January 19, 2024







PAVEMENT MARKING:

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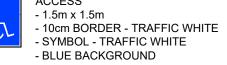
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REGIONAL ROAD 25 & BRITANNIA ROAD

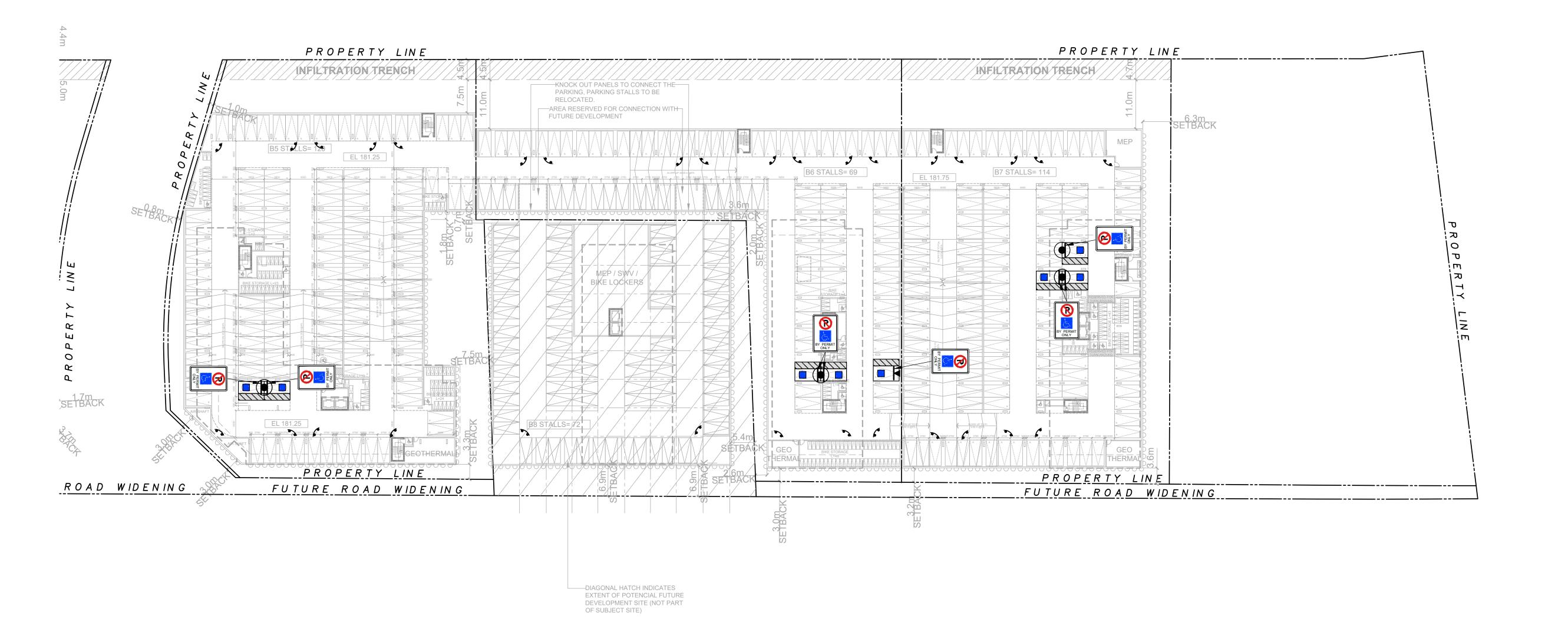
SIGNAGE AND PAVEMENT MARKING PLAN

NORTH BLOCK - P1 LEVEL

January 19, 2024







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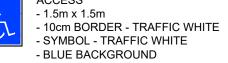
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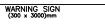
















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BA Consulting Group Ltd. 300 - 45 St. Clair Ave. W.



REGIONAL ROAD 25 & BRITANNIA ROAD

SIGNAGE AND PAVEMENT MARKING PLAN

NORTH BLOCK - P2 LEVEL

January 19, 2024



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 SchlegI

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

FROM: PROJECT: DATE:

Deanna Green, P.Eng. Proposed Mixed-Use December 9, 2022
Development

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 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 belowgrade 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 nonresidential 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.



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: <u>image001.png</u> <u>image002.jpg</u>

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 <<u>vau@bagroup.com</u>>; 'Christine.Chea@mattamycorp.com' <<u>Christine.Chea@mattamycorp.com</u>>;

'Anthony.Sotomayor@mattamycorp.com' <<u>Anthony.Sotomayor@mattamycorp.com</u>>; Krusto, Matt <<u>Matt.Krusto@halton.ca</u>>; heide.schlegl@milton.ca; kayleen.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-lmpact-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 https://doi.org/10.2016/jhtml.com/ 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

CAUTION: This email originated from outside the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe. If you are unsure or need assistance please contact the IT Service Desk. 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 < <u>Darren.Loro@halton.ca</u>> **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 CAUTION: This email originated from outside the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe. If you are unsure or need assistance please contact the IT Service Desk. 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.

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

Thank you.

Deanna

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



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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

CAUTION: This email originated from outside the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe. If you are unsure or need assistance please contact the IT Service Desk.

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 m² to 148,000 m², 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

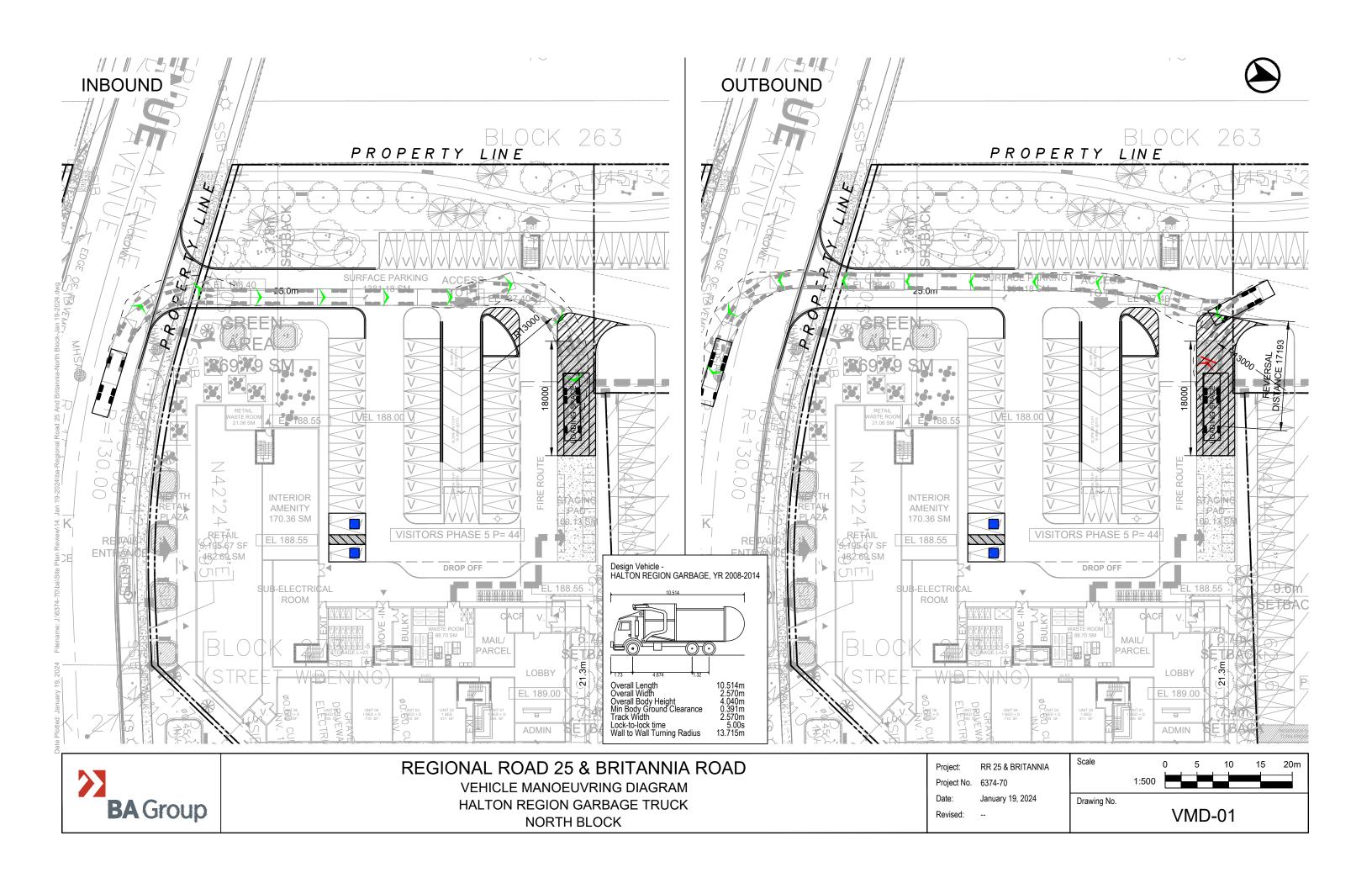
Deanna Green, MSc.P.Eng. Associate

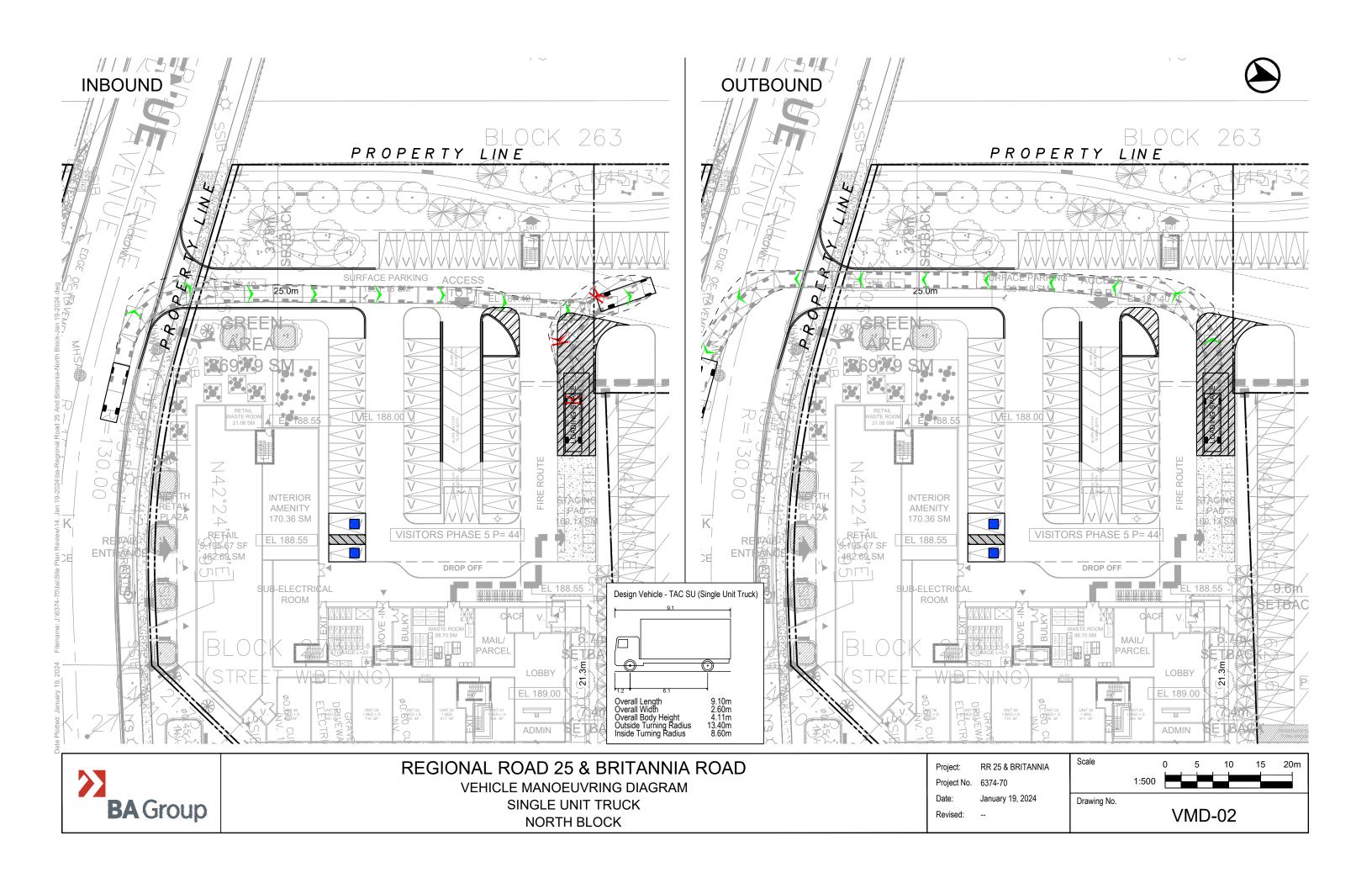
BA Consulting Group Ltd. 300 - 45 St. Clair Ave. W. Toronto, ON M4V 1K9 TEL 416 961 7110 x149
EMAIL Deanna.Green@bagroup.com

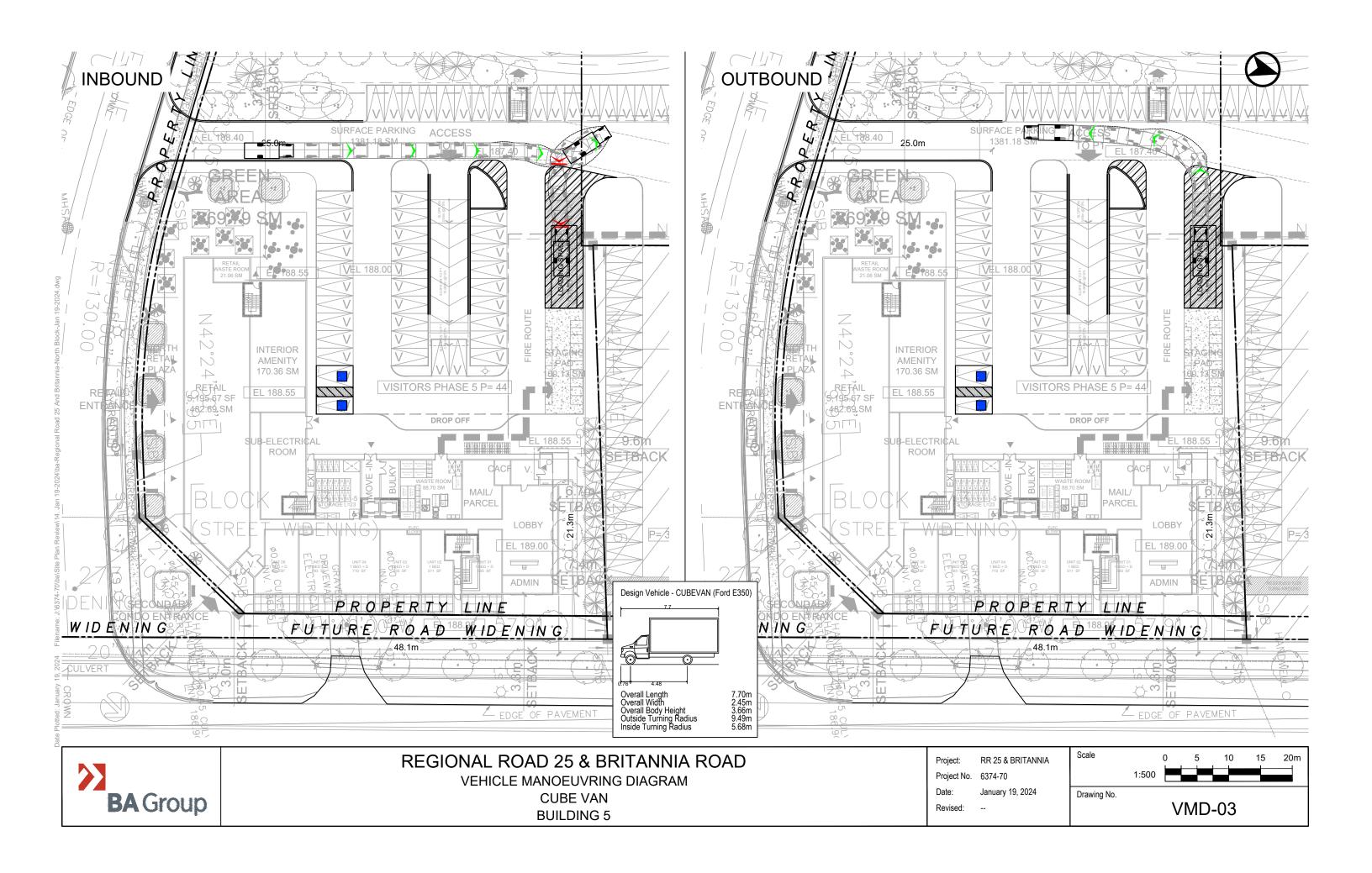
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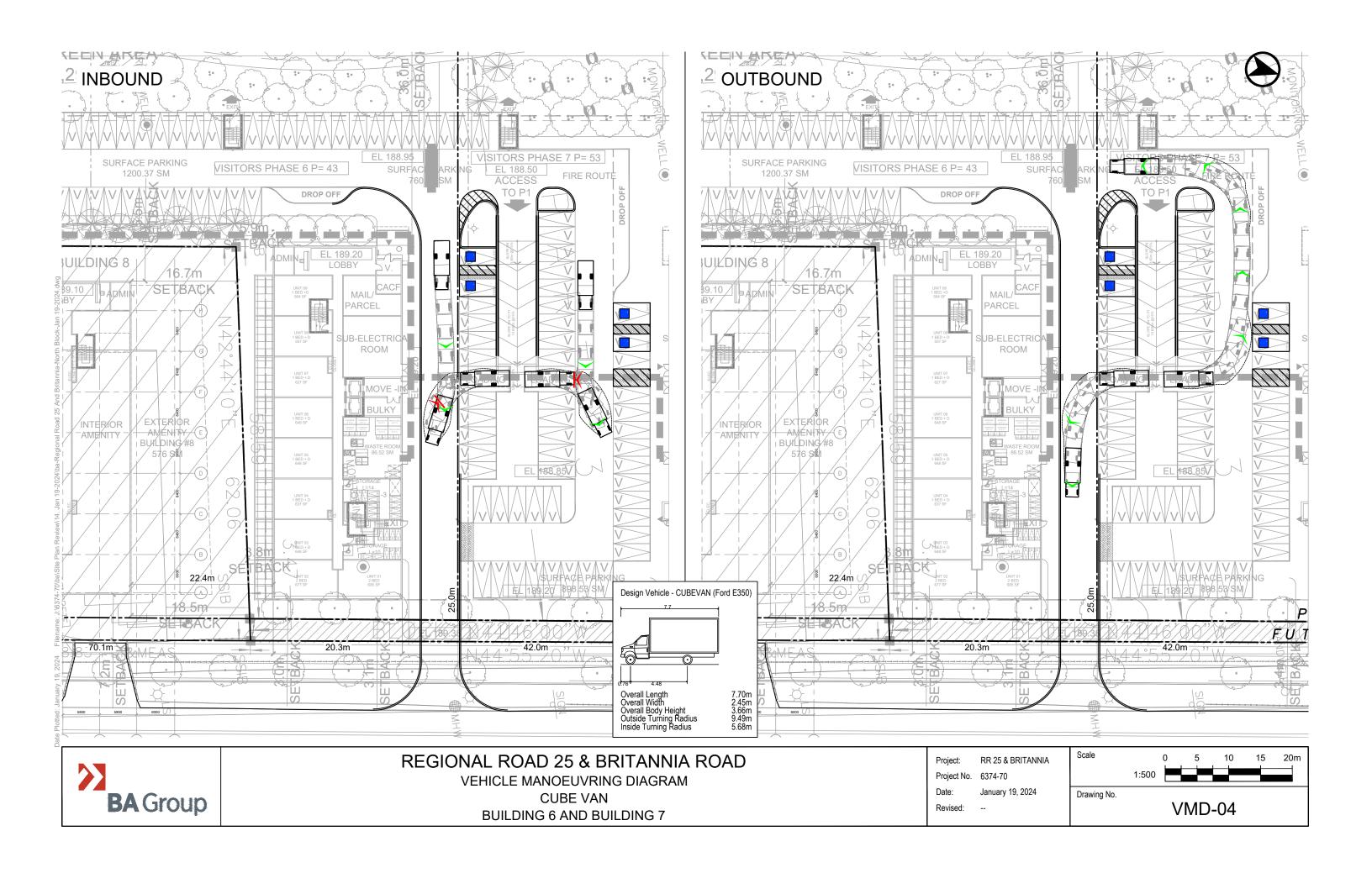
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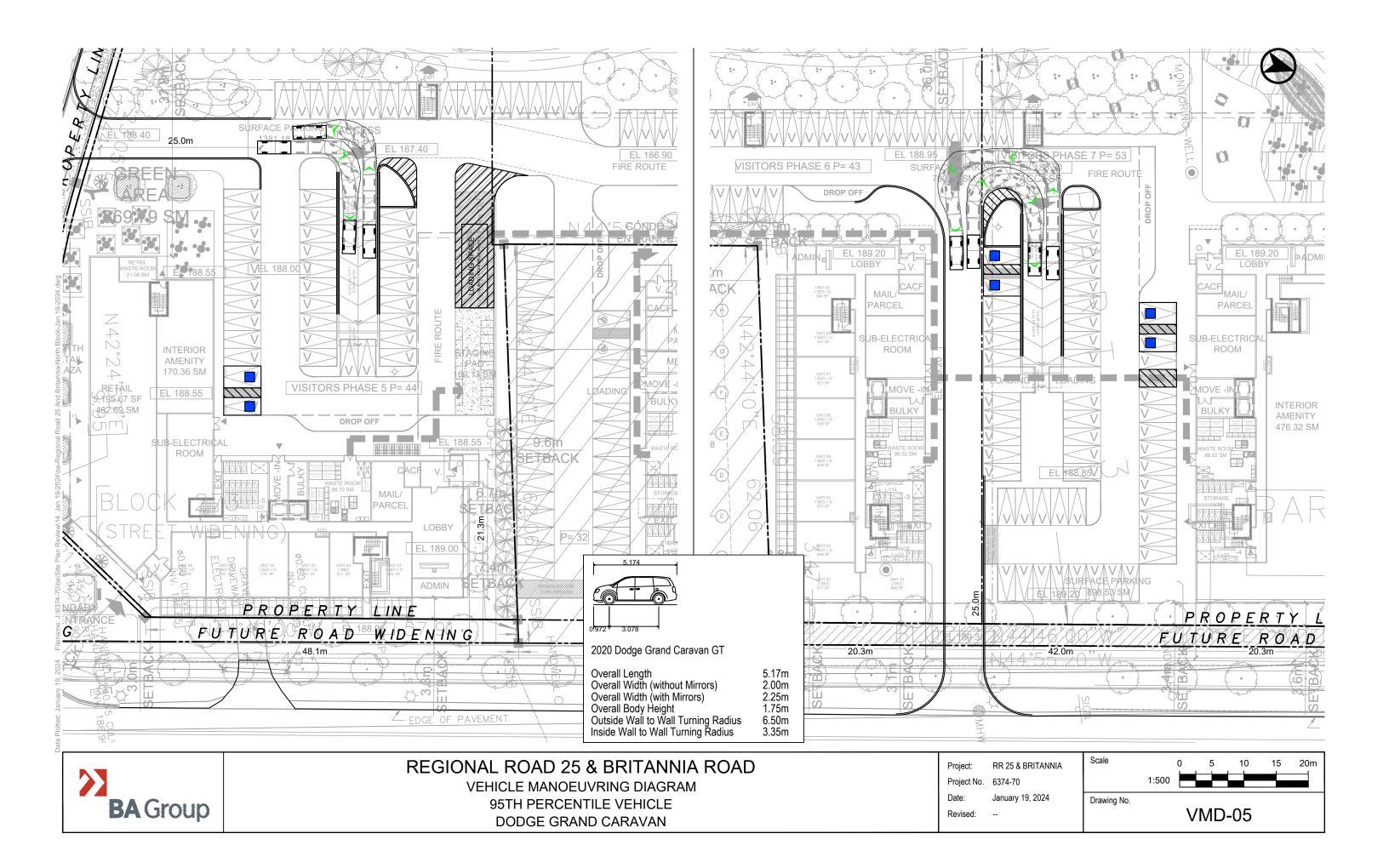
APPENDIX D: VEHICLE MANOEUVRING DIAGRAMS

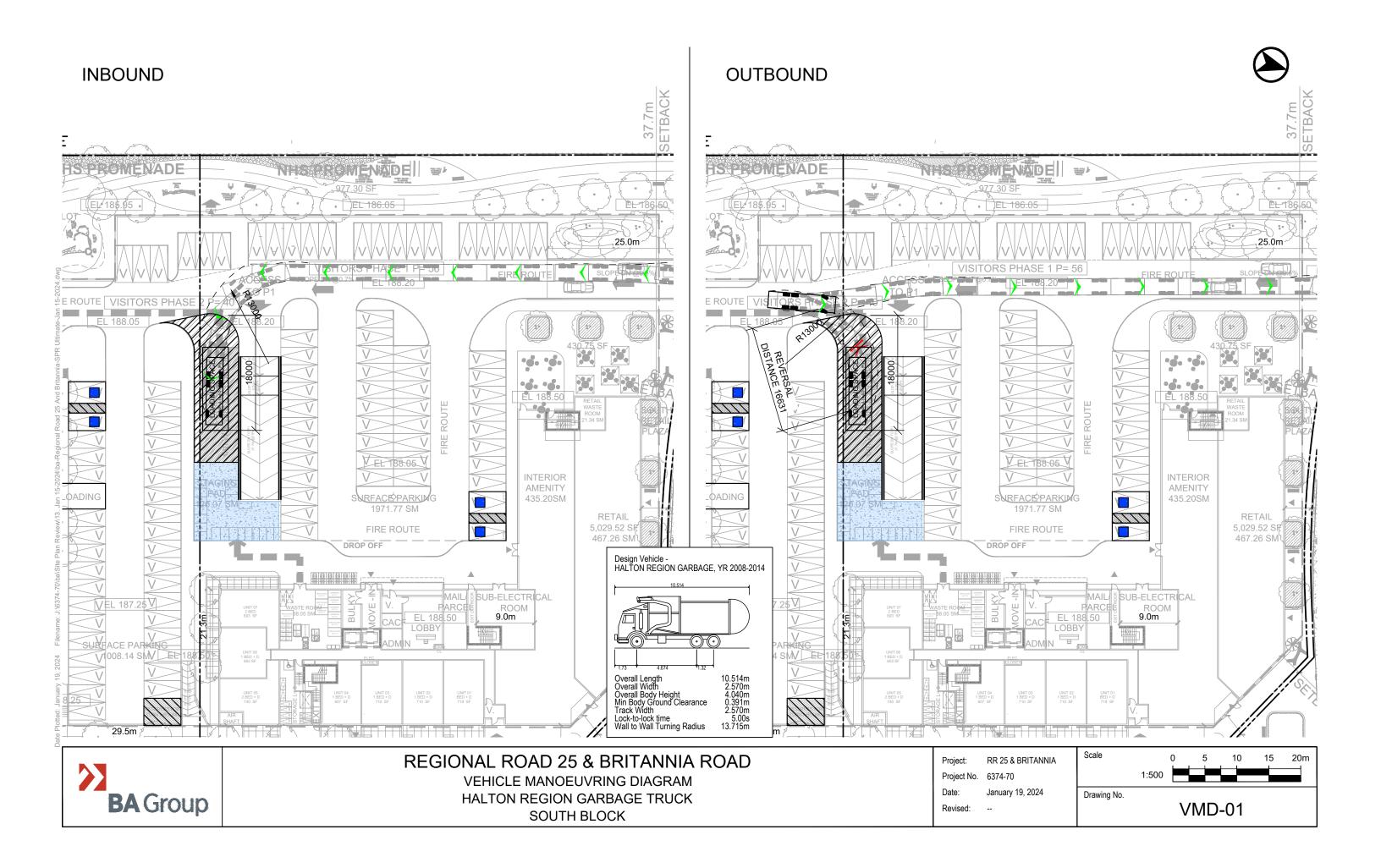


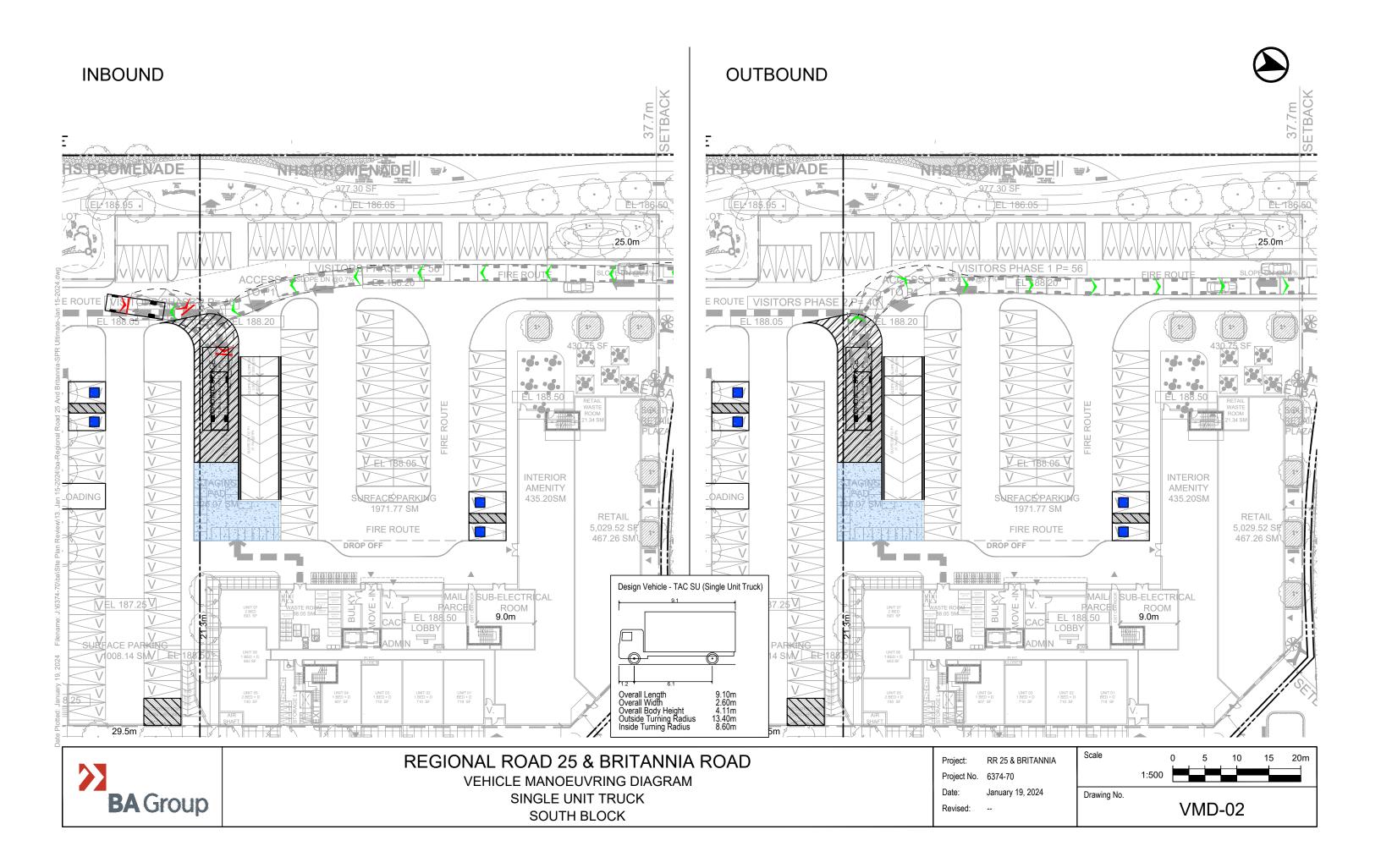


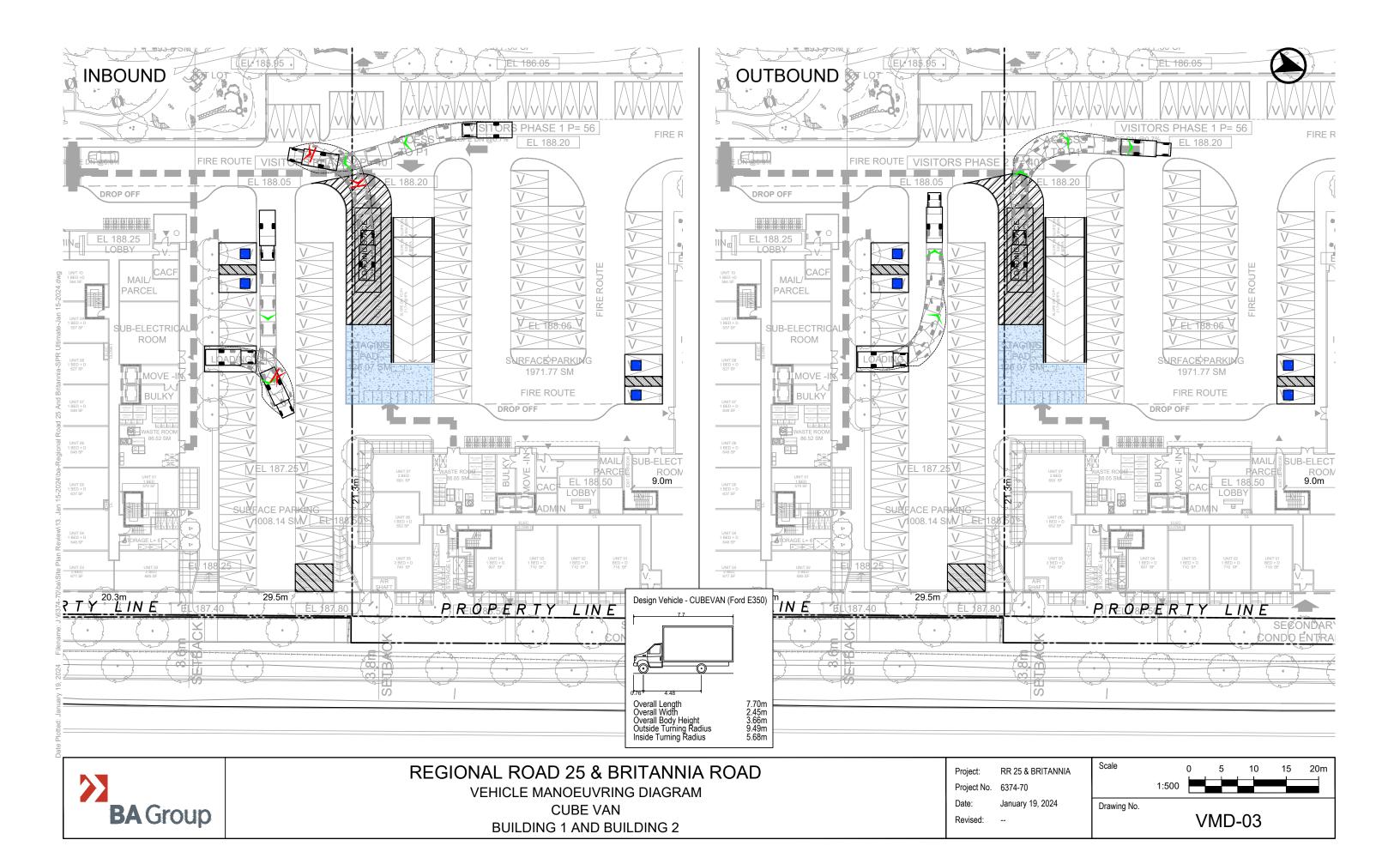


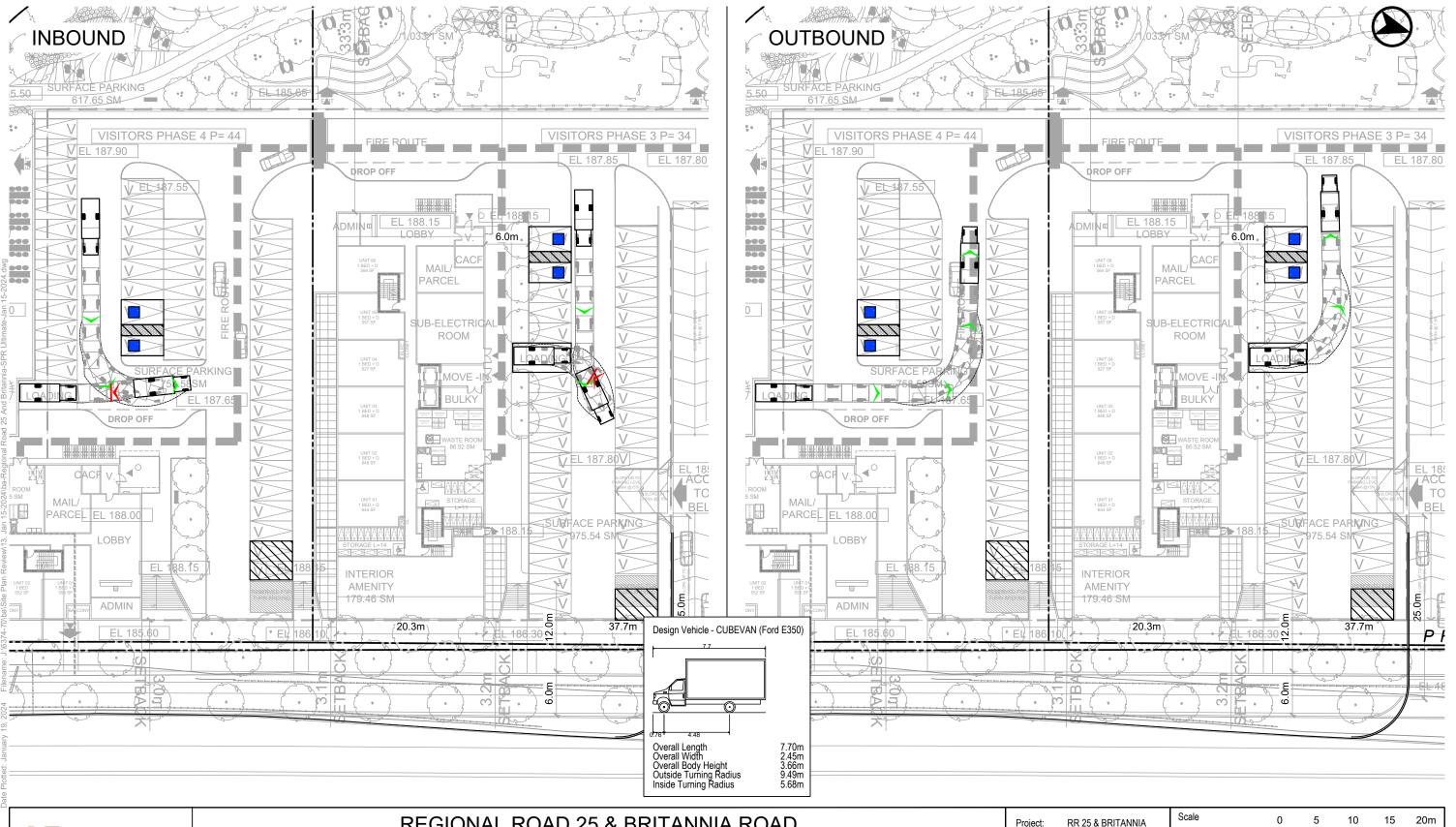














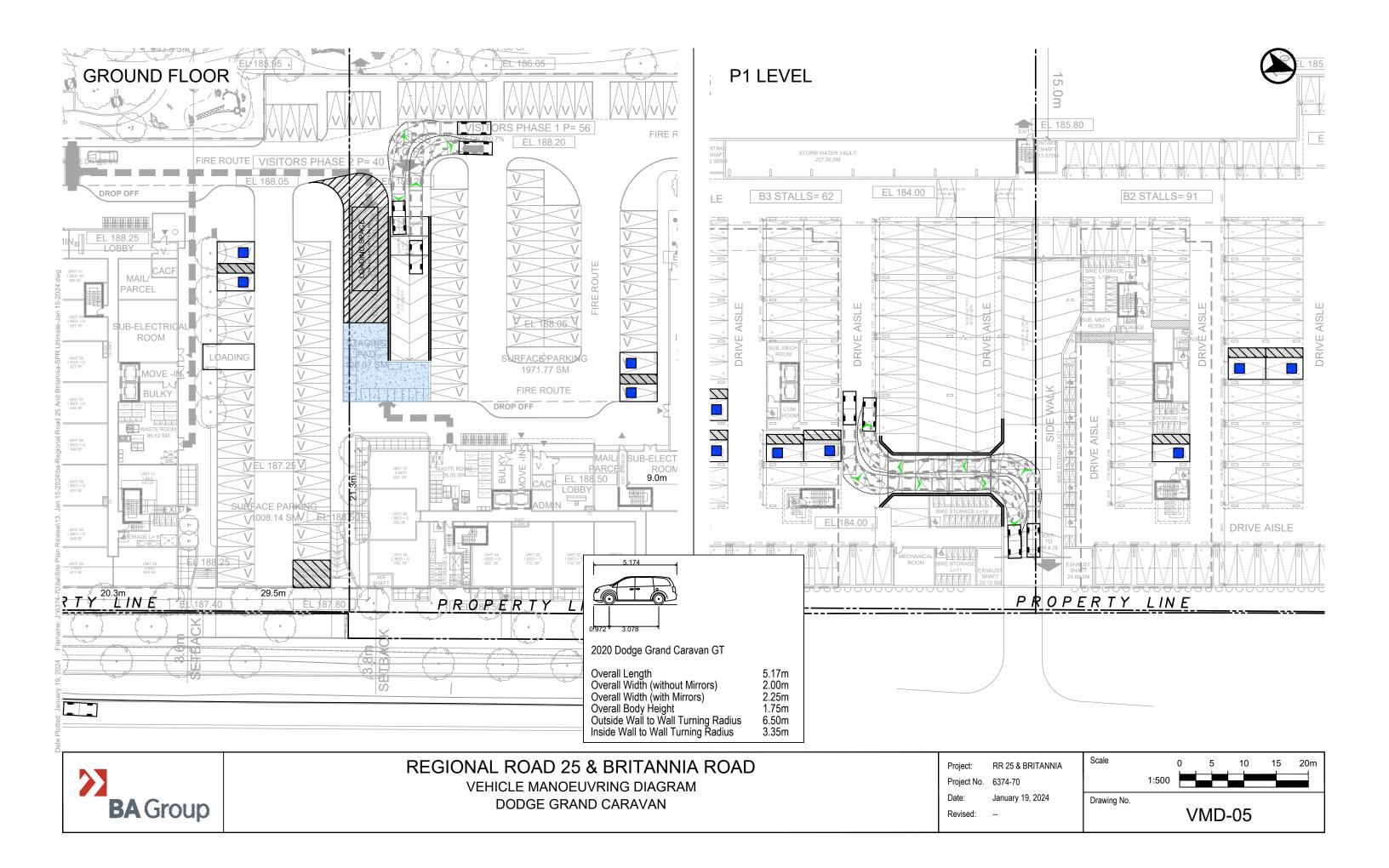
REGIONAL ROAD 25 & BRITANNIA ROAD

VEHICLE MANOEUVRING DIAGRAM **CUBE VAN BUILDING 3 AND BUILDING 4**

RR 25 & BRITANNIA Project No. 6374-70

January 19, 2024





APPENDIX E: TRAFFIC COUNTS

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

					Tu	rning Mo	vement (Count (5	. BRITA	NNIA RD & FARMS	STEAD DE	7)					
Start Time			N App FARMS	proach TEAD DR					oroach NNIA RD				Int. Total (15 min)	Int. Total (1 hr)			
otart rinic	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 %	-	-	-		-	-	-	-		-	-	-	-		-	-	-

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

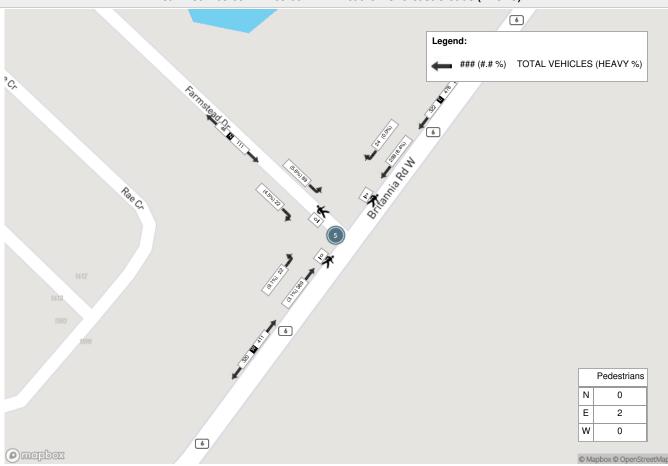
					Peak Hour: 08:	00 AM - 0	09:00 AM	Weath	ner: Ove	cast Clouds (1.73	°C)					
Start Time				oroach TEAD DR					proach NNIA RD					oroach NNIA RD		Int. Total (15 min)
	Right	Left	UTurn	Peds	Approach Total	Right	Thru	UTurn	Peds	Approach Total	Thru	Left	UTurn	Peds	Approach Total	
08:00:00	9	29	0	0	38	6	67	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%		-

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

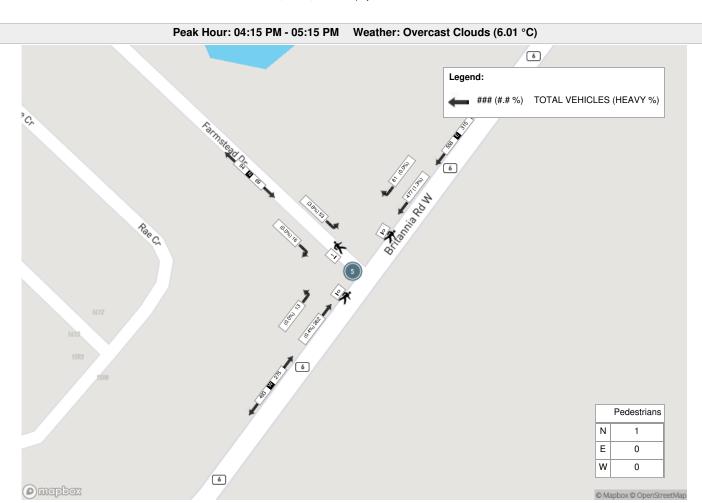
					Peak Hour: 04:1	Weather: Overcast Clouds (6.01 °C)												
Start Time				oroach TEAD DR					roach NNIA RD			W Approach BRITANNIA RD						
	Right	Left	UTurn	Peds	Approach Total	Right	Thru	UTurn	Peds	Approach Total	Thru	Left	UTurn	Peds	Approach Total			
16:15:00	3	13	0	0	16	23	137	0	0	160	65	3	0	0	68	244		
16:30:00			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	Grand Total 16 53 0		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)







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

										Turnii	ng Mov	rement Count (1	. REGI	ONAL F	D 25 8	BRITA	NNIA F	RD)								
a =			R	N Approa	ch RD 25		E Approach BRITANNIA RD								R	S Approac	ch RD 25			W Approach BRITANNIA RD						Int. Total (1 hr)
Start Time	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%		-	-	-

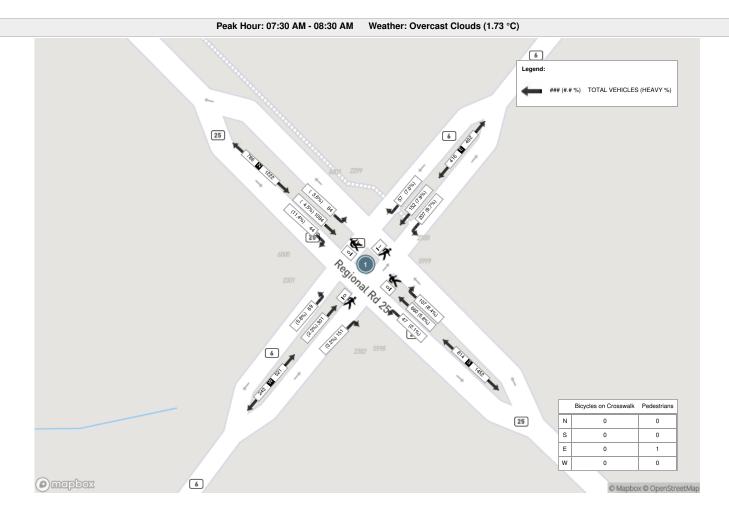
Turning Movement Count Location Name: REGIONAL RD 25 & BRITANNIA RD Date: Tue, Nov 29, 2022 Deployment Lead: Peter Ilias

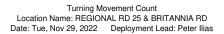
								Peak	Hour: 0	7:30 AI	M - 08:3	0 AM Weath	er: Ove	rcast C	louds (1	1.73 °C)												
Start Time			RE	N Approac GIONAL R	h D 25			E Approach Britannia RD						S Approach REGIONAL RD 25								W Approach BRITANNIA RD						
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach 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%		-			

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

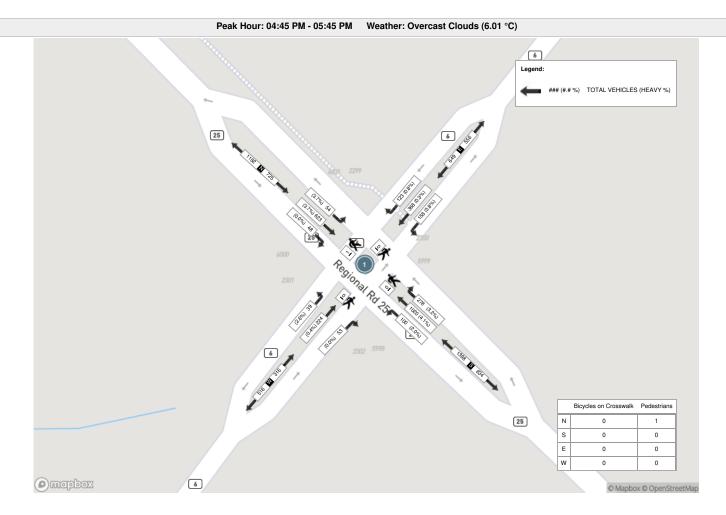
								Peak	Hour: 0	04:45 PI	M - 05:	45 PM Weath	er: Ove	rcast C	louds	(6.01 °C	;)								
Start Time			R	N Approa	ch RD 25				В	E Approac	h RD				R	S Approac	ch RD 25					W Approac	:h RD		Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	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	8.0	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%		-







Spectrum



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

										Turni	ng Mov	vement Count (2	. REGI	ONAL F	D 25 &	ETHER	IDGE A	VE)								
Start Time				N Appro	ach RD 25					E Appro	ach E AVE					S Approa						W Appro	ach E AVE		Int. Total (15 min)	Int. Total (1 hr)
Start Time	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	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-
Bicvcle %	-	_	_	-		-	_	_	_	-		-	_	_		_		-	_	_	_	_		-	-	_

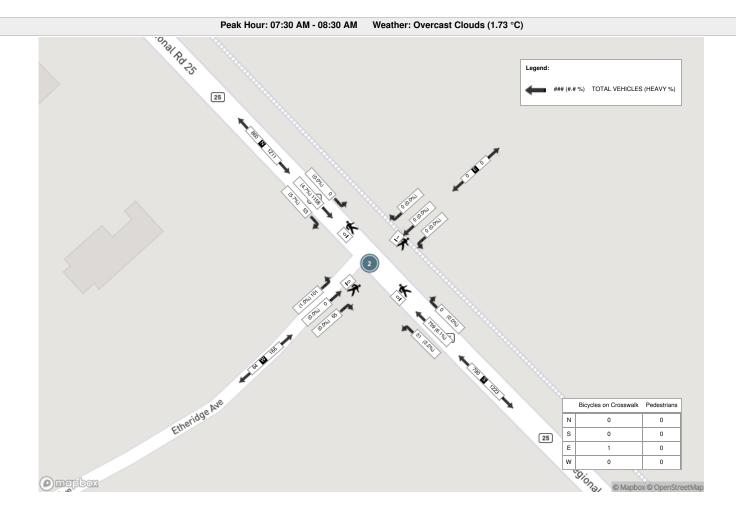
Turning Movement Count Location Name: REGIONAL RD 25 & ETHERIDGE AVE Date: Tue, Nov 29, 2022 Deployment Lead: Peter Ilias

								rea	K I IOU		AIVI - C	08:30 AM We	atilei: (Jvercas	Cioud	s (1.73 °	U)								
Start Time				N Approa	rch RD 25					E Appr ETHERID	oach GE AVE				F	S Approac REGIONAL R	ch RD 25					W Approa	ich E AVE		Int. T (15 n
	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	56
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	50
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	49
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	57
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	21
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	
ingle-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	
rticulated 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%		
cycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	
voles on Crosswalk%		_	_	_	0%			_	_	_	100%		_	_		_	0%		_	_		_	0%		

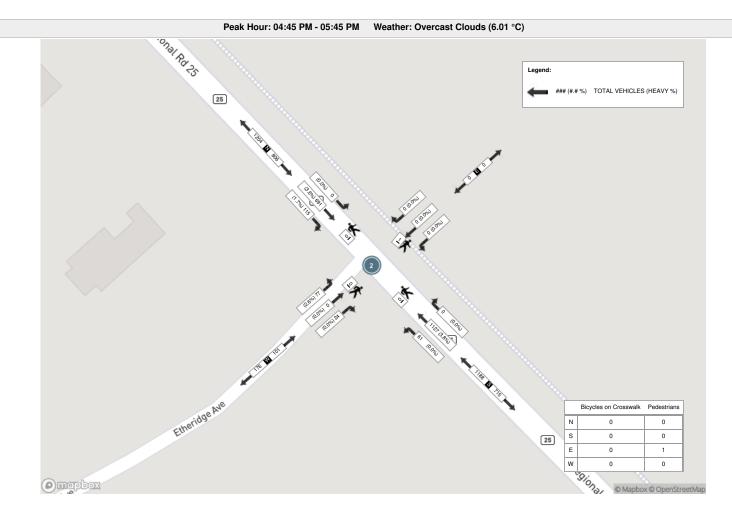
Turning Movement Count Location Name: REGIONAL RD 25 & ETHERIDGE AVE Date: Tue, Nov 29, 2022 Deployment Lead: Peter Ilias

Start Time				N Appro REGIONAL	ach RD 25					E Appr ETHERID	oach GE AVE					S Approa	ch RD 25					W Approa ETHERIDGE	ch AVE		Int. To (15 m
	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%		-
icycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
icycles on Crosswalk%	_	_	_	_	0%				_		0%						0%						0%		









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

									Tur	ning Mo	oveme	nt Count (4 . RE	GIONAI	L RD 25	& LOU	IS ST L	AUREN	IT AVE)								
			R	N Approac	ch RD 25				LOUIS	E Approad	ch ENT AVE				RI	S Approac EGIONAL R	h D 25				LOUIS	W Approac	h NT AVE		Int. Total (15 min)	Int. Total (1 hr)
Start Time	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%		-	-	-

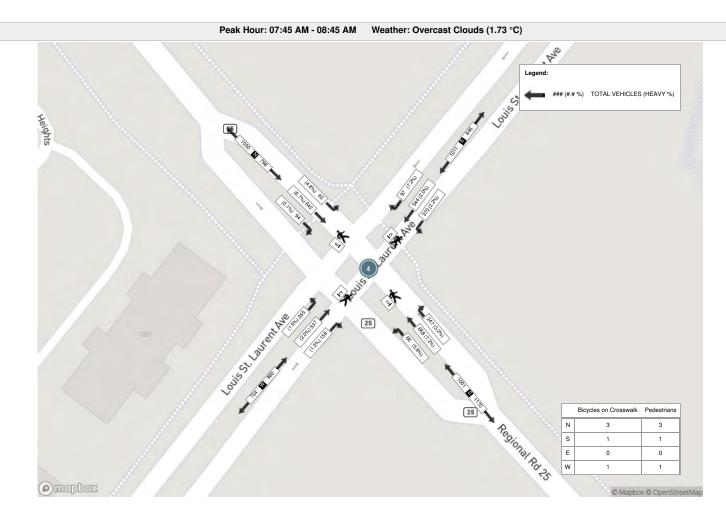
Turning Movement Count Location Name: REGIONAL RD 25 & LOUIS ST LAURENT AVE Date: Tue, Nov 29, 2022 Deployment Lead: Peter Ilias

								Peak	Hour: 0	7:45 AI	M - 08:4	5 AM Weath	ner: Ove	rcast C	louds (1.73 °C)									
Start Time			RI	N Approac	h D 25				LOUIS	E Approac ST LAURE	h NT AVE				RE	S Approac GIONAL R	h D 25				LOUIS	W Approac	h NT AVE		Int. To (15 mi
	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	100
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	99
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	85
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	377
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	-	
icycles 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%		

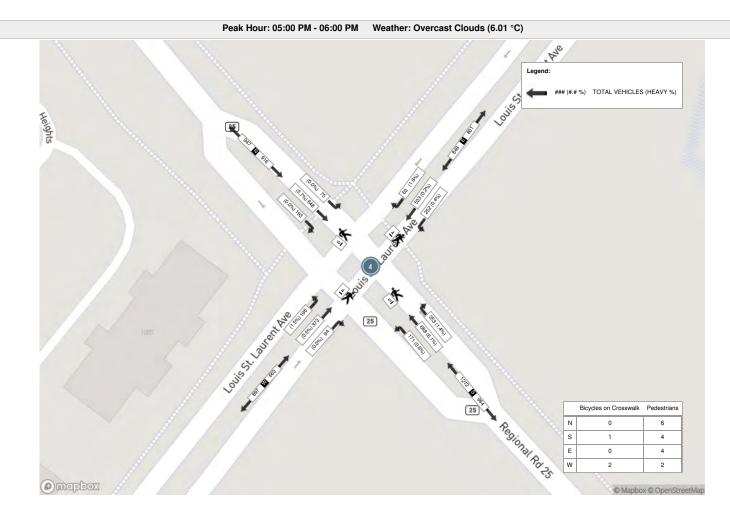
Turning Movement Count Location Name: REGIONAL RD 25 & LOUIS ST LAURENT AVE Date: Tue, Nov 29, 2022 Deployment Lead: Peter Ilias

								Pea	k Hour	: 05:00	PM - 06	:00 PM Weat	ther: Ov	ercast	Clouds	(6.01 °C	;)								
Start Time			F	N Approa	ch RD 25				LOUI	E Approa	ch ENT AVE				R	S Approac EGIONAL R	h D 25				LOUIS	W Approad	ch ENT 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%		-









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

										Turnin	g Mov	ement Count (3	. REGI	ONAL F	RD 25 8	WHITL	OCK A	AVE)								
Start Time			R	N Approa	ich RD 25				v	E Approac	h AVE				F	S Approa	i ch RD 25				v	W Approac	h AVE		Int. Total (15 min)	Int. Total (1 hr)
Start Time	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 %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	_	-	-	_		-		_

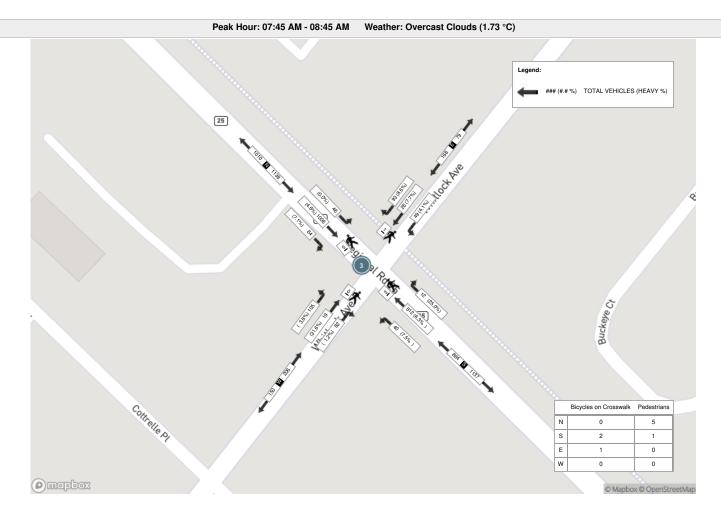
Turning Movement Count Location Name: REGIONAL RD 25 & WHITLOCK AVE Date: Tue, Nov 29, 2022 Deployment Lead: Peter Ilias

								Peak	Hour: (07:45 AI	M - 08:4	5 AM Weath	er: Ove	ercast C	Clouds ((1.73 °C)								
Start Time			ı	N Approa	ach RD 25				V	E Approac	e h AVE				R	S Approa	ch RD 25				W	W Approac	h 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%		-

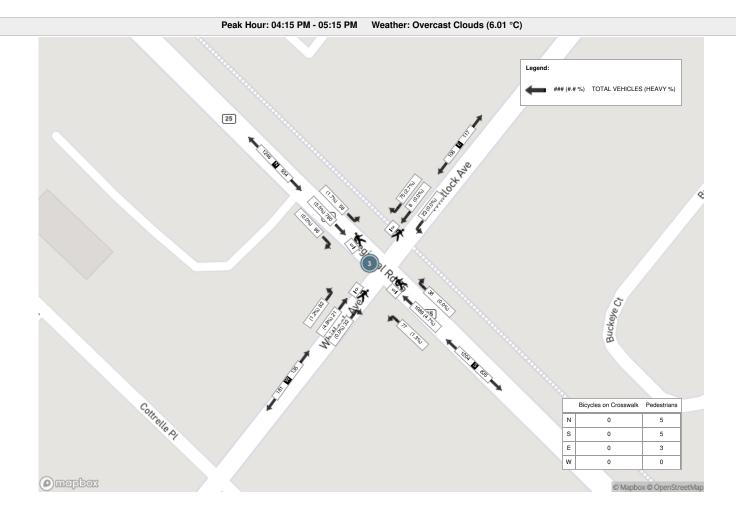
Turning Movement Count Location Name: REGIONAL RD 25 & WHITLOCK AVE Date: Tue, Nov 29, 2022 Deployment Lead: Peter Ilias

Start Time			R	N Approa	ch RD 25					E Approad	ch AVE				R	S Approad EGIONAL F	ch RD 25				W	N Approact	h NVE		Int. To (15 m
	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	61
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	60
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	60
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	56
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	23
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%	
ingle-Unit Trucks	0	19	0	0		19	1	0	0	0		1	0	19	0	0		19	0	1	0	0		1	
ngle-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%	
rticulated Trucks	0	19	0	0		19	0	0	0	0		0	0	25	0	0		25	0	0	0	0		0	
ticulated 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%		
cles on Crosswalk																									









Britannia Rd @ Regional Rd 25 **Specified Period Morning Peak Diagram One Hour Peak** From: 7:30:00 From: 7:00:00 To: 9:00:00 To: 8:30:00 Weather conditions: Municipality: Halton Region Overcast/Wet Site #: 0000003408 Regional Rd 25 & Britannia Rd Intersection: Person(s) who counted: Cam TFR File #: 17 Count date: 9-Dec-2019 ** Signalized Intersection ** Major Road: Regional Rd 25 runs N/S North Leg Total: 2279 Heavys 3 48 0 51 Heavys 23 East Leg Total: 1258 Trucks 0 1 9 East Entering: North Entering: 1475 Trucks 18 514 1415 East Peds: North Peds: Cars 8 1168 239 Cars 763 0 \mathbb{X} Totals 804 Peds Cross: Totals 11 1224 Peds Cross: \bowtie 240 Regional Rd 25 Trucks Heavys Totals Heavys Trucks Cars Totals Cars 188 194 0 89 135 0 1 136 270 14 289 Britannia Rd 492 15 Heavys Trucks Cars Totals Britannia Rd 0 51 54 2 334 337 Trucks Heavys Totals 2 235 238 1 Cars 733 7 620 744 Regional Rd 25 \mathbb{X} Peds Cross: Peds Cross: \bowtie Cars 1673 Cars 45 625 160 830 West Peds: 0 Trucks 14 Trucks 1 2 19 South Peds: 0 16 West Entering: 629 5 26 Heavys 64 Heavys 1 20 South Entering: 875 West Leg Total: 823 Totals 1751 Totals 47 South Leg Total: 2626

Britannia Rd @ Regional Rd 25 **Specified Period** Mid-day Peak Diagram **One Hour Peak** From: 11:00:00 From: 11:45:00 To: 14:00:00 To: 12:45:00 Weather conditions: Municipality: Halton Region Overcast/Wet Site #: 0000003408 Regional Rd 25 & Britannia Rd Intersection: Person(s) who counted: Cam TFR File #: 17 Count date: 9-Dec-2019 ** Signalized Intersection ** Major Road: Regional Rd 25 runs N/S North Leg Total: 1262 Heavys 0 46 2 48 Heavys 43 East Leg Total: 632 Trucks 0 19 East Entering: North Entering: 643 16 3 Trucks 14 298 North Peds: East Peds: Cars 23 461 92 576 Cars 562 0 \mathbb{X} Totals 619 Peds Cross: Totals 23 523 97 Peds Cross: \bowtie Regional Rd 25 Totals Trucks Heavys Totals Heavys Trucks Cars Cars 2 165 170 0 74 105 1 2 108 101 13 116 Britannia Rd 278 15 Heavys Trucks Cars Totals Britannia Rd 0 16 17 1 108 114 Trucks Heavys Totals 2 47 49 0 Cars 171 308 12 334 Regional Rd 25 \mathbb{X} Peds Cross: Peds Cross: \bowtie Cars 609 Cars 37 474 108 619 West Peds: 0 Trucks 20 Trucks 1 19 South Peds: 0 12 6 West Entering: 180 9 52 South Entering: 690 Heavys 59 Heavys 1 42 West Leg Total: 350 Totals 39 South Leg Total: 1378 Totals 688 123 **Comments**

Britannia Rd @ Regional Rd 25 **Specified Period Afternoon Peak Diagram One Hour Peak** From: 15:00:00 From: 16:45:00 To: 18:00:00 To: 17:45:00 Weather conditions: Municipality: Halton Region Overcast/Wet Site #: 0000003408 Regional Rd 25 & Britannia Rd Intersection: Person(s) who counted: Cam TFR File #: 17 Count date: 9-Dec-2019 ** Signalized Intersection ** Major Road: Regional Rd 25 runs N/S North Leg Total: 2040 Heavys 0 12 0 12 Heavys 27 East Leg Total: 1403 Trucks 0 9 East Entering: North Entering: 698 1 Trucks 5 857 East Peds: North Peds: Cars 42 542 93 677 Cars 1310 0 \mathbb{X} Peds Cross: Totals 42 562 94 Totals 1342 Peds Cross: \bowtie Regional Rd 25 Totals Heavys Trucks Cars Cars Trucks Heavys Totals 643 646 251 394 1 396 206 2 210 Britannia Rd 849 Heavys Trucks Cars Totals Britannia Rd 0 30 32 138 138 Trucks Heavys Totals 0 35 35 0 Cars 203 538 5 546 Regional Rd 25 \mathbb{X} Peds Cross: Peds Cross: \bowtie Cars 783 Cars 207 1031 307 1545 West Peds: 0 Trucks 10 Trucks 0 4 2 6 South Peds: 0 West Entering: 205 5 30 Heavys 14 Heavys 1 24 South Entering: 1581 West Leg Total: 851 Totals 208 1059 South Leg Total: 2388 Totals 807 **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:

Major Road: Regional Rd 25 runs N/S

Totals 6750

Cam

** Signalized Intersection **

North Leg Total: 13423 North Entering: 6673 North Peds: Peds Cross: \bowtie

Heavys 3 299 11 Trucks 3 90 11 Cars 164 5092 1000 Totals 170 1022 5481

Heavys 285 Trucks 94 Cars 6371

East Leg Total: 8171 East Entering: 4231 East Peds: 0 \mathbb{X} Peds Cross:

Heavys Trucks Cars Totals 21 2406 2458



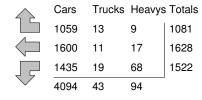


313

104

6256

Regional Rd 25



Britannia Rd

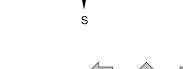
3813

Heavys Trucks Cars Totals 2 216 236 18 13 1423 1445 677 695 9 9

2316



Britannia Rd



Cars	Trucks Heavys Totals	

 \mathbb{X} Peds Cross: West Peds: 0 West Entering: 2376 West Leg Total: 4834

Cars 7204 Trucks 118 Heavys 376 Totals 7698



Regional Rd 25

7128 Cars 642 5096 1390 Trucks 7 79 22 108 Heavys 11 258 61 330 Totals 660 1473 5433

Peds Cross: \bowtie South Peds: 0 South Entering: 7566 South Leg Total: 15264

81

3940

Specified Period Morning Peak Diagram One Hour Peak From: 7:00:00 From: 7:30:00 To: 9:00:00 To: 8:30:00 Weather conditions: Municipality: Halton Region Site #: Cloudy/Dry 0000002977 Regional Rd 25 & Louis St Laurent / Intersection: Person(s) who counted: Matt TFR File #: Linda Count date: 6-Dec-2016 ** Signalized Intersection ** Major Road: Regional Rd 25 runs N/S North Leg Total: 1649 Heavys 10 48 0 58 Heavys 46 East Leg Total: 1207 7 2 10 North Entering: 829 Trucks 1 Trucks 15 East Entering: 567 Cars 89 North Peds: 624 48 761 Cars 759 East Peds: 2 \mathbb{Z} Peds Cross: Totals 100 679 Totals 820 Peds Cross: ⋈ 50 Regional Rd 25 Heavys Trucks Cars Totals Trucks Heavys Totals Cars 26 10 553 589 2 83 323 334 7 141 6 150 Louis St Laurent Ave 544 Heavys Trucks Cars Totals Louis St Laurent Ave 2 117 130 11 444 452 4 464 483 Trucks Heavys Totals 15 Cars 622 1025 640 Regional Rd 25 \mathbb{X} Peds Cross: Peds Cross: l≫1 Cars 1229 Cars 141 562 130 833 West Peds: 0 Trucks 14 Trucks 5 5 22 South Peds: 0 12 3 45 West Entering: 1065 Heavys 69 Heavys 9 33 South Entering: 900 West Leg Total: 1654 Totals 155 South Leg Total: 2212 Totals 1312

Specified Period Mid-day Peak Diagram **One Hour Peak** From: 11:00:00 **From:** 13:00:00 To: 14:00:00 To: 14:00:00 Weather conditions: Municipality: Halton Region Site #: Cloudy/Dry 0000002977 Regional Rd 25 & Louis St Laurent / Person(s) who counted: Intersection: Matt TFR File #: Linda Count date: 6-Dec-2016 ** Signalized Intersection ** Major Road: Regional Rd 25 runs N/S North Leg Total: 1124 Heavys 8 42 0 50 Heavys 56 East Leg Total: 499 Trucks 2 16 East Entering: North Entering: 558 13 1 Trucks 24 236 North Peds: Cars 77 372 43 492 Cars 486 East Peds: 0 \mathbb{X} Peds Cross: Totals 87 427 Totals 566 Peds Cross: ⋈ 44 Regional Rd 25 Totals Trucks Heavys Totals Heavys Trucks Cars Cars 10 345 369 0 29 144 2 150 57 0 57 Louis St Laurent Ave 230 Heavys Trucks Cars Totals Louis St Laurent Ave 2 47 58 1 136 143 140 151 Trucks Heavys Totals 6 5 Cars 252 2 323 263 Regional Rd 25 \mathbb{X} Peds Cross: 607 Peds Cross: M Cars 569 Cars 124 410 73 West Peds: 1 Trucks 18 Trucks 4 22 2 28 South Peds: 0 West Entering: 352 52 Heavys 48 Heavys 4 47 1 South Entering: 687 West Leg Total: 721 Totals 132 South Leg Total: 1322 Totals 635

Specified Period Afternoon Peak Diagram One Hour Peak From: 15:00:00 **From:** 16:30:00 To: 18:00:00 To: 17:30:00 Weather conditions: Municipality: Halton Region Site #: Cloudy/Dry 0000002977 Regional Rd 25 & Louis St Laurent / Person(s) who counted: Intersection: Matt TFR File #: Linda Count date: 6-Dec-2016 ** Signalized Intersection ** Major Road: Regional Rd 25 runs N/S North Leg Total: 1690 Heavys 0 19 0 19 Heavys 24 East Leg Total: 1178 7 Trucks 0 7 East Entering: North Entering: 769 0 Trucks 15 607 Cars 882 North Peds: Cars 139 537 67 743 East Peds: 1 \mathbb{X} Peds Cross: Totals 139 Totals 921 Peds Cross: ⋈ 563 67 Regional Rd 25 Totals Trucks Heavys Totals Heavys Trucks Cars Cars 879 889 0 61 448 2 451 92 95 Louis St Laurent Ave 601 Heavys Trucks Cars Totals Louis St Laurent Ave 0 86 89 2 306 308 2 2 193 197 Trucks Heavys Totals Cars 585 562 571 Regional Rd 25 \mathbb{X} Peds Cross: 1216 Peds Cross: l≫1 Cars 822 Cars 292 735 189 West Peds: 0 Trucks 11 Trucks 5 26 South Peds: 0 15 6 Heavys 2 24 West Entering: 594 Heavys 22 21 1 South Entering: 1266 West Leg Total: 1483 Totals 299 South Leg Total: 2121 Totals 855

Total Count Diagram

Municipality: Halton Region Site #: 0000002977

Intersection: Regional Rd 25 & Louis St Laurent /

TFR File #:

North Leg Total: 11061

North Entering: 5413

North Peds:

Peds Cross:

Peds Cross:

West Peds:

Count date: 6-Dec-2016 Weather conditions:

Cloudy/Dry

Person(s) who counted:

Matt

Linda

Regional Rd 25

** Signalized Intersection **

25

361 Heavys 52 308 1 5 129 Trucks 13 111

Cars 743 3783 397 Totals 808 4202 403 Major Road: Regional Rd 25 runs N/S Heavys 371

> Trucks 125 Cars 5152

Totals 5648

East Leg Total: 6742 East Entering: 3372 East Peds: 8 \mathbb{X} Peds Cross:

Heavys Trucks Cars Totals 115 78 4239 4432



Louis St Laurent Ave

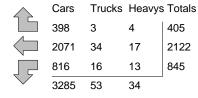
Heavys	Trucks	Cars	Totals	_
57	10	591	658	
18	27	1982	2027	
71	28	1909	2008	
146	65	4482	'	\

 \mathbb{X} Cars 6508 5 Trucks 155 West Entering: 4693 Heavys 392 West Leg Total: 9125 Totals 7055



4923





Louis St Laurent Ave



	Cars	1425	4163	905	6493
	Trucks	31	112	26	169
₹	Heavys	46	310	9	365
	Totals	1502	4585	940	_

Trucks Heavys Totals Cars 3284 3370

> Peds Cross: \bowtie South Peds: South Entering: 7027 South Leg Total: 14082

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), offcampus 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

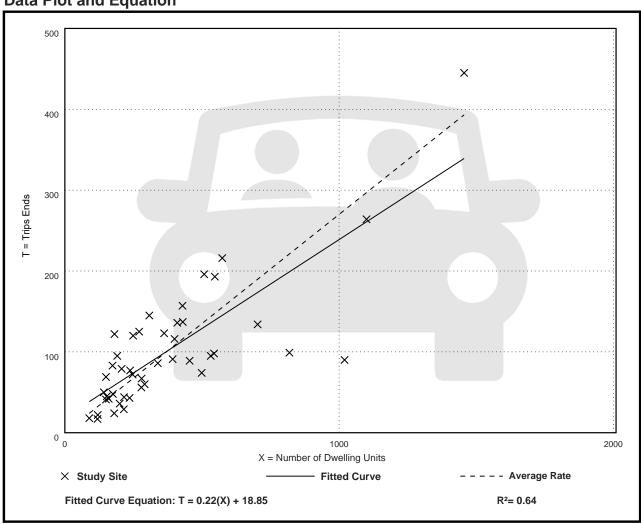
Number of Studies: 45 Avg. Num. of Dwelling Units: 372

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





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

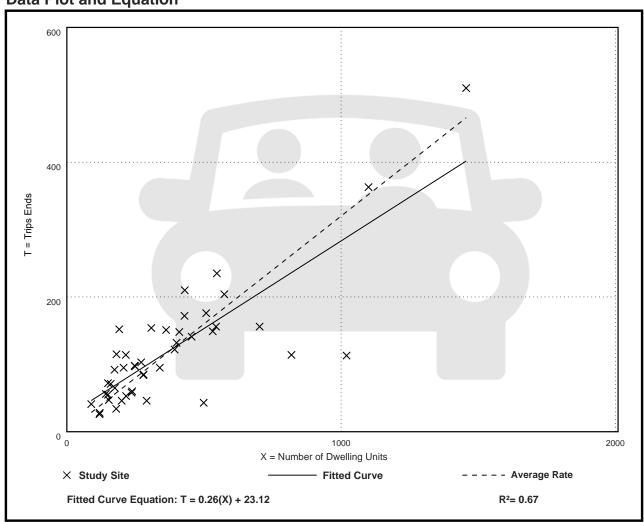
Number of Studies: 45 Avg. Num. of Dwelling Units: 372

Directional Distribution: 56% entering, 44% exiting

Vehicle Trip Generation per Dwelling Unit

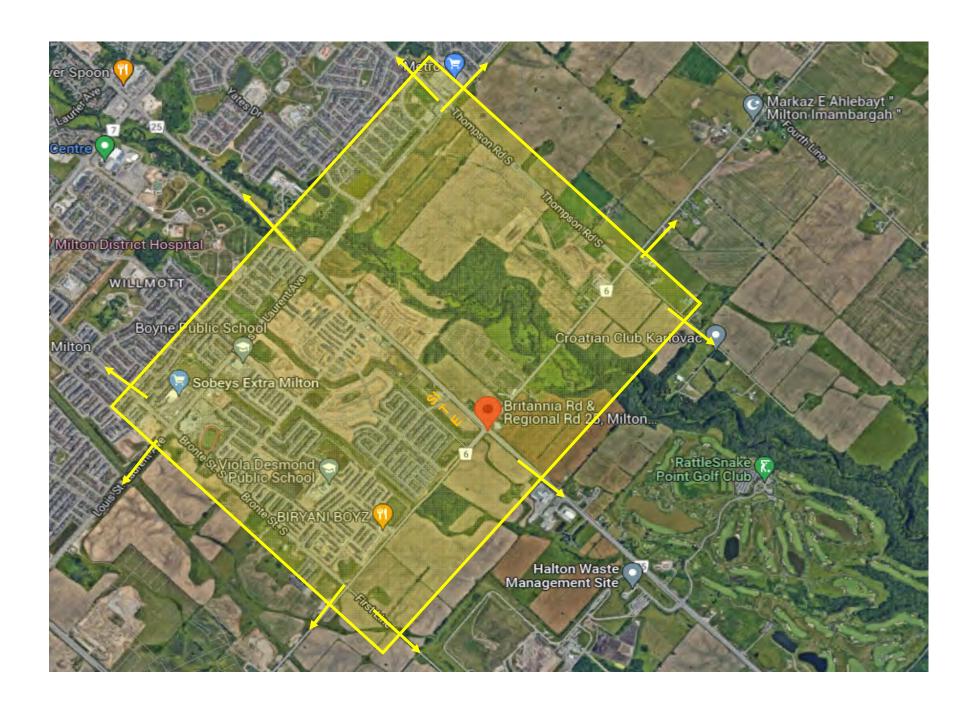
Average Rate	Range of Rates	Standard Deviation
0.32	0.09 - 0.80	0.13

Data Plot and Equation





APPENDIX G: TTS DATA



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

Primary travel mode of trip - mode_prime In D Р Т 2006 GTA zone of origin - gta06_orig In 4104 4105 4108)

Trip 2016

Table:

PD 2 of Toronto 0 16 0	87 16 45 11 18 87
	45 11 18
PD 3 of Toronto 0 0 45	11 18
	18
PD 5 of Toronto 0 0 11	
PD 7 of Toronto 0 0 18	87
PD 8 of Toronto 0 87 0	٠.
PD 9 of Toronto 0 99 9 1	80
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 1	11
	65
Brampton 45 232 277 5	54
Mississauga 34 1147 755 19	36
Halton Hills 0 93 0	93
	84
Burlington 79 116 126 3:	321
	64
	80
	36
Woolwich 0 0 16	16
	64
	15
Barrie 0 22 0	22
Milton 72 1645 789 25	06

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

Trip purpose of origin - purp_orig In H

Primary travel mode of trip - mode_prime In D

2006 GTA zone of origin - gta06_orig In 4104

Planning district of destination - pd_dest In 38

Trip 2016 Table:

TOTAL	4108	4105	4104	
47	0	47	0	4101
62	0	62	0	4103
118	14	104	0	4104
341	10	331	0	4105
432	377	55	0	4108
151	62	89	0	4109
107	87	20	0	4110
34	0	34	0	4117
99	18	81	0	4119
35	0	35	0	4122
12	0	12	0	4123
121	46	56	19	4124
659	159	448	52	4125
63	0	63	0	4126
67	0	67	0	4127
12	0	12	0	4144
29	15	14	0	4145
60	0	60	0	4147
31	0	31	0	4148
25	0	25	0	4192

Ρ

4105 4108

Т

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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

P T Primary travel mode of trip - mode_prime In D 2006 GTA zone of destination - gta06_dest In 4104 4105 4108)

Trip 2016 Table:

Tubic.				
	4104	4105	4108	TOTAL
PD 1 of Toronto	0	124	59	183
PD 2 of Toronto	0	46	0	46
PD 3 of Toronto	ō	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

(Start time of trip - start_time In 1500-1759

Trip purpose of destination - purp_dest In H

Primary travel mode of trip - mode_prime In D

2006 GTA zone of destination - gta06_dest In 4104

Planning district of origin - pd_orig In 38

Trip 20	
Toblo:	

TOTAL	4108	4105	4104	
82	0	82	0	4103
84	0	84	0	4104
324	10	314	0	4105
263	200	63	0	4108
26	26	0	0	4109
134	72	62	0	4110
87	0	87	0	4119
32	32	0	0	4120
24	0	24	0	4122
54	27	27	0	4123
72	37	35	0	4124
518	257	235	26	4125
55	0	55	0	4126
67	0	67	0	4127
12	0	12	0	4144
29	15	14	0	4145
103	0	103	0	4148
25	0	25	0	4192

Р

4105 4108

Т

U

AM
Outbound
2023-07-25

RESIDENTIAL VEHICLE TRIP DISTRIBUTION

Traffic Volume Allocation

J			NORTH	NORTH	NORTH	SOUTH	SOUTH	SOUTH	EAST	EAST	WEST	WEST	
Zone	Trips	%	Bronte St S	RR25	Thompson Rd S	First Line	RR25	Thompson Rd S	Britannia Rd	Louis St. Laurent Ave	Britannia Rd	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%		4070			40%		30%	30%			100.00%
Halton Hills	93	1%		70%			40%		15%	15%			100.00%
Oakville	584	8%		70%			50%		50%	15%			100.00%
Burlington	321	4%				20%	40%		50%		40%		100.00%
Hamilton	164	2%				20%	40%				40%		100.00%
Waterloo	80	1%	10%	50%		20%	40%				20%	20%	100.00%
													100.00%
Kitchener	36	0%	10%	50%							20%	20%	
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%	1	1	1		1			100.00%
4124	121	2%		50%	50%	1	1	1		1			100.00%
4125	659	9%	50%	50%		1	1	1		1			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%	1	50%	50%				,,,				100.00%

NORTH	NORTH	NORTH	SOUTH	SOUTH	SOUTH	EAST	EAST	WEST	WEST	
Bronte St S	RR25	Thompson Rd S	First Line	RR25	Thompson Rd S	Britannia Rd	Louis St. Laurent Ave	Britannia Rd	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%	0.89%	1.78%	0.00%	0.00%	0.00%	1.78%	0.00%	4.4%
0.00%	0.00%	0.00%	0.45%	0.91%	0.00%	0.00%	0.00%	0.91%	0.00%	2.3%
0.11%	0.55%	0.00%	0.00%	0.00%	0.00%		0.00%	0.22%	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%	0.04%	0.04%	0.2%
0.00%	0.12%	0.00%	0.00%	0.00%	0.00%	0.09%	0.09%	0.00%	0.00%	0.6%
0.00%	0.26%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.19%	0.19%	0.6%
0.00%	0.65%	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%										6.0%
0.00%	2.39% 0.00%	2.39%	0.00%	0.00%	0.00%	0.00%	1.19%	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%	0.44%	0.44%	0.00%	0.00%	0.00%	0.09%	0.09%	0.00%	0.00%	0.5%
0.00%	0.55%	0.14%	0.00%	0.00%	0.00%	0.03%	0.09%	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%	0.03%	0.4%
0.12%	0.12%	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%	0.00%	0.00%	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	RESIDENTIAL VEHICLE TRIP DISTRIBUTI	ON
Inbound	Traffic Volume Allocation	
2023-07-25		

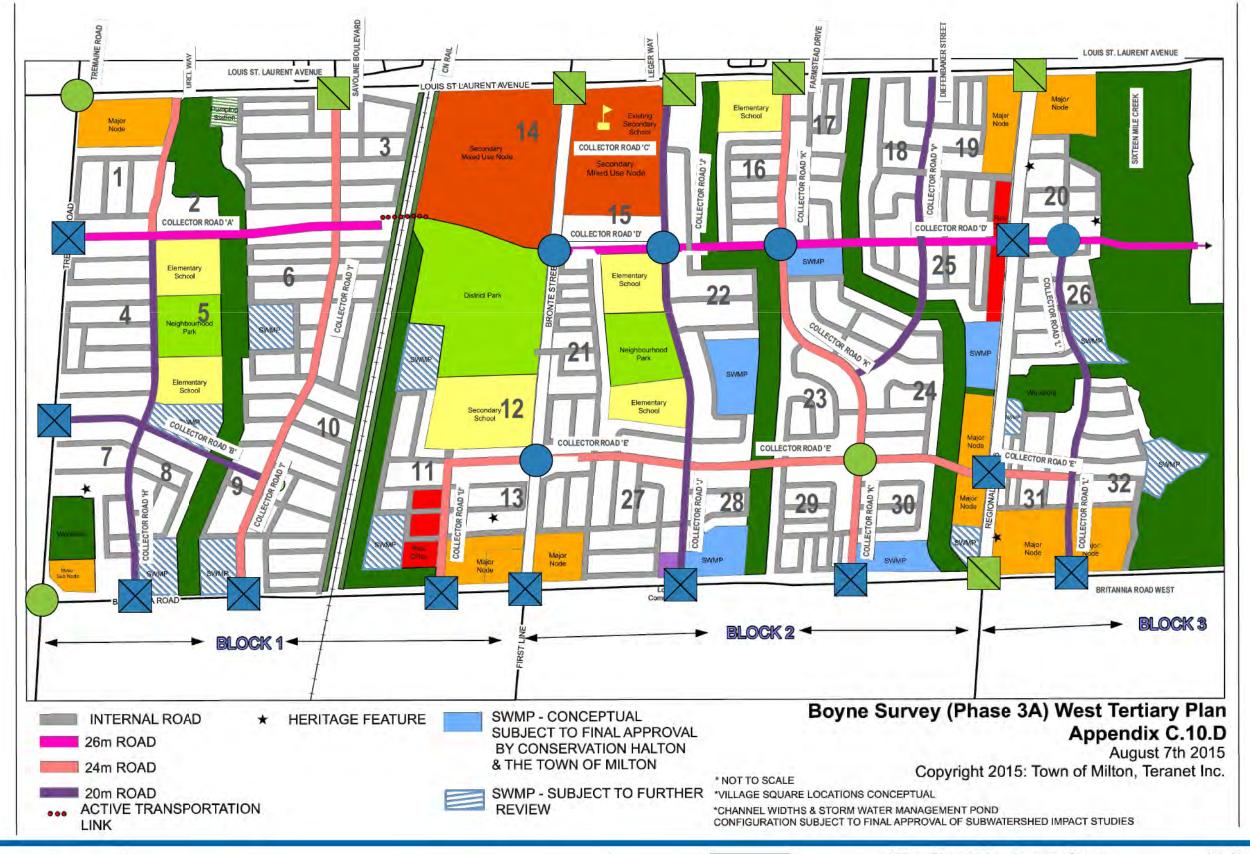
J			NORTH	NORTH	NORTH	SOUTH	SOUTH	SOUTH	EAST	EAST	WEST	WEST	
Zone	Trips	%	Bronte St S	RR25	Thompson Rd S	First Line	RR25	Thompson Rd S	Britannia Rd	Louis St. Laurent Ave	Britannia Rd	Louis St. Laurent Ave	TOTAL
PD 1 of Toronto	183	3%		10%			50%		20%	20%			100.00%
PD 2 of Toronto	46	1%		10%			50%		20%	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%											

					ato opiit roto					
NORTH	NORTH	NORTH	SOUTH	SOUTH	SOUTH	EAST	EAST	WEST	WEST	
Bronte St S	RR25	Thompson Rd S	First Line	RR25	Thompson Rd S	Britannia Rd	Louis St. Laurent Ave	Britannia Rd	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%	0.95%	1.91%	0.00%	0.00%	0.00%	1.91%	0.00%	4.8%
0.00%	0.00%	0.00%	0.36%	0.73%	0.00%	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% 100%

Route Split Totals

APPENDIX H: BOYNE ROAD NETWORK ASSESSMENT



Legend

Existing Traffic Signal

Proposed Traffic Signal

2015 Roundabout
Proposed Roundabout

Future draft plans will confirm a final recommended design criteria.



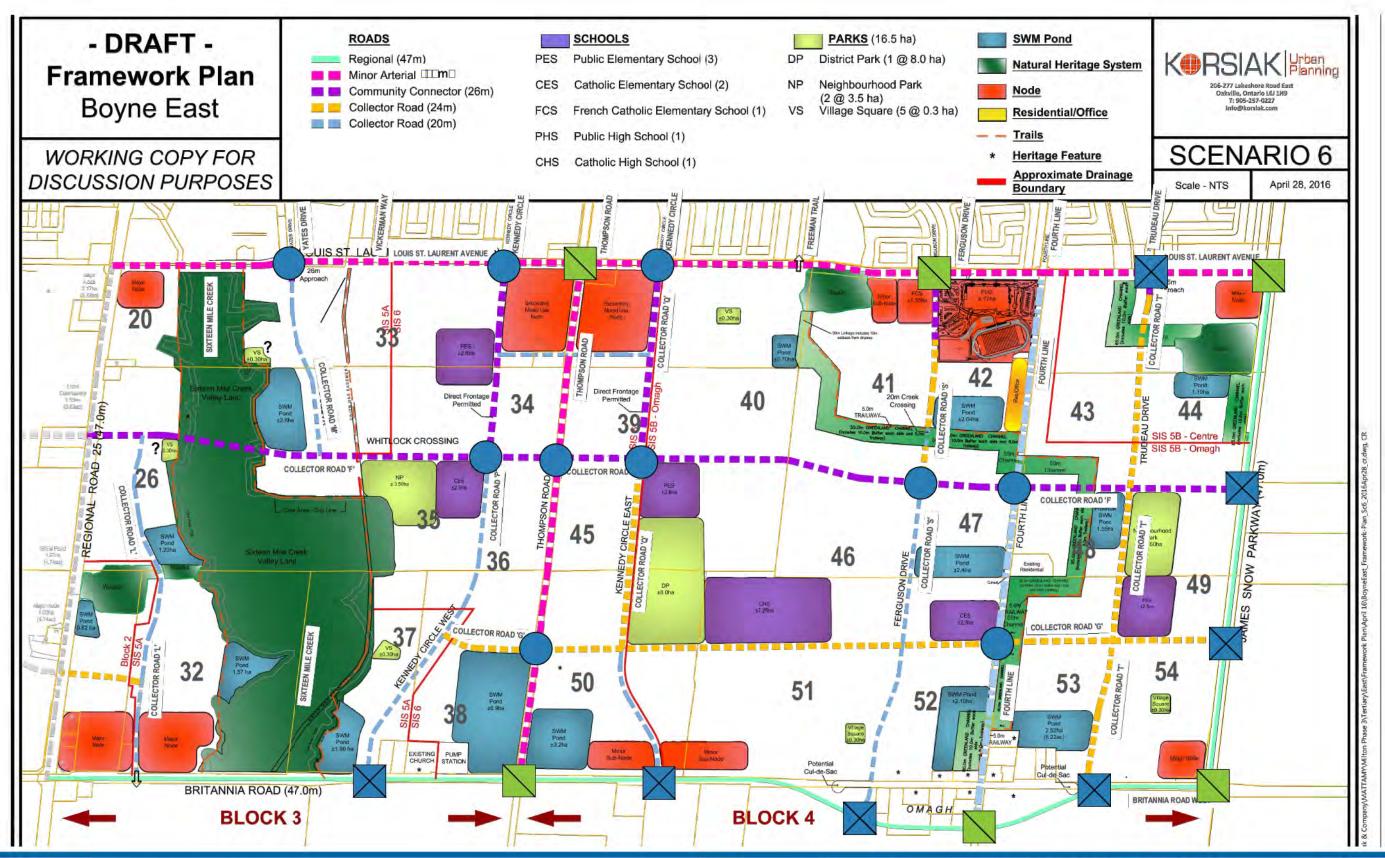


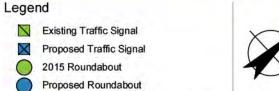
Milton Phase 3 Landowners Group Boyne Survey Road Network Assessment West Block Boyne Survey Road Network Job Number 28-21522

Revision C

Date Sept 2017

Figure 01









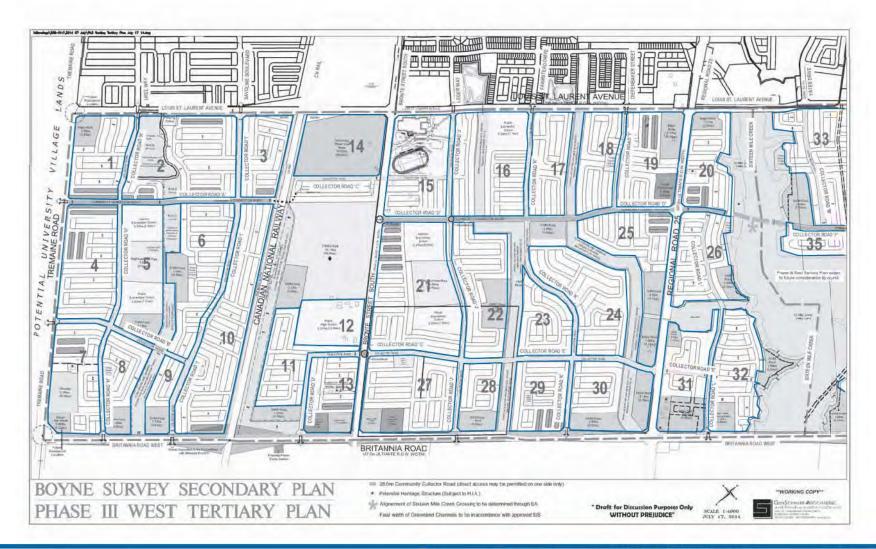
Milton Phase 3 Landowners Group Boyne Survey Road Network Assessment East Block Boyne Survey Road Network Job Number | 28-21522 Revision C

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

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 B
Date Aug 2014
Figure 01

APPENDIX I: TRAFFIC SIGNAL TIMINGS



Date: 28-Sep-2021

Intersection: Britannia Rd @ Farmstead Dr.

				8 Ph	ase Basi	c Timing	Sheet					
	1	2	3	4	5	6	7	8	2 Ped	4 Ped	6 Ped	8 Ped
Phases in use	Χ	X	X	Х	X	Х	X	Х	Х	Х	Х	Х
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 F	Phase Ba	sic Timin	g Sheet					
	1	2	3	4	5	6	7	8	2 Ped	4 Ped	6 Ped	8 Ped
Phases in use	Χ	X	X	Χ	Χ	Χ	Х	Х				
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		Х				Х						
Ped Recall		(22.22.22										

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: Cycle Length: Offset (%):	6:00 130 99%		l		Pattern 2 Time: Cycle Length: Offset (%):	9:30 120 12%		I	
Direction Phase % Direction Phase %	SBL 1 12 NBL 5 12	NB 2 40 SB 6 40	WBL 3 12 EBL 7 12	EB 4 36 WB 8 36	Direction Phase % Direction Phase %	SBLT 1 8 NBLT 5 8	NB 2 44 SB 6 44	WBLT 3 13 EBLT 7 13	EB 4 35 WB 8 35
Pattern 3 Time: Cycle Length: Offset (%):	15:00 130 80%				Pattern 4 Time: Cycle Length: Offset (%):	20:00 120 12%		I	
Direction Phase % Direction Phase %	SBLT 1 9 NBLT 5 12	NB 2 44 SB 6 40	WBLT 3 12 EBLT 7 8	EB 4 35 WB 8 39	Direction Phase % Direction Phase %	SBLT 1 8 NBLT 5 8	NB 2 44 SB 6 44	WBLT 3 13 EBLT 7 13	EB 4 35 WB 8 35
Pattern 5 Time: Cycle Length: Offset (%):	22:00 Local		ı		Pattern 6 Time: Cycle Length: Offset (%):			ı	
Direction Phase % Direction Phase %	SBLT 1 NBLT 5	NB 2 SB 6	WBLT 3 EBLT 7	EB 4 WB 8	Direction Phase % Direction Phase %	1	2 6	7	8



Date: 04-Oct-21

Intersection: Regional Road 25 @ Etheridge Avenue

				8 F	Phase Ba	sic Timin	g Sheet					
	1	2	3	4	5	6	7	8	2 Ped	4 Ped	6 Ped	8 Ped
Phases in use		Х		Х	Х	Х		Х				
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		Х				Х						
Ped Recall		(00.00.0.00										

Notes: Use Max 1 (22:00-6:00)

Local Zero Overide Active Set Sync Reference to 3:15

Ped Reservice On



Pattern 1 Time: Cycle Length: Offset (%):	6:00 130 89%				Pattern 2 Time: Cycle Length: Offset (%):	9:30 120 99%			
Direction Phase % Direction Phase %	1 0 NBLT 5 10	NB 2 69 SB 6 59	3 0 7 0	EB 4 31 WB 8 31	Direction Phase % Direction Phase %	1 0 NBLT 5 11	NB 2 68 SB 6 58	3 0 7 0	EB 4 32 WB 8 32
Pattern 3 Time: Cycle Length: Offset (%):	15:00 130 79%				Pattern 4 Time: Cycle Length: Offset (%):	20:00 120 99%			
Direction Phase % Direction Phase %	1 0 NBLT 5 10	NB 2 69 SB 6 59	3 0 7 0	EB 4 31 WB 8 31	Direction Phase % Direction Phase %	1 0 NBLT 5 11	NB 2 68 SB 6 58	3 0 7 0	EB 4 32 WB 8 32
Pattern 5 Time: Cycle Length: Offset (%):	22:00 Local				Pattern 6 Time: Cycle Length: Offset (%):				
Direction Phase % Direction Phase %	1 NBLT 5	NB 2 SB 6	3 7	EB <i>4</i> WB 8	Direction Phase % Direction Phase %	1	2	3 7	<i>4</i> 8



Date: 04-Oct-21

Intersection: Regional Road 25 @ Whitlock Avenue

				8 F	Phase Ba	sic Timin	g Sheet					
	1	2	3	4	5	6	7	8	2 Ped	4 Ped	6 Ped	8 Ped
Phases in use	Х	Х		Х	Х	Х		Х				
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		Х				Х						
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: Cycle Length: Offset (%): Direction Phase	6:00 130 49% SBLT 1	NB 2	3	EB 4	Pattern 2 Time: Cycle Length: Offset (%): Direction Phase	9:30 120 69% SBLT 1	NB 2	3	EB 4
% Direction Phase %	9 NBLT 5 9	62 SB 6 62	0 7 0	29 WB 8 29	% Direction Phase %	10 NBLT 5 10	59 SB 6 59	0 7 0	32 WB 8 32
Pattern 3 Time: Cycle Length: Offset (%):	15:00 130 31%				Pattern 4 Time: Cycle Length: Offset (%):	20:00 120 69%		I	
Direction Phase % Direction Phase %	SBLT 1 9 NBLT 5 9	NB 2 62 SB 6	3 0 7 0	EB 4 29 WB 8 29	Direction Phase % Direction Phase %	SBLT 1 10 NBLT 5 10	NB 2 59 SB 6 59	3 0 7 0	EB 4 32 WB 8 32
Pattern 5 Time: Cycle Length: Offset (%):	22:00 Local				Pattern 6 Time: Cycle Length: Offset (%):			I	
Direction Phase %	SBLT 1	NB 2	3	EB 4	Direction Phase %	1	2	3	4
Direction Phase %	NBLT 5	SB 6	7	WB 8	Direction Phase %	5	6	7	8



Date: 25-Jan-21

Intersection: Regional Rd 25 @ Louis St Laurent

				8 F	Phase Ba	sic Timin	g Sheet					
	1	2	3	4	5	6	7	8	2 Ped	4 Ped	6 Ped	8 Ped
Phases in use	X	X	X	Χ	X	X	X	Х				
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		Х				Х						
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 Fill in yellow cells STEP 1 Do not touch other cells Combined Vehicle and Pedestrian Major Street All Approaches Minor Streets Crossing Artery from Minor Streets amPHV Lefts + 20 peds Lefts + 20 peds pmPHV 530 AHV 320 103 218 55 AHV = (amPHV+pmPHV)/4 Need to highlight which column applies Link formulas in "%" column to the highlighted column Just. 1B Just. 2B STEP 2 (ex. Minimum Requirement 2 or more lanes, restricted flow) JUSTIFICATION 7 Minimum Requirement 1 Lane Minimum Requirement 2 or more Compliance Sectional ENTIRE Justification Description Highways lanes Free Flow Restr. Flow Free Flow Restr. Flow Numerical A. Vehicle volume, all approaches (average 480 720 900 320 44% . Minimum 44% /ehicular Volume B. Vehicle volume, along minor streets (average 120 170 120 103 60% 170 A. Vehicle volume, major street (average hour) 480 720 600 900 218 30% 2. Delay to cross 30% raffic B. Combined vehicle and pedestrian volume 50 50 75 55 73% crossing artery from minor streets (average hour *For "T" intersections, these values should be increased by 50%. (Justification 1B ONLY) Result: 44%

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

150%

Not Warranted

Required:

Analysis Using Average Hour Volume

50% increase for a future intersection or roadway.

APPENDIX K: SYNCHRO WORKSHEETS

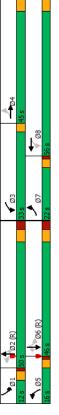
Timings 1: Regional Rd 25 & Louis St Laurent Ave

Existing AM 01-12-2024

Lane Group	EBF	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	,	4₽	y -	4₽	y -	₩	ĸ.	<u>~</u>	₩	*-	
Traffic Volume (vph)	265	535	370	545	82	029	245	09	640	92	
Future Volume (vph)	265	535	370	545	82	670	245	90	640	92	
Turn Type	pm+pt	Ϋ́	pm+pt	Ž	pm+pt	≨	Perm	pm+pt	≨	Perm	
Protected Phases	7	4	က	∞	2	2		-	9		
Permitted Phases	4		∞		7		2	9		9	
Detector Phase	7	4	က	∞	2	2	2	-	9	9	
Switch Phase											
Minimum Initial (s)	2.0	10.0	10.0	10.0	5.0	20.0	20.0	2.0	20.0	20.0	
Minimum Split (s)	0.6	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	26.0	16.0	50.0	20.0	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	0.9	2.0	0.9	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)	26.1	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	
//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	
SO-	ပ	ш	ш	۵	ပ	۵	∢	O	□	∢	
Approach Delay		51.1		49.9		30.1			36.0		
Approach LOS				۵		O					
Intersection Summary											
Cycle Length: 140											
Actuated Cycle Length: 140	0										
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	to phase 2:1	VBTL an	d 6:SBTL	Start of	Green						
Natural Cycle: 90											
Control Type: Actuated-Coordinated	ordinated										
Maximum v/c Ratio: 0.92											
ntersection Signal Delay: 42.0	12.0			_	ntersectio	Intersection LOS: D					
ntersection Capacity Utilization 79.9%	ation 79.9%			_	SU Level	CU Level of Service D	۵				

Existing Traffic Conditions

Splits and Phases: 1: Regional Rd 25 & Louis St Laurent Ave



Synchro 11 Report Page 1 Britannia & RR25 BA Group - NHY

Queues 1: Regional Rd 25 & Louis St Laurent Ave

	4	†	/	ţ	•	←	•	۶	→	•	
Lane Group	田田	田田	WBL	WBT	BE	NBT	NBR	SBL	SBT	SBR	
Lane Group Flow (vph)	282	739	394	681	6	713	261	2	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	97.6	4.6	10.6	9.88	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		0.06	
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	92.0	0.87	0.55	0.28	0.56	0.35	0.22	0.58	0.16	
•											

⁹⁵th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

34.0 35.0 0.25 7.0 3.0 856 c0.21 44 45 535 535 535 1100 0.95 1.00 0.97 1.00 0.97 1.00 0.94 569 569 569 578 718 % NA 265 265 3.0 3.0 3.0 1.00 1.00 0.35 0.36 0.37 282 282 282 282 282 2% Traffic Volume (vph)
Traffic Volume (vph)
Meal Four Volume (vph)
Meal Fow (vpha)
Total Lost time (s)
Lane Vull Factor
Fig. ped/bikes
Fig. ped Permitted Phases
Actuated Green, G (s)
Effective Green, g (s)
Actuated g/C Ratio
Clearance Time (s)
Vehicle Extension (s)
Lane Gpp Cap (vph)
ws Ratio Prot
ws Ratio Prot ncremental Delay, d2 Heavy Vehides (%) Turn Type Protected Phases Progression Factor Jniform Delay, d1 v/c Ratio

> Synchro 11 Report Page 2 Britannia & RR25 BA Group - NHY

HCM Signalized Intersection Capacity Analysis 1: Regional Rd 25 & Louis St Laurent Ave

Existing AM 01-12-2024

Existing AM 01-12-2024

2% Perm 0.02 0.06 30.6 1.00 0.2 30.8 98 99 60 60 11.00 11.00 11.00 11.00 11.00 11.00 11.00 10.94 10.94 47.5 48.5 0.35 7.2 3.0 548 0.58 37.5 1.00 2.1 2.1 39.6 D D 47.5 48.5 0.35 7.2 3.0 1168 0.20 % ¥ 9 \$\frac{1}{4}\$\frac 60 60 3.0 3.0 1.00 1.00 1.00 1.00 1.00 1.71 4.92 64 64 55.9 0.40 0.40 3.0 3.0 261 0.01 0.08 0.25 27.0 1.00 0.5 2% 50.7 51.7 0.37 7.2 3.0 579 3% Perm 0.07 0.19 30.0 1.00 0.7 18.2 D 50.7 51.7 0.37 7.2 3.0 1245 c0.21 35.3 1.00 1.9 37.2 D D % ₹ 85 85 85 85 80 80 80 80 80 80 90 90 90 90 90 %9 60.3 62.1 0.44 4.0 3.0 289 0.01 0.11 0.31 24.4 1.00 0.6 0.6 HCM 2000 Level of Service Sum of lost time (s) ICU Level of Service 0 0 5 % 95 101 0.61 40.4 1.00 1.0 41.4 D 51.2 43.6 44.6 0.32 7.0 3.0 0.20 % ₹ 370 370 1900 2.0 2.0 1.00 1.00 1.00 0.095 1.70 0.095 394 394 64.7 65.7 0.47 3.0 3.0 3.0 422 0.19 0.25 0.093 40.4 1.00 27.7 68.1 2% 0.94 0 44.3 0.72 140.0 79.9% % 160 160 900 0.84 49.8 1.00 7.2 57.1 E E 52.8 51.1 53.1 0.38 4.0 3.0 3.0 3.0 0.10 0.10 0.77 32.5 32.5 41.7 HCM 2000 Control Delay HCM 2000 Volume to Capacity ratio ntersection Capacity Utilization Actuated Cycle Length (s) Approach Delay (s) Approach LOS Delay (s) Level of Service

Synchro 11 Report Page 3 Britannia & RR25 BA Group - NHY

Timings 2: Regional Rd 25 & Whitlock Ave

	1	†	>	ţ	4	•	←	•	۶	→	•	
Lane Group	EBE	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	*	æ	*	*	*-	*	‡	*	*	‡	*	
Traffic Volume (vph)	105	8	20	52	98	4	825	9	20	1335	82	
Future Volume (vph)	105	8	20	52	92	8	825	9	20	1335	82	
Turn Type	Perm	Ϋ́	Perm	Ϋ́	Perm	pm+pt	Ϋ́	Perm	pm+pt	¥	Perm	
Protected Phases		4		80		2	2		-	9		
Permitted Phases	4		∞		∞	2		2	9		9	
Detector Phase	4	4	∞	œ	∞	ა	7	2	-	9	9	
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	32.5	32.5	
Total Split (s)	38.0	38.0	38.0	38.0	38.0		81.0			81.0		
Total Split (%)	29.2%	29.2%	29.5%	29.5%	29.5%		62.3%			62.3%	9	
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3		4.2			4.2		
All-Red Time (s)	3.2	3.2	3.2	3.2	3.2		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		
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	3.0	5.5			5.5	5.5	
Lead/Lag						Lead	Lag			Lag		
Lead-Lag Optimize?						Yes	Yes			Yes		
Recall Mode	None	None	None	None	None	None	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	
v/c Ratio	0.63	0.39	0.36	0.11	0.36	0.15	0.37	0.01	0.11		0.08	
Control Delay	68.1	18.3	56.1	48.0	12.1	5.6	9.7	0.4	3.8		3.2	
Queue Delay	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	
ROS	ш	ω	ш	_	В	⋖	⋖	∢	⋖	В	∢	
Approach Delay		43.7		30.3			9.3			11.0		
Approach LOS		٥		O			∢			Ф		
Intersection Summary												
Cycle Length: 130												
Actuated Cycle Length: 130												
Offset 64 (49%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	I to phase	2:NBTL a	TBS:9 pur	rl, Start c	of Green							
Natural Cycle: 95												
Control Type: Actuated-Coordinated	dinated											
Maximum v/c Ratio: 0.63												
Intersection Signal Delay: 14.1	Ψ.			드	Intersection LOS: B	LOS: B						
Intersection Capacity Utilization 65.3%	on 65.3%			೦	ICU Level of Service C	of Service	O _E					
Analysis Period (min) 15												

 Britannia & RR25
BA Group - NHY
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Queues 2: Regional Rd 25 & Whitlock Ave

	`	Ť	•	,	/		_	L	•	*	*	
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	35	
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	5.6	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	5.6	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	. 8.	114.6	0.7	6.7	142.0	9.1	
Internal Link Dist (m)		67.9		68.1			6.969			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	4	278	2427	938	204	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	90.0	0.23	0.15	0.37	0.01	0.11	0.59	0.08	
Intersection Summary												

Britannia & RR25
BA Group - NHY
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HCM Signalized Intersection Capacity Analysis 2: Regional Rd 25 & Whitlock Ave

All Annual Period Control Cont	FET EBR 20 80 20 80 80 80 80 80 80 80 80 80 80 80 80 80	WBL 50 50 1900	WBT 25 25 25 25	WBR 95	NBL 4	NBT	₩ E	SBL 50	SBT 1335	SBR 85
105 105 106 100 100 1.00 1.00 0.39 1.25 1.725 1.		50 50 50 1900	25 25	}: 82 -≯	40	++	k- ¢	50 - 7	1335	85
105 106 1900 100 1.00 1.00 1.00 1.00 1.00 1.00		50 1900	S S 2	95	4		1	220	1335	82
105 1900 5.5 1.00 1.00 1.00 1.00 1.72 1725 0.74 1343 1343		1900	52			825	2	3		
1900 5.5 1.00 1.00 1.00 1.72 1.72 1.343 0.92 0.92 0.93 1.72 1.72 1.343		1900		8	40	825	10	20	1335	82
5.5 1.00 1.00 0.99 0.99 17.25 17.25 17.25 10.44 13.44 11.44			1900	1900	1900	1900	1900	1900	1900	1900
1.00 1.00 1.00 1.00 1.00 1.72 1.74 1.34 1.44 1.44 1.44 1.44		5.5	2.5	2.5	3.0	5.5	5.5	3.0	5.5	5.5
100 0.39 1725 0.74 1343 1343 114		1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
0.99 1.00 1.00 0.74 1343 114 114		1.00	1.00	0.98	1.00	1.00	1.00	1.00	1.00	1.00
1.00 0.95 17.25 0.74 1343 0.92 1.14 1.14		0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
0.95 1725 0.74 1343 0.92 114 114		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
1725		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
0.92		1726	1759	1455	1671	3406	1292	1805	3438	1509
1343 · 0.92		0.62	1.00	1.00	0.14	1.00	1.00	0.29	1.00	1.00
0.92		1123	1759	1455	242	3406	1292	249	3438	1509
411 0 411		0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
114		72	22	103	43	897	Ξ	24	1451	92
114		0	0	88	0	0	က	0	0	18
		32	27	4	43	897	œ	24	1451	74
ည		2		2						
leavy Vehicles (%) 4% 32		4%	%8	%6	8%	%9	25%	%0	2%	2%
Turn Type Perm N	NA •	Perm	ĕ°	Perm	pm+pt	¥°	Perm	pm+pt	≜ "	Perm
Percent Flases	+	00	0	œ	0 0	7	2	- vc	>	G
(s) 16.5	16.5	16.5	16.5	16.5	96.4	8.06	8.06	999	6.06	6 06
17.5	5.	17.5	17.5	17.5	98.4	91.8	91.8	98.6	91.9	91.9
0.13	0.13	0.13	0.13	0.13	9.70	0.71	0.71	92.0	0.71	0.71
6.5	3.5	6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.5	6.5
	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
ane Grp Cap (vph) 180 20	206	151	236	195	255	2405	912	481	2430	1066
	0.02		0.02		c0.01	0.26		0.01	c0.42	
		0.05		0.01	0.12		0.01	0.08		0.05
0.63	0.16	0.36	0.11	0.07	0.17	0.37	0.01	0.11	09.0	0.07
	49.8	51.1	49.4	49.1	6.2	9.7	9.9	4.2	9.7	5.9
	1.00	1.00	1.00	1.00	0.41	1.11	1.00	1.00	1.00	1.00
	0.4	1.5	0.2	0.2	0.3	0.4	0.0	0.1	1.	0.1
60.3	7.7	52.6	49.7	49.3	2.8	8.9	2.7	4.3	10.8	0.9
ш	٥	_	۵	۵	∢	⋖	⋖	⋖	В	⋖
(s) /	55.3		50.3			9.8			10.3	
pproach LOS	ш		۵			∢			В	
ntersection Summary										
HCM 2000 Control Delay	15.6	모	M 2000	HCM 2000 Level of Service	Service		В			
HCM 2000 Volume to Capacity ratio	0.58									
Actuated Cycle Length (s)	130.0	S	Sum of lost time (s)	time (s)			14.0			
ntersection Capacity Utilization	65.3%	☲	ICU Level of Service	f Service			O			
Analysis Period (min)	15									

Britannia & RR25 BA Group - NHY

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Timings 5: Regional Rd 25 & Etheridge Ave

Existing AM 01-12-2024

Existing AM 01-12-2024

→	SBT	4₽	1410	1410	¥	9		9		20.0	38.4	0.77	59.2%	4.2	2.2	-1.0	5.4	Lag	Yes	C-Max	98.4	9.76	09:0	3.0	0.0	3.0	А	3.0	A				Green				Intersection LOS: A	ICU Level of Service B
←	NBT	‡	775	775	¥	2		2		20.0	38.4	0.06		4.2	2.2	-1.0	5.4			C-Max (105.0	0.81	0.30	1.7	0.0	1.7	∢	6 .	∢				T, Start of				Inte	ರ
•	NBL	<u>r</u>	30	30	pm+pt	2	2	2		7.0	11.0	13.0	10.0%	3.0	1.0	-1.0	3.0	Lead	Yes	None	107.4	0.83	0.11	2.3	0.0	2.3	∢						and 6:SB					
<u> </u>	EBR	*	65	65	Perm		4	4		10.0	36.2	40.0	30.8%	3.3	5.9	-1.0	5.2			None	14.4	0.11	0.28	14.5	0.0	14.5	В						e 2:NBTL					
4	EBL	*	100	100	Prot	4		4		10.0	36.2	40.0	30.8%	3.3	2.9	-1.0	5.2			None	14.4	0.11	0.53	64.0	0:0	64.0	ш	44.5	٥			000	nced to phas		pordinated		5.4	zation 57.9%
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	SOT	Approach Delay	Approach LOS	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 Capacity Utilization 57.9% Analysis Period (min) 15

Splits and Phases: 5: Regional Rd 25 & Etheridge Ave



Synchro 11 Report Page 7 Britannia & RR25 BA Group - NHY

Queues 5: Regional Rd 25 & Etheridge Ave

	•	/	•	←	→	
Lane Group	EBF	EBR	NBL	NBT	SBT	
Lane Group Flow (vph)	105	89	32	816	1542	
v/c Ratio	0.53	0.28	0.11	0:30	09:0	
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	6.0	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	6.969	
Turn Bay Length (m)	40.0		0.07			
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	
C						
Intersection Summary						

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis 5: Regional Rd 25 & Etheridge Ave

Existing AM 01-12-2024

																																						vice		13.6	а		
•	SBR		22	22	1900								0.95	28	0	0	%9																					HCM 2000 Level of Service		time (s)	of Service		
→	SBT		•	•	_		0.95			•				1484		~	2%	_	9				0.74	6.4	3.0	2544	c0.45		C		0.27		က		3.0	∢		HCM 2000		Sum of lost time (s)	ICU Level of Service		
←	NBT		775		•		0.95		1.00		1.00			816			%9	Z	2			_					c0.24		_		0.44		_	¥	1.7	∢		ľ					
•	NBL		30		_				0.95			230					3%	pm+pt	2		104.0						0.01		_		0.64		3.5	⋖				6.1	0.58	130.0	27.9%	15	
/	EBR	*			_					•		Ì	0		09		%0	Perm								178					•		5	Ω									
1	EBL	*	100	100	1900	5.2	1.00	1.00	0.95	1787	0.95	1787	0.95	105	0	105	1%	Prot	4		13.4	14.4	0.11	6.2	3.0	197	00:00		0.53	54.6	1.00	2.8	57.4	ш	55.2	ш			apacity ratio	s)	ilization		
	Movement	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Ideal Flow (vphpl)	Total Lost time (s)	Lane Util. Factor	ぎ	Flt Protected	Satd. Flow (prot)	Fit Permitted	Satd. Flow (perm)	Peak-hour factor, PHF	Adj. Flow (vph)	RTOR Reduction (vph)	Lane Group Flow (vph)	Heavy Vehicles (%)	Turn Type	Protected Phases	Permitted Phases	Actuated Green, G (s)	Effective Green, g (s)	Actuated g/C Ratio	Clearance Time (s)	Vehicle Extension (s)	Lane Grp Cap (vph)	v/s Ratio Prot	v/s Ratio Perm	v/c Ratio	Uniform Delay, d1	Progression Factor	Incremental Delay, d2	Delay (s)	Level of Service	Approach Delay (s)	Approach LOS	Intersection Summary	HCM 2000 Control Delay	HCM 2000 Volume to Capacity ratio	Actuated Cycle Length (s)	Intersection Capacity Utilization	Analysis Period (min)	c Critical Lane Group

Britannia & RR25 BA Group - NHY

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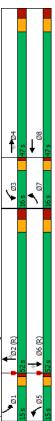
Britannia & RR25 BA Group - NHY

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Existing AM 01-12-2024 Timings 7: Regional Rd 25 & Britannia Rd

	^	†	/	-	ļ	•	-	•	۶	→	*	
Lane Group	EBL	EBT	EBR	WBL	WBT	R	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	K.	*	*	K.	₩	K.	ŧ	*	K.	‡	*-	
Traffic Volume (vph)	52	332	240	290	270	45	099	165	240	1225	9	
Future Volume (vph)	55	332	240	290	270	45	099	165	240	1225	10	
Turn Type	Prot	Ž	Perm	Prot	Ϋ́	Prot	Ϋ́	Perm	Prot	≨	Perm	
Protected Phases	7	4		က	∞	2	2		-	9		
Permitted Phases			4					2			9	
Detector Phase	7	4	4	က	∞	2	2	2	-	9	9	
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	99.0	0.65	96.0	0.54	0.22	0.44	0.22	09.0	0.71	0.01	
Control Delay	59.9	57.5	23.3	99.3	45.5	29.6	24.9	3.9	\$Z 80.	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	9.69	24.9	3.9	54.8	26.1	0.0	
TOS	ш	ш	ပ	ш	٥	ш	O	⋖	Ω	O	∢	
Approach Delay		44.7			69.5		22.7			30.6		
Approach LOS		Ω			ш		ပ			O		
Intersection Summary												
Cycle Length: 130												
Actuated Cycle Length: 130 Offset 104 (80%), Referenced to phase 2:NBT and 6:SBT, Start of Green	ed to phase	e 2:NBT	and 6:SB	T, Start of	f Green							
Natural Cycle: 120												
Control Type: Actuated-Coordinated	rdinated											
Maximum v/c Ratio: 0.96												
Intersection Signal Delay: 38.1	3.1			⊆ 9	Intersection LOS: D	LOS: D						
Intersection Capacity Utilization 74.9%	tion /4.9%			2	CU Level of Service D	of Service	٥					

Splits and Phases: 7: Regional Rd 25 & Britannia Rd



Synchro 11 Report Page 10 Britannia & RR25 BA Group - NHY

Queues 7: Regional Rd 25 & Britannia Rd

Existing AM 01-12-2024

	1	†	<u>/</u>	/	Ļ	•	←	•	٠	→	•
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	09	364	261	315	391	49	717	179	261	1332	=
v/c Ratio	0.26	99.0	0.65	96.0	0.54	0.22	0.44	0.22	09.0	0.71	0.01
Control Delay	59.9	57.5	23.3	99.3	45.5	9.69	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	9.69	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)	0.09			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	96.0	0.36	0.16	0.44	0.22	09.0	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.

Synchro 11 Report Page 11 Britannia & RR25 BA Group - NHY

HCM Signalized Intersection Capacity Analysis 7: Regional Rd 25 & Britannia Rd

FEL EBT EBT 144 145		^	†	/	/	ţ	1	•	—	•	٠	→	*
100 100	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
55 335 240 290 270 90 45 660 1900	Lane Configurations	F	‡	*-	F	₽		K.	ŧ	*-	K.	‡	*
55 335 240 290 270 90 45 660 1900 1900 1900 1900 1900 1900 1900	Traffic Volume (vph)	22	335	240	290	270	8	42	099	165	240	1225	9
1900 1900 1900 1900 1900 1900 1900 1900	Future Volume (vph)	22	335	240	290	270	6	45	099	165	240	1225	10
3.0 6.5 6.5 3.0 6.5 3.0 6.7 3.0 0.55 1.00 0.97 0.95 0.97 0.95 1.00 1.00 0.85 1.00 0.95 1.00 0.95 0.97 0.95 1.00 1.00 0.85 1.00 0.95 1.00 0.95 1.00 0.95 1.00 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 303 3574 1599 3273 3431 3367 3438 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
0.97 0.96 1.00 0.97 0.95 0.97 0.95 0.97 0.95 0.97 0.95 0.97 0.95 0.97 0.95 0.97 0.95 0.97 0.95 0.97 0.95 0.97 0.95 0.90 0.95 0.00 0.95 0.00 0.95 0.00 0.95 0.00 0.95 0.00 0.95 0.00 0.95 0.00 0.95 0.00 0.95 0.00 0.95 0.00 0.95 0.00 0.95 0.00 0.95 0.00 0.95 0.00 0.95 0.00 0.95 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92	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
1,00 1,00 0.85 1,00 0.96 1,00 1,00 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.	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
0.95 100 0.95 100 0.95 100 0.95 100 0.93 3303 3574 1599 3273 3431 3367 3438 3303 3574 1599 3273 3431 3367 3438 0.95 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92	Ft	1:00	1.00	0.85	1.00	96.0		1:00	1.00	0.85	1.00	1.00	0.85
3303 3574 1599 3273 3431 3367 3438 3303 5574 1599 3273 3431 3367 3438 3378 3438 3367 3438 337 3438 3367 3438 3367 3438 3367 3438 3367 3438 3367 3438 3367 34	Fit Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 0.00 0.00	Satd. Flow (prot)	3303	3574	1599	3273	3431		3367	3438	1553	3502	3438	1272
3303 3574 1599 3273 3431 3367 3438 6 0 2 0 0 2 0 0 2 0 0 2 0 0 2 0 0 2 0 0 2 0 0 2 0 0 2 0 0 2 0 0 2 0 0 2 0 0 2 0 0 2 0 0 2 0	Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92	Satd. Flow (perm)	3303	3574	1599	3273	3431		3367	3438	1553	3502	3438	1272
60 364 261 315 293 98 49 717 60% 1% 1% 7% 1% 2% 4% 5% 77 4 4 3 8 8 6 5 5 2 76 208 208 120 25 2 6 3 598 70 60 0.16 0.16 0.10 0.20 0.06 0.07 7 7 5 75 75 75 92 0 10 0.07 10.0 0.01 0.01 0.01 0.02 0.06 0.02 0.01 0.01 0.01 0.01 0.01 10.0 1.00 1.00	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
6	Adj. Flow (vph)	9	364	261	315	293	86	49	717	179	261	1332	7
6% 1% 7% 1% 2% 4% 5% 4% 5% 4% 1% 1% 1% 2% 4% 5% 4% 5% 4% 5% 4% 5% 4% 5% 4% 5% 4% 5% 4% 5% 4% 5% 4% 5% 4% 5% 4% 5% 4% 5% 4% 5% 4% 5% 6% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5%	RTOR Reduction (vph)	0	0	155	0	23	0	0	0	92	0	0	5
6% 1% 7% 1% 2% 4% 5% 7% 1% 2% 1% 5% 1% 5% 1% 5% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1%	Lane Group Flow (vph)	9	364	106	315	362	0	49	717	84	261	1332	9
Prot NA Perm Prot NA NA Prot NA NA Prot NA	Heavy Vehicles (%)	%9	1%	1%	%2	1%	2%	4%	2%	4%	%0	2%	27%
66 198 198 120 25.2 6.3 59.8 7.6 20.8 20.8 13.0 26.2 7.3 60.8 7.6 20.8 20.8 13.0 26.2 7.3 60.8 7.6 20.8 20.8 13.0 26.2 7.3 60.8 4.0 7.5 7.5 4.0 7.5 4.0 7.7 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Turn Type	Prot	A	Perm	Prot	Ν		Prot	NA	Perm	Prot	M	Perm
6.6 19.8 19.8 12.0 25.2 6.3 59.8 7.6 20.8 20.8 13.0 26.2 7.3 60.8 7.3 60.8 13.0 26.2 7.3 60.8 13.0 26.2 7.3 60.8 13.0 26.2 7.3 60.8 13.0 26.2 7.3 60.8 13.0 26.2 7.3 60.8 13.0 26.2 7.3 60.8 13.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Protected Phases	7	4		က	∞		2	2		_	9	
66 198 198 120 255 63 598 67 68 68 68 68 68 68 68 68 68 68 68 68 68	Permitted Phases			4						2			9
7.6 20.8 20.8 13.0 26.2 73 60.8 10.0 6.0.6 0.16 0.16 0.10 0.20 0.06 0.47 4.0 7.5 7.5 4.0 7.5 4.0 7.5 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Actuated Green, G (s)	9.9	19.8	19.8	12.0	25.2		6.3	29.8	29.8	15.2	68.7	68.7
0.06 0.16 0.16 0.10 0.20 0.06 0.47 4.0 7.5 7.5 4.0 7.5 4.0 7.7 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Effective Green, g (s)	9.7	20.8	20.8	13.0	26.2		7.3	8.09	8.09	16.2	69.7	69.7
4.0 7.5 7.5 4.0 7.5 4.0 7.7 4.0 7.7 7.1 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Actuated g/C Ratio	90:0	0.16	0.16	0.10	0.20		90:0	0.47	0.47	0.12	0.54	0.54
30 30 30 30 30 30 30 30 30 30 30 30 30 3	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
193 571 255 327 691 189 1607 0.02 60.10 6.10 0.11 0.01 0.21 0.31 0.64 0.41 0.96 0.52 0.26 0.45 58.7 51.1 49.1 58.3 46.3 58.8 23.3 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.9 2.3 1.1 39.7 0.7 0.7 0.9 59.6 53.4 50.2 98.0 47.1 59.5 24.2 E D F D F D E C 52.7 69.8 29.8 25.2 99.9 HCM 2000 Level of Service pacity ratio 0.73 Sum of lost time (s) 130.0 Sum of lost time (s) 110.0 Sum of lost time (s) 110.0 Sum of lost time (s)	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
0.02 c0.10 0.01 0.01 0.01 0.01 0.01 0.01 0.0	Lane Grp Cap (vph)	193	571	255	327	691		189	1607	726	436	1843	681
0.31 0.64 0.47 0.96 0.52 0.26 0.45 58.7 51.1 49.1 58.3 46.3 58.8 23.3 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1	v/s Ratio Prot	0.02	c0.10		c0.10	0.11		0.01	0.21		c0.02	c0.39	
0.31 0.64 0.41 0.96 0.52 0.26 0.45 58.7 51.1 49.1 58.3 46.3 58.8 23.3 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1	v/s Ratio Perm			0.07						0.05			0.00
58.7 51.1 49.1 58.3 46.3 58.8 23.3 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1	v/c Ratio	0.31	0.64	0.41	96.0	0.52		0.26	0.45	0.12	09:0	0.72	0.01
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Uniform Delay, d1	28.7	51.1	49.1	58.3	46.3		28.8	23.3	19.5	53.8	22.8	14.1
696 534 502 98.0 47.1 89.5 24.2 E D D F D E C 52.7 69.8 9acity ratio 0.73 130.0 Sum of lost time (s) 130.0 Sum of lost time (s) 130.0 Sum of lost time (s)	Progression Factor	1:00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	0.93	1.03	1.00
596 534 502 98.0 47.1 59.5 24.2 E D D F D E C 52.7 69.8 25.2 D E C 39.9 HCM 2000 Level of Service pacity ratio 0.73 Sum of lost time (s) 130.0 17.1 over 1	Incremental Delay, d2	0.9	2.3	[-	39.7	0.7		0.7	0.9	0.3	1.9	2.1	0.0
52.7 698 25.2 52.7 698 25.2 D E C S S HCM 2000 Level of Service pacity ratio 0.73 Sum of lost time (s) 130.0 Sum of lost time (s)	Delay (s)	9.69	53.4	50.2	0.86	47.1		59.5	24.2	19.8	52.0	25.7	14.1
52.7 69.8 25.2 D E C C 39.9 HCM 2000 Level of Service pacity ratio 0.73 Sum of lost time (s) 31.00 Sum of lost time (s) 32.00 Level of Service control of time (s) 33.00 Sum of lost time (s)	Level of Service	ш	□	□	ш	Ω		ш	ပ	В	□	ပ	ш
D E C 39.9 HCM 2000 Level of Service pacity ratio 0.73 130.0 Sum of lost time (s) 1 130.0 In 1 and 16 Sonice	Approach Delay (s)		52.7			8.69			25.2			29.9	
39.9 HCM 2000 Level of Service 0.73 (7.70 Sum of lost time (s) 1.00 Sum of lost time (s) 1.1 lovel of Service 1.00 Sum of lost time (s) 1.00 Sum of lost time (s) 1.00 Sum of lost time (s) 1.10 Sum of lost time (s) 1.00 Sum of	Approach LOS		Ω			ш			ပ			O	
39.9 HCM 2000 Level of Service pacity ratio 0.73	Intersection Summary												
130.0 Sum of lost time (s) 7.4 00.0 ICLI I and 14 Secretary	HCM 2000 Control Delay			39.9	王	CM 2000	Level of 3	Service		۵			
130.0 Sum of lost time (s)	HCM 2000 Volume to Capaci	ity ratio		0.73									
7/4 Oo/	Actuated Cycle Length (s)			130.0	ઝ	um of lost	time (s)			19.2			
0/0:+-	Intersection Capacity Utilization	ion		74.9%	೦	U Level o	of Service			۵			
Analysis Period (min) 15	Analysis Period (min)			15									
	CITCUIT ONG CITCUIT												

Synchro 11 Report Page 12 Britannia & RR25 BA Group - NHY

Timings 10: Britannia Rd & Farmstead Dr

Existing AM 01-12-2024

Existing AM 01-12-2024

•	SBR	¥L.	20	20	Perm		œ	8		10.0	15.3	41.0	39.0%	3.3	2.0	-1.0	4.3			None	12.9	0.12	0.10	16.6	0.0	16.6	В						en				Intersection LOS: A	CU Level of Service A
٠	SBL	je-	06	6	Prot	∞		œ		10.0	15.3			3.3	2.0	-1.0	4.3			None	12.9	0.12	0.44	49.0	0.0	49.0	۵	43.1	۵				Start of Gr				Inte	noi I
ţ	WBT	444	300	300	¥	9		9		20.0	29.4	53.0	20.5%	4.2	2.2	-1.0	5.4	Lag	Yes	C-Max	82.1	0.78	0.09	4.2	0.0	4.2	∢	4.2	∢				d 6:WBT,					
†	EBT	444	240	240	¥	2		2		20.0	29.4	64.0	61.0%	4.2	2.2	-1.0	5.4			C-Max	86.5	0.82	0.13	2.7	0.0	2.7	∢	2.7	∢				EBTL an					
1	EBL	*	20	8	bm+pt	2	2	2		7.0	11.0	11.0	10.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	87.8	0.84	0.03	2.5	0.0	2.5	A					105	ed to phase 2		Coordinated		:7.7	lization 33.1%
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	SOT	Approach Delay	Approach LOS	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 Capacity Utilization 33.1% Analysis Period (min) 15

Splits and Phases: 10: Britannia Rd & Farmstead Dr



Synchro 11 Report Page 13 Britannia & RR25 BA Group - NHY

Queues 10: Britannia Rd & Farmstead Dr

Existing AM 01-12-2024 21 21 16.6 0.0 16.6 0.0 7.2 SBL 93 93 0.44 49.0 49.0 19.0 33.9 199.3 335 0.09 4.2 0.0 4.2 4.3 12.4 377.9 EBT 557 0.13 2.7 0.0 2.7 8.0 13.5 101.0 21 2.5 2.5 0.0 2.5 2.5 2.4

595 0 0 0.16

3735 0 0 0 0.09

20.0 817 0 0 0 0

Intersection Summary

Lane Group

Lane Group Flow (vph)

Vic Ratio
Control Delay
Queue Delay
Total Delay
Queue Length 50th (m)
Queue Length 95th (m)
Irun Bay Length (m)
Irun Bay Length (m)
Starvation Cap Reducth
Spillback Cap Reducth
Spillback Cap Reducth
Sorage Cap Reducth
Reduced vic Ratio

Synchro 11 Report Page 14 Britannia & RR25 BA Group - NHY

HCM Signalized Intersection Capacity Analysis 10: Britannia Rd & Farmstead Dr

Existing AM 01-12-2024

Movement Lane Configurations Traffic Volume (vph) Traffic Volume (vph) Ideal Flow (vphp) Total Lost time (s) Lane Utili, Factor Frt Fit Protected Satd. Flow (prot) Path Protected Satd. Flow (prot) Path Flow (prot) Adj. Flow (vph)	BB ~ 8 8	₩¥	WBT	WBR	SBL	SBR		
Lane Configurations Traffic Volume (yph) Future Volume (yph) Heal Flow (yphp) Total Lost time (s) Lane Util, Factor Fit Protected Satd. Flow (prot) Fit Permitted Adj. Flow (vph)	- 8 8	***	441		,			
Traffic Volume (vph) Future Volume (vph) deal Four Volume (vph) Total Lost firm (s) Lane Utill. Factor Fit	8 8				k-	W.		
Future Volume (vph) leael Flow (vptp) Lane Util. Factor Frt Fit Treateded Sadd. Flow (prot) Sadd. Flow (prot) Peak-hour factor, PHF Adj. Flow (vph)	c	240	300	22	90	20		
deal Flow (yphp) Total Lost time (s) Lane Util. Factor Frt Frt Protected Safd. Flow (prot) Path Permitted Sald. Flow (prot) Pash Flow (prot) Pash Flow (prot) Adj. Flow (vph)	₹	240	300	25	90	20		
Tdal Lost time (s) Lane Util. Factor Frt Fit Protected Satd. Flow (prot) Fit Permitted Satd. Flow (prom) Peak-hour factor, PHF Adj. Flow (vph)	1900	1900	1900	1900	1900	1900		
Lane Util. Factor FIP Protected Satd. Flow (prot) FIP Permitted Satd. Row (perm) Satd. Flow (perm) Adf. Flow (vpt)	3.0	5.4	5.4		4.3	4.3		
Frt Fit Protected Satu Flow (prot) Fit Permitted Satu. Flow (perm) Peak-hour factor, PHF Adj. Flow (vph)	1.00	0.91	0.91		1.00	1.00		
Fit Protected Sard. Flow (prot) Fit Permitted Sard. Flow (perm) Peak-hour factor, PHF Adj. Flow (vph)	1:00	1.00	0.99		1.00	0.85		
Satd. Flow (prot) Fit Permitted Satd. Flow (perm) Peak-hour factor, PHF Adj. Flow (vph)	0.95	1.00	1.00		0.95	1.00		
Fit Permitted Satd. Flow (perm) Peak-hour factor, PHF Adj. Flow (vph)	1656	5036	4774		1703	1538		
Satd. Flow (perm) Peak-hour factor, PHF Adj. Flow (vph)	0.52	1.00	1.00		0.95	1.00		
Peak-hour factor, PHF Adj. Flow (vph)	910	5036	4774		1703	1538		
Adj. Flow (vph)	76.0	0.97	0.97	26.0	26.0	26:0		
	71	222	309	56	93	21		
RTOR Reduction (vph)	0	0	4	0	0	19		
Lane Group Flow (vph)	7	222	331	0	93	2		
Heavy Vehides (%)	%6	3%	%8	%0	%9	2%		
	pm+pt	¥	ΑN		Prot	Perm		
hases	2	2	9		∞			
Permitted Phases	2					80		
Actuated Green, G (s)	83.4	83.4	9.9/		6.6	6.6		
Effective Green, g (s)	84.4	84.4	9.77		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		
Vehide 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		5.8	0.0		
Delay (s)	2.1	2.3	3.9		47.5	42.3		
Level of Service	4	¥	∢		Ω	۵		
Approach Delay (s)		2.3	3.9		46.5			
Approach LOS		∢	∢		Ω			
Intersection Summary								
HCM 2000 Control Delay			7.7	H	:M 2000 L	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	ratio		0.19					
Actuated Cycle Length (s)			105.0	S	Sum of lost time (s)	time (s)	12.7	
Intersection Capacity Utilization			33.1%	⊴	ICU Level of Service	f Service	A	
Analysis Period (min)			15					
c Critical Lane Group								

Synchro 11 Report Page 15 Britannia & RR25 BA Group - NHY

Timings 1: Regional Rd 25 & Louis St Laurent Ave

Existing PM 01-12-2024

	1	†	>	ţ	•	←	•	۶	→	•	
Lane Group	EBF	EBT	WBL	WBT	MBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	r	₩	-	₩₽	*	‡	*-	۴	‡	*-	
Traffic Volume (vph)	195	375	250	535	170	069	322	75	650	195	
Future Volume (vph)	195	375	250	535	170	069	322	75	650	195	
Turn Type	pm+pt	Ϋ́	pm+pt	Ϋ́	pm+pt	Ϋ́	Perm	pm+pt	Ϋ́	Perm	
Protected Phases	7	4	က	∞	2	2		_	9		
Permitted Phases	4		∞		7		7	9		9	
Detector Phase	7	4	က	∞	2	2	2	-	9	9	
Switch Phase											
Minimum Initial (s)	2.0	10.0	10.0	10.0	5.0	20:0	20.0	2.0	20.0	20.0	
Minimum Split (s)	9.0	30.0	14.0	30.0	0.6	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	12.0	57.0	27.0	
Total Split (%)	14.3%	23.6%	14.3%	23.6%	21.4%		23.6%	8.6%	40.7%	40.7%	
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0		4.2	3.0	4.2	4.2	
All-Red Time (s)	1:0	3.0	0.0	3.0	1.0		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	
Total Lost Time (s)	3.0	0.9	5.0	0.9	3.0		6.2	3.0	6.2	6.2	
Lead/Lag	Lead	Lag	Lead	Lag	Lead		Lag	Lead	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	None		C-Max	None	C-Max	C-Max	
Act Effct Green (s)	45.7	26.4	48.4	26.8	84.8		70.3	8.77	96.1	96.1	
Actuated g/C Ratio	0.33	0.19	0.35	0.19	0.61		0.50	0.56	0.47	0.47	
v/c Ratio	0.77	0.73	0.80	0.92	0.39		0.38	0.19	0.41	0.24	
Control Delay	53.7	58.4	52.9	73.9	14.8		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	
Total Delay	53.7	58.4	52.9	73.9	14.8	23.2	3.0	13.0	25.8	3.6	
SOT	□	ш	_	ш	ш	O	⋖	ш	ပ	∢	
Approach Delay		57.0		67.8		16.2			20.0		
Approach LOS		ш		ш		В			O		
Intersection Summary											
Cycle Length: 140											
Actuated Cycle Length: 140											
Offset 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	phase 2:	NBTL an	d 6:SBTL	Start of	Green						
Natural Cycle: 90											
Control Type: Actuated-Coordinated	linated										
Maximum v/c Ratio: 0.92											
Intersection Signal Delay: 36.6	9			_	tersectio	Intersection LOS: D					
Intersection Capacity Utilization 75.3%	on 75.3%			9	U Level	CU Level of Service D	o D				
Analysis Period (min) 15											

Splits and Phases: 1: Regional Rd 25 & Louis St Laurent Ave



Synchro 11 Report Page 1 Britannia & RR25 BA Group - NHY

Britannia & RR25 BA Group - NHY

Synchro 11 Report Page 2

Queues 1: Regional Rd 25 & Louis St Laurent Ave

Existing PM 01-12-2024

	4	†	/	ţ	•	•	•	۶	-	•	
Lane Group	EBF	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Group Flow (vph)	203	490	260		177	719	370	78	229	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		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	
Total Delay	53.7	58.4	52.9		14.8	23.2	3.0	13.0	25.8	3.6	
Queue Length 50th (m)	45.8	68.3	26.0		21.9	69.5	0.0	9.1	2.79	0:0	
Queue Length 95th (m)	#73.6	89.1	#83.7		33.7	86.2	16.6	16.5	988	14.8	
Internal Link Dist (m)		126.1				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.

HCM Signalized Intersection Capacity Analysis 1: Regional Rd 25 & Louis St Laurent Ave

	4	†	<i>></i>	>	ţ	4	•	•	•	٠	→	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	<u></u>	₩		<u></u>	₩		F	ŧ	¥C	<u></u>	‡	¥C
Traffic Volume (vph)	195	375	92	250	535	65	170	069	355	75	650	195
Future Volume (vph)	195	375	8	220	232	93	170	069	322	75	650	195
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	0.9		2.0	0.9		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
표	1.00	0.97		1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Fit 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		280	3406	1567	628	3471	1582
Peak-hour factor, PHF	96.0	96.0	96:0	96:0	96:0	96:0	96.0	96.0	96.0	96.0	96.0	96.0
Adj. Flow (vph)	203	391	66	260	222	89	177	719	370	78	219	203
RTOR Reduction (vph)	0	16	0	0	9	0	0	0	184	0	0	107
Lane Group Flow (vph)	203	474	0	260	619	0	177	719	186	78	219	96
Confl. Peds. (#/hr)	2		2	2		2	2		2	2		2
Heavy Vehicles (%)	2%	1%	%0	%0	%0	2%	1%	%9	%	%0	4%	%0
Turn Type	pm+pt	ΑN		pm+pt	Ν		pm+pt	Ν	Perm	pm+pt	¥	Perm
Protected Phases	7	4		က	∞		2	2		-	9	
Permitted Phases	4			∞			7		7	9		9
Actuated Green, G (s)	40.8	25.5		45.4	25.8		2.08	69.2	69.2	72.6	65.1	65.1
Effective Green, g (s)	45.8	26.5		44.4	26.8		81.7	70.2	70.2	74.6	96.1	99.1
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	9/9		447	1707	785	406	1638	746
v/s Ratio Prot	0.0	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		90.0
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	9.	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		9.0	0.8	0.7	0.2	0.8	0.4
Delay (s)	54.1	57.3		22.8	72.5		15.1	22.8	20.4	16.5	22.0	21.1
Level of Service	Ω	ш		ш	ш		Ф	ပ	ပ	В	ပ	O
Approach Delay (s)		56.4			9.79			21.1			23.5	
Approach LOS		ш			ш			ပ			ပ	
Intersection Summary												
HCM 2000 Control Delay			38.9	Ĭ	HCM 2000 Level of Service	evel of 9	Service		_			
HCM 2000 Volume to Capacity ratio	city ratio		09:0			5			1			
Actuated Cycle Length (s)			140.0	ิ์	Sum of lost time (s)	time (s)			18.2			
Intersection Capacity Utilization	ion		75.3%	೦	CU Level of Service	f Service			□			
Analysis Period (min)			15									
Critical Lane Group												

Critical Lane Group

Britannia & RR25 BA Group - NHY

Synchro 11 Report Page 3

Timings 2: Regional Rd 25 & Whitlock Ave

Existing PM 01-12-2024

Existing PM 01-12-2024

20.0 35.5 81.0 62.3% 4.2 2.3 -1.0 5.5 C-Max 95.6 0.74 0.08 2.8 Pe 85 85 4.2 2.3 -1.0 5.5 Lag Yes C-Max 95.6 0.74 0.32 780 780 NA 60 60 60 60 60 7.0 11.0 11.0 3.5% 3.0 1.0 -1.0 3.0 0.0 0.0 3.6 3.6 20.0 35.5 81.0 62.3% 4.2 2.3 -1.0 5.5 Lag Yes C-Max 95.7 0.04 0.09 4.2 2.3 -1.0 5.5 Lag Yes C-Max 95.7 0.74 0.51 5.8 1240 NA 7.0 11.0 11.0 3.0 3.0 1.0 -1.0 3.0 None 104.7 0.81 0.014 3.1 Actuated Öycle Length: 130 Offset, 40 (31%), Referenced to phase 2:NBT, and 6:SBT, Start of Green Natural Cycle: 85 Control Type: Actualed-Coordinated 37.5 38.0 38.0 29.2% 3.3 3.3 3.2 -1.0 None 14.5 0.32 14.2 0.0 14.2 B 10.0 37.5 38.0 29.2% 3.3 3.3 3.2 -1.0 None 14.5 0.11 0.05 49.7 0.0 D D C C 10.0 37.5 38.0 29.2% 3.3 3.2 -1.0 None 14.5 0.11 0.17 53.3 0.0 53.3 10.0 37.5 38.0 29.2% 3.3 3.2 -1.0 5.5 None 14.5 0.11 0.24 28.4 0.0 10.0 37.5 38.0 29.2% 3.3 3.3 3.2 -1.0 None 14.5 0.11 0.53 66.1 66.1 Switch Phase Minimum Initial (s) Minimum Initial (s) Total Split (s) Total Split (s) Yellow Time (s) Lost Time (s) Lost Time Adjust (s) Total Lost Time (s) Leadulag Optimize? Recall Mode Ad Effict Green (s) Advanted g/C Ratio Lane Configurations Traffic Volume (vph) Future Volume (vph) Protected Phases Permitted Phases Detector Phase Approach Delay Approach LOS Control Delay Queue Delay Total Delay

Splits and Phases: 2: Regional Rd 25 & Whitlock Ave

Intersection LOS: A ICU Level of Service C

Intersection Signal Delay: 9.1 Intersection Capacity Utilization 67.4% Analysis Period (min) 15

Maximum v/c Ratio: 0.53



Synchro 11 Report Page 4 Britannia & RR25 BA Group - NHY

Queues 2: Regional Rd 25 & Whitlock Ave

Queues 2: Regional Rd 25 & Whitlock Ave	& Whitlo	ck Ave								"	Existing PM 01-12-2024
	•	†	•	ļ	4	•	+	•	٠	→	*
Lane Group	EBF	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	85	25	56	9	11	11	1278	41	62	804	86
v/c Ratio	0.53	0.24	0.17	0.02	0.32	0.14	0.51	0.04	0.17	0.32	80.0
Control Delay	99.1	28.4	53.3	49.7	14.2	3.1	2.8	6.0	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	2.8	6.0	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	52.5	8.9
Internal Link Dist (m)		67.9		68.1			6.969			481.0	
Turn Bay Length (m)	35.0		65.0		65.0	100.0		25.0	100.0		25.0
Base Capacity (vph)	321	442	341	475	442	220	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	80.0
Interception Summary											

Synchro 11 Report Page 5 Britannia & RR25 BA Group - NHY

HCM Signalized Intersection Capacity Analysis 2: Regional Rd 25 & Whitlock Ave

Existing PM 01-12-2024

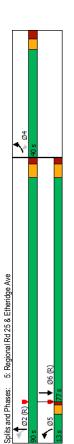
%0 Perm 93.7 94.7 0.73 6.5 3.0 0.05 0.07 5.0 1.00 0.1 5.2 780 780 1900 1900 1.00 1.00 1.00 3406 804 804 804 %9 NA 93.7 94.7 0.73 6.5 3.0 2481 0.24 0.32 6.3 1.00 0.3 6.6 A A 6.3 99.4 101.4 0.78 3.0 3.0 3.0 0.01 0.13 1.00 1.00 1.00 93.8 94.8 0.73 6.5 3.0 0.03 0.03 4.9 1.29 0.0 6.3 A 14.0 C 93.8 94.8 0.73 6.5 3.0 2507 c0.37 1278 8 ₹ 0.51 7.6 0.64 0.7 5.5 A A 5.4 99.6 0.78 0.78 3.0 543 0.01 0.10 0.14 3.4 1.06 0.1 3.7 75 75 75 1900 3.0 3.0 1.00 1.00 1.00 0.95 77 77 77 % HCM 2000 Level of Service Sum of lost time (s) ICU Level of Service 13.5 14.5 0.11 6.5 3.0 171 0.01 0.05 51.6 1.00 0.1 51.7 0.05 51.6 1.00 0.1 0.1 51.7 D 13.5 14.5 0.11 6.5 3.0 211 0.01 0.02 0.17 1.00 0.5 0.5 52.8 13.5 14.5 0.11 6.5 3.0 152 30 31 31 0 0 5 0% 10.4 0.49 130.0 67.4% 20 20 20 20 5.5 1.00 0.99 1.00 1.100 1.100 1.677 1.00 1.677 21 21 22 23 13.5 14.5 0.11 6.5 3.0 187 0.01 0.13 1.00 0.3 52.4 D D D 55.6 E 2% NA 13.5 0.11 6.5 3.0 54.5 54.5 1.00 3.2 57.7 156 HCM 2000 Control Delay HCM 2000 Volume to Capacity ratio ntersection Capacity Utilization Actuated Cycle Length (s) Traffic Volume (vph)
Traffic Volume (vph)
Meal Four Volume (vph)
Meal Fow (vpha)
Total Lost time (s)
Lane Vull Factor
Fig. ped/bikes
Fig. ped Permitted Phases
Actuated Green, G (s)
Effective Green, g (s)
Actuated g/C Ratio
Clearance Time (s)
Vehicle Extension (s)
Lane Gpp Cap (vph)
ws Ratio Prot
ws Ratio Prot Progression Factor Incremental Delay, d2 Delay (s) Level of Service Heavy Vehicles (%) Turn Type Protected Phases Approach Delay (s) Jniform Delay, d1 Approach LOS v/c Ratio

Britannia & RR25 BA Group - NHY

Synchro 11 Report Page 6

Existing PM	01-12-2024
Timings	5: Regional Rd 25 & Etheridge Ave

ane Configurations 75 rraffic Volume (vph) 75 ruture Volume (vph) 75 ruture Volume (vph) 75 rote ded Phases 4 emitted Phases 4 emitted Phases 4 Minich Phase	25 25 25 25 25 25 26 40.0 36.2 40.0 30.8% 3.3% 3.3% 2.9	60 60 60 60 60 7.0 7.0 7.0 11.0 3.0 1.0 3.0 1.0 1.0 3.0 1.0 4.0 3.0 1.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4	1280 1280 1280 NA 2 2 2 2 20.0 38.4 38.4 4.2 2.2 -1.0 5.4	720 720 720 720 720 86 6 6 6 6 6 77.0 89.2% 4.2 2.2 2.2 4.2 5.4 1.09 5.4 1.09 7.4 89.2% 7.7 7.0 7.9 89.2% 7.7 7.0 7.7 7.0 7.7 7.0 7.7 7.0 7.7 7.0 7.7 7.0 7.7 7.0 7.7 7.0 7.7 7.0 7.7 7.0 7.7 7.7
ક્ષ્ય (મ વ	25 25 25 25 25 25 25 26 30 30 30 30 30 30 30 30 30 30 30 30 30			720 720 NA 6 6 6 6 770 771 771 771 771 771 771 771 771 771
€ (€	25 25 25 10.0 36.2 30.8% 3.3 3.3 2.9			720 720 720 6 6 6 6 6 6 77.0 77.0 77.0 5.4 1.0 5.4 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0
رغ ۳	25 Perm 4 4 4 4 4 0.0 36.2 40.0 30.8% 3.3 2.9			720 NA 6 6 20.0 38.4 38.4 38.4 2.2 2.2 2.2 2.2 1.10 5.4 Leg
	Perm 10.0 36.2 4 4 4 4 4 4 4 4 4 4 4 4 4 4 6 9 30.8% 3.3 3.3 3.3 2.9			NA 6 6 20.0 38.4 77.0 77.0 5-2 2.2 2.2 5.4 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0
				6 6 77.0 39.2% 4.2 2.2 -1.0 5.4 Lag
				6 20.0 38.4 77.0 59.2% 4.2 2.2 -1.0 5.4 Lag Yes
				6 20.0 38.4 77.0 59.2% 2.2 2.2 2.2 1.10 5.4 Leg Ves
				20.0 38.4 77.0 39.2% 4.2 2.2 -1.0 -1.0 -1.0 -1.0 -1.0 -1.0 -1.0 -1.0
				20.0 38.4 77.0 4.2 2.2 2.2 5.4 Lag
				38.4 77.0 8-2.8 2.2 2.1 1.0 5.4 Leg Yes
Minimum Split (s) 36.2				77.0 99.2% 42.2 2.2 5.4 1.40 1.40 1.40
otal Split (s) 40.0				99.2% 4.2 2.2 -1.0 5.4 Lag Yes
		3.0 -1.0 -1.0 3.0 Lead Yes		4.2 2.2 -1.0 5.4 Lag Yes
(ellow Time (s) 3.3		1.0 -1.0 3.0 Lead Yes		2.2 1.10 5.4 Lag Yes
_		-1.0 3.0 Lead Yes		-1.0 5.4 Lag Yes
t (s)		3.0 Lead Yes		5.4 Lag Yes
otal Lost Time (s) 5.2		Lead		Lag Yes Macro
-ead/Lag		Yes		Yes
.ead-Lag Optimize?) Mar.
Recall Mode None	None	None (C-IMax
Act Effet Green (s) 13.1		111.9	110.6	101.8
//C Ratio		98.0	0.85	0.78
v/c Ratio 0.46	Ĭ	0.12	0.47	0.34
Control Delay 63.2		1.2	1.5	3.0
Á		0.0	0:0	0.0
otal Delay 63.2	19.0	1.2	ا 5	3.0
	Ф	∢	∢	4
Approach Delay 52.1			7:	3.0
Approach LOS D			∢	A
ntersection Summary				
Sycle Length: 130				
Actuated Cycle Length: 130				
Offset 103 (79%), Referenced to phase 2:NBTL and 6:SBT, Start of Green	ase 2:NBTL	and 6:SB	r, Start of	Green
Natural Cycle: 90				
Sontrol Type: Actuated-Coordinated				
Maximum v/c Ratio: 0.47				
ntersection Signal Delay: 4.3			Inte	Intersection LOS: A
ntersection Capacity Utilization 52.5%	%		ಶ	ICU Level of Service A
Analysis Period (min) 15				



Britannia & RR25
BA Group - NHY
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Queues 5: Regional Rd 25 & Etheridge Ave

Lane Group EBL EBR NBL Lane Group Flow (vph) 81 27 65 vic Patio 0.46 0.14 0.12 Control Delay 63.2 19.0 1.2 Queue Delay 63.2 19.0 1.2 Queue Length Soft (m) 27.1 0.0 0.0 Queue Length Soft (m) 37.1 9.3 m.7 Internal Link Dist (m) 35.1 9.3 m.7 Turn Bay Length (m) 40.0 70.0 8 Salvaration Cap Reduction 0 0 0 Salvaration Cap Reduction 0 0 0		SBT 898 0.34 0.0 0.0 3.0 3.0 7.1
hp Flow (vph) 81 27 65 149 63.2 19.0 1.2 149 63.2 19.0 1.2 149 0.0 0.0 0.0 149 0.0 0.0 0.0 150 0.0 0.0 0.0 151 0.0 0.0 151 0.0 0.0 151 0.0 0.0 152 0.0 0.0 153 0.0 0.0 153 0.0 0.0 154 0.0 0.0 155 0.0 0		898 0.34 3.0 0.0 47.2 7.1
lady 6.46 0.14 0.12 lady 6.32 19.0 1.2 lady 0.0 0.0 0.0 y 63.2 19.0 1.2 ygth 50th (m) 27.1 9.3 m1.7 k Dist (m) 37.1 9.3 m1.7 script (vph) 468 452 571 can Beduch 0.0 0.0		0.34 3.0 0.0 47.2 7.1
63.2 19.0 1.2 0.0 0.0 0.0 63.2 19.0 1.2 21.1 0.0 0.6 37.1 9.3 m1.7 53.9 70.0 40.0 70.0 0 0 0		3.0 0.0 0.0 3.0 7.1
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0		0.0 3.0 7.1 7.1
63.2 19.0 1.2 21.1 0.0 0.6 37.1 9.3 m1.7 53.9 40.0 70.0 46.0 70.0 0 0 0		3.0 47.2 7.1
21.1 0.0 0.6 37.1 9.3 m1.7 53.9 70.0 40.0 70.0 0 0 0		47.2 7.1
37.1 9.3 m1.7 53.9 70.0 40.0 70.0 0 0 0		7.1
53.9 40.0 70.0 468 452 571 0 0 0		
40.0 70.0 468 452 571 0 0 0	292.1	6.969
468 452 571 0 0 0 0 0		
Starvation Cap Reductn 0 0 0 Shillpark Can Reductn 0 0	2953	2672
Spillhack Can Reducth 0 0 0 0	0	0
a company of the comp	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		

Britannia & RR25 BA Group - NHY

Synchro 11 Report Page 8

HCM Signalized Intersection Capacity Analysis 5: Regional Rd 25 & Etheridge Ave

																																					A		13.6	A		
*	SBR	115	115	1900								0.93	124	0	0	2%																					HCM 2000 Level of Service		ime (s)	Service		
→	SBT	4 ₩	720	1900	5.4	0.95	0.98	1:00	3408	1.00	3408	0.93	774	വ	893	4%	NA	9		7.76	28.7	9.76	6.4	3.0	2587	0.26		0.35	2.1	0.48	0.4	2.8	⋖	2.8	∢		CM 2000 L		Sum of lost time (s)	ICU Level of Service		
←	NBT	₩	1280	1900	5.4	0.95	1.00	1.00	3471	1:00	3471	0.93	1376	0	1376	4%	N	5		107.3	108.3	0.83	6.4	3.0	2891	c0.40		0.48	3.0	0.31	0.4	4.1	⋖	1.4	∢		<u>*</u>		ง	೦		
•	NBL	jr 6	8 8	1900	3.0	1.00	1:00	0.95	1805	0.29	551	0.93	92	0	92	%0	pm+pt	2	2	107.3	108.3	0.83	4.0	3.0	522	0.01	0.10	0.12	2.2	0.42	0.1	1.0	⋖				4.5	0.49	130.0	52.5%	15	
>	EBR	*− ₹	25	1900	5.2	1.0	0.85	1.00	1615	1.00	1615	0.93	27	22	2	%0	Perm		4	10.1	11.1	0.09	6.2	3.0	137		0.0	0.05	54.5	1.00	0.0	54.5	□									
4	EB	15	75	1900	5.2	1.00	1.00	0.95	1752	0.95	1752	0.93	∞	0	∞	3%	Prot	4		10.1	11.1	0.0	6.2	3.0	149	00.05		0.54	22.0	1:00	4.0	61.0	ш	59.4	ш			ity ratio		on		
	Movement	Lane Configurations Traffic Volume (voh)	Future Volume (vph)	Ideal Flow (vphpl)	Total Lost time (s)	Lane Util. Factor	귶	Flt Protected	Satd. Flow (prot)	Flt Permitted	Satd. Flow (perm)	Peak-hour factor, PHF	Adj. Flow (vph)	RTOR Reduction (vph)	Lane Group Flow (vph)	Heavy Vehicles (%)	Turn Type	Protected Phases	Permitted Phases	Actuated Green, G (s)	Effective Green, g (s)	Actuated g/C Ratio	Clearance Time (s)	Vehicle Extension (s)	Lane Grp Cap (vph)	v/s Ratio Prot	v/s Ratio Perm	v/c Ratio	Uniform Delay, d1	Progression Factor	Incremental Delay, d2	Delay (s)	Level of Service	Approach Delay (s)	Approach LOS	Intersection Summary	HCM 2000 Control Delay	HCM 2000 Volume to Capacity ratio	Actuated Cycle Length (s)	Intersection Capacity Utilization	Analysis Period (min)	 Critical Lane Group

Britannia & RR25
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Timings 7: Regional Rd 25 & Britannia Rd

Existing PM 01-12-2024

Existing PM 01-12-2024

	4	†	<u>/</u>	>	Ļ	•	•	•	۶	→	•	
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	K.	‡	¥C.	ř.	₩	F	‡	*-	F	‡	*	
Traffic Volume (vph)	ස	250	35	210	392	210	1060	315	92	610	4	
Future Volume (vph)	30	250	35	210	395	210	1060	315	92	610	40	
Turn Type	Prot	ΑĀ	Perm	Prot	≨	Prot	≨	Perm	Prot	Ϋ́	Perm	
Protected Phases	7	4		က	∞	2	2		_	9		
Permitted Phases			4					7			9	
Detector Phase	7	4	4	က	∞	2	2	2	-	9	9	
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	20.0	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%	9.5%	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	6.09	6.09	
Actuated g/C Ratio	90.0	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	4.0	60.3	28.2	4.8	74.7	18.9	0.1	
ros	ш	_	⋖	ш	۵	ш	ပ	⋖	ш	Ф	∢	
Approach Delay		43.7			50.8		27.8			25.0		
Approach LOS					٥		O			ပ		
Intersection Summary												
Cycle Length: 130												
Actuated Cycle Length: 130												
Offset: 104 (80%), Referenced to phase 2:NBT and 6:SBT, Start of Green	d to phase	2:NBT	Ind 6:SB1	. Start of	Green							
Natural Cycle: 120	-											
Control Type: Actuated-Coordinated	dinated											
Maximum v/c Ratio: 0.77												
Intersection Signal Delay: 34.3	3			Ξ	Intersection LOS: C	LOS: C						
Intersection Capacity Utilization 77.6%	%9''.2\u00e4			೦	CU Level of Service D	f Service	۵					
Alialysis Fellou (IIIII) 13												

Splits and Phases: 7: Regional Rd 25 & Britannia Rd

128 | \$7.5 | \$4.02 (R) | \$4.0

Britannia & RR25
BA Group - NHY
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Queues 7: Regional Rd 25 & Britannia Rd

	1	†	<i>></i>	>	ţ	€	←	•	۶	→	•
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	33	272	88	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	32.0	0.0
Queue Length 95th (m)	10.2	44.1	0.0	#47.5	92.6	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)	0.09			120.0		90.0		0.06	90.0		0.06
Base Capacity (vph)	203	1096	299	316	1204	406	1762	921	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.

HCM Signalized Intersection Capacity Analysis 7: Regional Rd 25 & Britannia Rd

Existing PM 01-12-2024

Existing PM 01-12-2024

FBI		1	†	<i>></i>	>	ţ	4	•	←	•	٠	→	•
90 250 35 210 395 250 210 1060 315 95 610 20 250 35 210 395 250 210 1060 315 95 610 20 35 210 395 250 210 1060 315 95 610 20 35 210 395 250 210 1060 315 95 610 20 30 250 35 210 395 250 210 1060 1900 1900 1900 1900 1900 1900 19	Movement	B	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
30 250 35 210 395 250 210 1060 315 95 610 1900 1900 1900 1900 1900 1900 1900	Lane Configurations	K.	*	*	K.	₽		K	*	*	K.	*	*
1900 1900	Traffic Volume (vph)	೫	250	35	210	395	250	210	1060	315	95	610	9
1900 1900	Future Volume (vph)	93	250	35	210	395	250	210	1060	315	92	610	8
30 6.5 6.5 3.0 6.5 3.0 6.7 6.7 3.0 6.7 100 1.00 0.95 1.00 0.95 1.00 0.95 1.00 100 1.00 0.95 1.00 0.95 1.00 0.95 1.00 100 1.00 0.95 1.00 0.95 1.00 1.00 100 1.00 0.95 1.00 0.95 1.00 1.00 100 1.00 0.95 1.00 0.95 1.00 1.00 100 1.00 0.95 1.00 0.95 1.00 1.00 100 1.00 0.95 1.00 0.95 1.00 1.00 100 1.00 0.95 1.00 0.95 1.00 1.00 100 1.00 1.00 0.95 1.00 0.95 1.00 100 1.00 1.00 0.95 1.00 0.95 1.00 100 1.00 1.00 0.95 1.00 0.95 1.00 100 1.00 1.00 0.95 1.00 0.95 1.00 100 1.00 1.00 0.95 1.00 0.95 1.00 100 1.00 1.00 1.00 1.00 1.00 1.00 100 1.00 1.00 1.00 1.00 1.00 1.00 100 1.00 1.00 1.00 1.00 1.00 1.00 100 1.00 1.00 1.00 1.00 1.00 1.00 100 1.00 1.00 1.00 1.00 1.	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
1,00 1,00 0,97 0,95 1,00 0,97 0,95 1,00 0,97 0,95 1,00 0,94 1,00 0,95 1,00 0,95 1,00 0,95 1,00 0,95 1,00 0,95 1,00 0,95 1,00 0,95 1,00 0,95 1,00 1,00	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
100 100 0.88 100 0.94 100 0.86 100 0.86 100 0.86 100 0.86 100 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.	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
0.95 1.00 1.00 0.95 1.00 0.95 1.00 1.00 0.95 1.00 0.95 0.90 0.90	き	1.00	1.00	0.85	1.00	0.94		1.00	1.00	0.85	1.00	1.00	0.85
3303 3610 1615 3433 3366 3502 3505 1583 3467 3471 1615 3433 3366 3502 3505 1583 3467 3471 1615 3433 3366 3502 3505 1583 3467 3471 1616 3433 3366 3502 3505 1583 3467 3471 1616 3433 3366 3502 092 092 092 092 092 092 092 092 092 0	Fit Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
0.95 1.00 1.00 0.95 1.00 0.95 1.00 1.00 0.95 1.00 0.95 1.00 0.93 0.02 0.92 0.92 0.92 0.92 0.92 0.92 0.92	Satd. Flow (prot)	3303	3610	1615	3433	3366		3502	3505	1583	3467	3471	1615
3303 3610 1615 3433 3366 3502 3505 1583 3467 3471 9 2 092 092 092 092 092 092 092 092 092	Fit Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
092 093 092 093 <td>Satd. Flow (perm)</td> <td>3303</td> <td>3610</td> <td>1615</td> <td>3433</td> <td>3366</td> <td></td> <td>3502</td> <td>3505</td> <td>1583</td> <td>3467</td> <td>3471</td> <td>1615</td>	Satd. Flow (perm)	3303	3610	1615	3433	3366		3502	3505	1583	3467	3471	1615
33 272 38 228 429 272 228 1152 342 103 663 10 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	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
1	Adj. Flow (vph)	33	272	38	228	459	272	228	1152	342	103	663	43
33 272 7 228 612 0 228 1152 183 103 663 6% 0% 0% 2% 1% 1% 1% 0% 3% 2% 1% 4% 7 4	RTOR Reduction (vph)	0	0	3	0	83	0	0	0	159	0	0	ಜ
6% 0% 0% 2% 1% 1% 0% 3% 2% 1% 4% 7 4 3 8 5 5 2 1% 4% 7 4 4 3 8 5 2 2 1 6 7 4 4 3 8 5 5 2 2 1 6 2 3	Lane Group Flow (vph)	33	272	7	228	612	0	228	1152	183	103	663	8
Prot NA Pent NA Prot NA Pent NA Pent NA Prot NA NA <td>Heavy Vehides (%)</td> <td>%9</td> <td>%0</td> <td>%0</td> <td>2%</td> <td>1%</td> <td>1%</td> <td>%0</td> <td>3%</td> <td>2%</td> <td>1%</td> <td>4%</td> <td>%0</td>	Heavy Vehides (%)	%9	%0	%0	2%	1%	1%	%0	3%	2%	1%	4%	%0
7 4 3 8 5 2 1 6 42 24,0 44 10.8 30.6 13.7 62.7 62.7 93 58.3 52 25.0 25.0 11.8 31.6 14.7 63.7 63.7 10.3 59.3 59.3 4.0 7.5 7.5 7.1 4.0 7.7 4.0	Turn Type	Prot	NA	Perm	Prot	W		Prot	¥	Perm	Prot	NA	Perm
1, 2, 24, 0, 24, 0, 10, 8, 30, 6, 13, 7, 62, 7, 62, 7, 62, 2, 2, 25, 0, 25, 0, 11, 8, 31, 6, 14, 7, 63, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7,	Protected Phases	7	4		က	∞		2	2		-	9	
42	Permitted Phases			4						2			9
5.2 25.0 25.0 11.8 31.6 14.7 63.7 63.7 10.3 59.3 4.0 7.5 7.5 4.0 7.5 4.0 0.11 0.49 0.49 0.49 0.49 0.49 0.49 0.49 0.49	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
0.04 0.19 0.19 0.09 0.24 0.11 0.49 0.49 0.08 0.46 4 4.0 7.5 7.5 7.5 7.5 7.5 7.5 7.7 7.7 7.7 7.7	Effective Green, g (s)	5.2	25.0	25.0	1.8	31.6		14.7	63.7	63.7	10.3	59.3	59.3
4.0 7.5 7.5 7.5 7.5 7.7 4.0 7.7 7.7 4.0 7.7 7.7 4.0 7.7 7.7 4.0 7.7 7.7 4.0 7.7 7.7 4.0 7.7 7.7 4.0 7.7 7.7 4.0 7.7 7.7 4.0 7.7 7.7 4.0 7.7 7.7 4.0 7.7 7.7 4.0 7.7 7.7 4.0 7.7 7.7 4.0 7.7 7.7 7.7 4.0 7.0 <td>Actuated g/C Ratio</td> <td>0.04</td> <td>0.19</td> <td>0.19</td> <td>0.09</td> <td>0.24</td> <td></td> <td>0.11</td> <td>0.49</td> <td>0.49</td> <td>0.08</td> <td>0.46</td> <td>0.46</td>	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
30 30 30 30 30 30 30 30	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
132 694 310 311 818 395 1717 775 274 1583 1583 1584 1583 1584 1583 1584 1583 1584 1583 1584 1	Vehide Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
0.01 0.08	Lane Grp Cap (vph)	132	694	310	311	818		395	1717	775	274	1583	736
0.25 0.39 0.02 0.73 0.75 0.58 0.67 0.24 0.38 0.42 0.65 0.52 0.02 0.02 0.73 0.75 0.58 0.67 0.24 0.38 0.42 0.02 0.02 0.03 0.05 0.05 0.02 0.03 0.02 0.03 0.02 0.03 0.02 0.03 0.02 0.03 0.02 0.03 0.03	v/s Ratio Prot	0.01	0.08		c0.02	c0.18		c0.07	c0.33		0.03	0.19	
0.25 0.39 0.02 0.73 0.75 0.58 0.67 0.24 0.38 0.42 0.05 0.54 0.65 0.54 0.58 0.67 0.24 0.38 0.42 0.05 0.55 0.65 0.54 0.58 0.42 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.0	v/s Ratio Perm			0.00						0.12			0.01
60.5 45.9 42.6 57.6 45.5 54.7 25.2 19.1 56.8 23.8 11.0 100 100 1.0 1.0 1.2 6.73 1.2 11.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.	v/c Ratio	0.25	0.39	0.02	0.73	0.75		0.58	29.0	0.24	0.38	0.42	0.03
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Uniform Delay, d1	60.5	45.9	45.6	97.6	45.5		54.7	25.2	19.1	26.8	23.8	19.5
10 0.4 0.0 8.6 3.8 2.0 2.1 0.7 0.8 0.8 (1.5 46.2 42.6 66.2 49.3 56.7 27.3 19.8 7.2 18.1 1.2 (1.5 46.2 42.6 66.2 49.3 56.7 27.3 19.8 7.2 18.1 1.2 (1.5 47.3 5.5 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0	Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.26	0.73	1.00
615 46.2 42.6 66.2 49.3 56.7 27.3 19.8 72.2 18.1 1 E D D E D E C B E B 47.3 D C C C And	Incremental Delay, d2	1.0	0.4	0.0	9.8	3.8		2.0	5.1	0.7	0.8	0.8	0.1
E D D E D E C B E C B E C B E C B E E C B E E C B E E C B E C B E E	Delay (s)	61.5	46.2	45.6	66.2	49.3		29.7	27.3	19.8	72.2	18.1	19.5
47.3 53.5 29.7 D	Level of Service	ш	Ω	□	ш			ш	ပ	В	ш	В	В
A 36.1 HCM 2000 Level of Service D Capacity ratio 0.71 HCM 2000 Level of Service D Capacity ratio 0.71 HCM 2000 Level of Service D 130.0 Sum of lost time (s) 19.2 Utilization 77.6% ICU Level of Service D 15	Approach Delay (s)		47.3			53.5			29.7			25.0	
alay 36.1 HCM 2000 Level of Service Capacity ratio 0.71 Capacity ratio 13.0 Sum of lost time (s) 17.6% ICU Level of Service 15.00 Publization 15.00 Publizat	Approach LOS		Ω			۵			ပ			ပ	
slay 36.1 HCM 2000 Level of Service Capacity ratio 0.71 0.71 h (s) 130.0 Sum of lost time (s) Utilization 77.6% ICU Level of Service 15 15	Intersection Summary												
Capacity ratio 0.71 h (s) 130.0 Sum of lost time (s) Utilization 77.6% ICU Level of Service 15	HCM 2000 Control Delay			36.1	Ĭ	2M 2000	Level of S	service		۵			
h (s) 130.0 Sum of lost time (s) Utilization 77.6% IOU Level of Service 15	HCM 2000 Volume to Capac	city ratio		0.71									
Utilization 77.6% ICU Level of Service 15	Actuated Cycle Length (s)			130.0	ଊ	ım of lost	time (s)			19.2			
15 ID	Intersection Capacity Utiliza	ıtion		%9.77	೨	U Level o	f Service			۵			
c Critical Lane Group	Analysis Period (min)			15									
	c Critical Lane Group												

Britannia & RR25 BA Group - NHY

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Britannia & RR25 BA Group - NHY

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Existing PM	01-12-2024
Timings	10: Britannia Rd & Farmstead Dr

•	SBR	R.	15	15	Perm		œ	80		10.0	15.3	41.0	39.0%	3.3	2.0	-1.0	4.3			None	11.6	0.11	80:0	19.2	0.0	19.2	В						eeu				Intersection LOS: A	CU Level of Service A	
٠	SBL	-	22	22	Prot	80		æ		10.0	15.3						4.3			None	11.6	0.11	0.31	47.4	0:0	47.4	٥	41.4	Ω				Start of Gr				Inte	ਹ	
ţ	WBT	4413	292	265	Ϋ́	9		9		20.0	29.4						5.4	Lag	Yes	C-Max	83.5	0.80	0.17	3.8	0.0	3.8	⋖	3.8	∢				1 6:WBT,						
†	EBT	₩	260	260	ΑN	2		2		20.0	29.4	64.0	61.0%	4.2	2.2	-1.0	5.4			C-Max	87.9	0.84	90:0	2.1	0.0	2.1	∢	5.1	∢				EBTL and						
^	EBF	-	15	15	pm+pt	2	2	2		7.0	11.0	11.0	10.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	89.2	0.85	0.02	1.9	0.0	1.9	∢						to phase 2		rdinated		0	tion 33.1%	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	SOT	Approach Delay	Approach LOS	Intersection Summary	Cycle Lenath: 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 Capacity Utilization 33.1%	Analysis Period (min) 15

Splits and Phases: 10: Britannia Rd & Farmstead Dr

64s

65s

65s

75s

11s

11s

Britannia & RR25
BA Group - NHY
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Queues 10: Britannia Rd & Farmstead Dr

Existing PM 01-12-2024

	1	†	ļ	٠	*	
Lane Group	田田	EBT	WBT	SBL	SBR	
Lane Group Flow (vph)	16	280	694	29	16	
v/c Ratio	0.02	90.0	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	0.9	22.4	24.5	9.9	
Internal Link Dist (m)		101.0	377.9	199.3		
Turn Bay Length (m)	20.0					
Base Capacity (vph)	671	4341	4016	909	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	90.0	0.17	0.10	0.03	
Intersection Summary						

Britannia & RR25 BA Group - NHY Page 14

HCM Signalized Intersection Capacity Analysis 10: Britannia Rd & Farmstead Dr

Existing PM 01-12-2024

1900 4.3 4.3 1.00 0.85 1.00 1615 1.00 1615 0.93 0.98 8 8 8 6 9.6 0.09 6.00 0.01 47 0.00 0.01 43.4 D avel of Service A D Service A Servic	Service
емсе	iervice
емісе	service
SENICE	bervice
емісе	iervice
service	iervice
service	iervice
зегиісе	iervice
service	iervice
ervice	iervice
iervice	iervice
iervice	iervice
зегиісе	iervice
ervice	iervice
iervice	service
ervice	service
ervice	Service
емісе	service
service	service
service	iervice
service	service
Service A	Service A

Britannia & RR25
BA Group - NHY
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2029 Future Background Traffic Conditions

2029 Future Background AM 01-12-2024 Timings 1: Regional Rd 25 & Louis St Laurent Ave

	1	†	>	ţ	•	←	•	۶	-	•	
Lane Group	EBF	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	*	₩	*	+ 13	K	*	R.	*	*	R.	
Traffic Volume (vph)	270	535	475	260	105	830	300	65	775	92	
Future Volume (vph)	270	535	475	290	105	830	300	92	775	92	
Turn Type	pm+pt	Ϋ́	pm+pt	¥	pm+pt	Ϋ́	Perm	pm+pt	Ϋ́	Perm	
Protected Phases	7	4	က	∞	2	2		_	9		
Permitted Phases	4		∞		2		2	9		9	
Detector Phase	7	4	က	∞	2	2	7	τ-	9	9	
Switch Phase											
Minimum Initial (s)	2.0	10.0	10.0	10.0	2.0	20.0	20.0	5.0	20.0	20:0	
Minimum Split (s)	9.0	30.0	14.0	30.0	0.6	32.2	32.2	0.6	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%	32.0%	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	0.9	2.0	0.9	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	99.0	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	
TOS TOS	O	ш	ш	۵	ပ	۵	∢	O	۵	⋖	
Approach Delay		58.3		49.6		31.6			38.0		
Approach LOS		ш		Ω		ပ			۵		
Intersection Summary											
Cycle Length: 140											
Actuated Cycle Length: 140											
Offset 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	phase 2:	NBTL an	d 6:SBTL	Start of	Green						
Natural Cycle: 90											
Control Type: Actuated-Coordinated	dinated										
Maximum v/c Ratio: 0.92											
Intersection Signal Delay: 43.9	6			드	Intersection LOS: D	n LOS: D					
Intersection Capacity Utilization 91.1%	on 91.1%			⊆	CU Level of Service F	of Servic	T e				
Analysis Period (min) 15											

€ Ø3 Splits and Phases: 1: Regional Rd 25 & Louis St Laurent Ave ↑ øs • • • øe (R) Ø1 * MØ2 (R)

Synchro 11 Report Page 1 Britannia & RR25 BA Group - NHY

Queues 1: Regional Rd 25 & Louis St Laurent Ave

2029 Future Background AM 01-12-2024

	1	†	>	ţ	•	←	•	۶	→	•	
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Group Flow (vph)	270	720	475	655	105	830	300	9	775	92	
v/c Ratio	99.0	0.92	0.92	0.58	0.43	0.65	0.40	0.30	29.0	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		32.0		65.0		65.0	80.0		90.0	
Base Capacity (vph)	475	790	547	1133	242	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	29.0	0.15	

Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Synchro 11 Report Page 2 Britannia & RR25 BA Group - NHY

HCM Signalized Intersection Capacity Analysis 2029 Future Background AM 1: Regional Rd 25 & Louis St Laurent Ave

	•	†	<i>></i>	>	ţ	4	•	←	•	٠	→	•
Movement	EB	EBEL	EBR	WBL	WBT	WBR	NB.	NBT	NBR	SBL	SBT	SBR
Lane Configurations	_	4₽		je-	4₽		je-	₩	K _	F	₩	X _
Traffic Volume (vph)	270	535	185	475	260	92	105	830	300	92	775	92
Future Volume (vph)	270	535	185	475	260	92	105	830	300	65	775	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	0.9		2.0	0.9		3.0	6.2	6.2	3.0	6.2	6.2
Lane Util. Factor	9:	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
Ŧ	1:00	96.0		1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Fit 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	84 11		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
Adi. Flow (vph)	270	232	185	475	260	99	105	830	300	9	775	95
RTOR Reduction (vph)	0	54	0	0	တ	0	0	0	155	0	0	62
Lane Group Flow (vph)	270	969	0	475	949	0	105	830	145	9	775	33
Confl. Peds. (#/hr)	വ					2						
Heavy Vehicles (%)	5%	7%	%	5%	2%	%/	%9	%/	3%	2%	%/	2%
Turn Type	pm+pt	N		pm+pt	AN		pm+pt	ΑN	Perm	pm+pt	¥	Perm
Protected Phases	7	4		က	œ		2	2		-	9	
Permitted Phases	4			∞			2		2	9		9
Actuated Green, G (s)	47.9	30.1		9.99	44.8		58.9	50.9	50.9	51.5	47.2	47.2
Effective Green, g (s)	49.9	31.1		9'.29	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	99.0	0.25	0.33	0.67	90.0
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		4.	39.8		28.0	39.6	31.6	30.1	45.1	30.9
Level of Service	٥	ш		ш	□		ပ	٥	ပ	ပ	٥	O
Approach Delay (s)		61.0			20.0			36.6			40.2	
Approach LOS		ш			۵			۵			۵	
Intersection Summary												
HCM 2000 Control Delay			46.6	¥	3M 2000	HCM 2000 Level of Service	Service		۵			
HCM 2000 Volume to Capacity ratio	city ratio		08.0									
Actuated Cycle Length (s)			140.0	જ	ım of lost	Sum of lost time (s)			18.2			
Intersection Capacity Utilization	tion		91.1%	೦	U Level o	of Service			ш			
Analysis Period (min)			15									
Critical Lane Groun												

Critical Lane Group

Britannia & RR25 BA Group - NHY

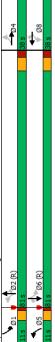
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Timings 2: Regional Rd 25 & Whitlock Ave

2029 Future Background AM

ane Group	≺	† =	WBL	₩	WBR	√ Be	◆ NBT	WBR.	→ ਲ	→ SBT	→ SBR	
ane Configurations	*	2,	-	*	¥.	-	‡	R.	-	*	R.	
raffic Volume (vph)	145	20	20	35	92	45	1020	9	20	1585	100	
-uture Volume (vph)	145	20	20	32	92	45	1020	10	20	1585	100	
urn Type	Perm	A N	Perm	A A	Perm	pm+pt	≨	Perm	pm+pt	N N	Perm	
Protected Phases		4		∞		ည	2		_	9		
Permitted Phases	4		∞		∞	2		2	9		9	
Detector Phase	4	4	∞	∞	∞	2	2	2	-	9	9	
Switch Phase												
Vinimum 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	
otal Split (s)	38.0	38.0	38.0	38.0	38.0	11.0	81.0	81.0	11.0	81.0	81.0	
otal Split (%)	29.5%	29.5%	29.5%	29.5%	29.5%	8.5%	62.3%	62.3%	8.5%	62.3%	62.3%	
'ellow 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	
ost 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	
otal 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	
-ead/Lag						Lead	Lag	Lag	Lead	Lag	Lag	
-ead-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 Effet 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	92.0	0.69	69.0	9.70	0.69	69.0	
//c Ratio	0.69	0.49	0.33	0.13	0.31	0.19	0.43	0.01	0.12	0.67	0.0	
Control Delay	68.1	30.2	52.5	45.3	10.9	5.3	8.5	0.5	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	
otal Delay	68.1	30.2	52.5	45.3	10.9	5.3	8.5	0.5	4.9	15.0	4.1	
.OS	ш	ပ	_	_	В	∢	∢	∢	∢	മ	∢	
Approach Delay		49.2		29.5			8.3			14.1		
Approach LOS				O			∢			В		
ntersection Summary												
Sycle Length: 130												
Actuated Cycle Length: 130												
Offset: 64 (49%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	ed to phase	2:NBTL	and 6:SB	TL, Start	of Green							
Vatural Cycle: 95												
Sontrol Type: Actuated-Coordinated	ordinated											
Maximum v/c Ratio: 0.69												
ntersection Signal Delay: 16.1	6.1			드	Intersection LOS: B	LOS: B						
ntersection Capacity Utilization 77.3%	ation 77.3%			⊇	ICU Level of Service D	of Service	۵					
alysis relide ()												

Splits and Phases: 2: Regional Rd 25 & Whitlock Ave



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Queues 2: Regional Rd 25 & Whitlock Ave 01-12-2024

	^	†	>	ļ	✓	•	←	•	۶	→	•	
ane Group	EBF	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
ane Group Flow (vph)	145	145	20	35	92	45	1020	9	20	1585	100	
/c Ratio	69.0	0.49	0.33	0.13	0.31	0.19	0.43	0.01	0.12	29.0	0.09	
Sontrol Delay	68.1	30.2	52.5	45.3	10.9	5.3	8.5	0.2	4.9	15.0	4.1	
Neue Delay	0:0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
otal Delay	68.1	30.2	52.5	45.3	10.9	5.3	8.5	0.2	4.9	15.0	4.1	
Jueue Length 50th (m)	37.5	18.2	12.1	8.2	0.0	8.0	105.3	0.0	5.6	125.2	3.1	
Jueue 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	
nternal Link Dist (m)		62.9		68.1			6.969			481.0		
urn Bay Length (m)	35.0		65.0		65.0	100.0		25.0	100.0		25.0	
sase 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	60:0	
ntersection Summary												

m Volume for 95th percentile queue is metered by upstream signal.

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HCM Signalized Intersection Capacity Analysis 2: Regional Rd 25 & Whitlock Ave

2029 Future Background AM 01-12-2024

	4	†	<i>></i>	/	ļ	4	•	•	•	۶	→	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	æ		*	*	¥C	*	#	*	<i>y-</i>	‡	*-
Traffic Volume (vph)	145	20	92	20	35	92	45	1020	9	20	1585	100
Future Volume (vph)	145	20	92	20	32	92	42	1020	9	20	1585	9
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	2.5	3.0	5.5	2.5	3.0	2.5	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	1.0
Frpb, ped/bikes	9:	0.99		1:00	1.00	0.98	1.00	1:00	1.00	1:00	9.	1.0
Flpb, ped/bikes	0.39	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.1	9.6
Tr.	1:00	0.30		1:00	1:00	0.85	1.00	1.00	0.85	9.	9.5	0.82
Fit 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	1.0
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	20	92	20	32	92	42	1020	10	20	1585	100
RTOR Reduction (vph)	0	29	0	0	0	80	0	0	က	0	0	8
Lane Group Flow (vph)	145	98	0	20	35	15	45	1020	7	20	1585	8
Confl. Peds. (#/hr)	വ		2	2		2						
Heavy Vehicles (%)	4%	32%	1%	4%	%8	%6	8%	%9	25%	%0	2%	7%
Turn Type	Perm	NA		Perm	¥	Perm	pm+pt	¥	Perm	pm+pt	NA	Perm
Protected Phases		4			∞		2	2		τ-	9	
Permitted Phases	4			∞		∞	2		7	9		9
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	92.6	88.9	88.9	92.6	88.9	88.9
Actuated g/C Ratio	0.16	0.16		0.16	0.16	0.16	0.74	99.0	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)	500	237		151	276	228	212	2329	883	408	2351	1031
v/s Ratio Prot		90.0			0.02		c0.01	0.30		0.01	00.46	
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	21.8	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	9.	1.00
Incremental Delay, d2	9.6	6.0		<u>ر</u> دن	0.2	0.1	0.5	9.0	0:0	0.1	9.1	0.1
Delay (s)	61.4	49.9		20.0	47.3	46.8	7.5	7.7	6.5	5.4	13.6	7.0
Level of Service	ш	ם נ		_	<u>:</u> د	2	∢	∢ !	∢	∢	20 0	∢
Approach Delay (s)		22.			8.74			``			13.0	
Approach LOS		ш			٥			∢			Ф	
Intersection Summary												
HCM 2000 Control Delay			17.0	Ĭ	SM 2000	HCM 2000 Level of Service	Service		В			
HCM 2000 Volume to Capacity ratio	ity ratio		0.65									
Actuated Cycle Length (s)			130.0	ઝ	Sum of lost time (s)	time (s)			14.0			
Intersection Capacity Utilization	ion		77.3%	೦	U Level o	ICU Level of Service	•		٥			
Analysis Period (min)			15									
c Critical Lane Group												

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Timings 2029 Future Background AM 5: Regional Rd 25 & Etheridge Ave/Collector Road 01-12-2024

-	SBT	₩.	1645	1645	ΑN	9		9		20.0	38.4	0.07	53.8%	4.2	2.2	-1.0	5.4	Lag	Yes	C-Max	868	69.0	0.72	9.0	0.0	9.0	∢	8.9	∢										
۶	SBL	*	8	8	Perm		9	9			38.4	70.0	23.8%	4.2	2.2	-1.0	5.4	Lag				69.0	0.08	3.3	0.0	3.3	∢											ပ	
←	NBT	₩	920	920	Ϋ́	2		2		20.0	38.4	81.0		4.2	2.2	-1.0	5.4								0.0		∢	2.2	∢								LOS: A	ICU Level of Service C	
•	NBL	*	8	8	pm+pt	2	2	2		7.0	11.0														0.0		⋖						Green				Intersection LOS: A	U Level o	
ţ	WBT	Ť,	0	0	¥	∞		∞		10.0	36.2														0:0		∢	35.9	٥				, Start of				드	O	
>	WBL	*	65	92	Perm		∞	∞		10.0	36.2	37.0	28.5%	3.3	2.9	-1.0	5.2	Lag	Yes	None	13.4	0.10	0.47	65.3	0.0	65.3	ш						d 6:SBTL						
†	EBT	2	0	0	Ϋ́	4		4		10.0	36.2	49.0	37.7%	3.3	2.9	-1.0	5.2			None	23.0	0.18	0.17	1.0	0.0	1.0	∢	29.0	ပ				NBTL an						
•	EBF	*	100	100	pm+pt	7	4	7		7.0	11.0	12.0	9.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	25.2	0.19	0.38	47.2	0.0	47.2	٥						phase 2:		dinated			on 68.3%	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	ros	Approach Delay	Approach LOS	Intersection Summary	Cycle Lenath: 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 Capacity Utilization 68.3%	Analysis Period (min) 15

Splits and Phases: 5. Regional Rd 25 & Etheridge Ave/Collector Road

\$\int_{\infty} \int_{\infty} \text{ Fegional Rd 25 & Etheridge Ave/Collector Road} \text{ \int_{\infty} \int_{\infty} \text{ \int_{\infty} \int_{\infty} \int_{\infty} \text{ \int_{\infty} \int_{\infty} \int_{\infty} \text{ \int_{\infty} \int_{\infty} \int_{\infty} \int_{\infty} \text{ \int_{\infty} \int_{\infty} \int_{\infty} \int_{\infty} \int_{\infty} \int_{\infty} \text{ \infty} \text{ \infty} \text{ \infty} \text{ \infty} \text{ \int_{\infty} \infty} \text{ \infty} \te

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Queues 5: Regional Rd 25 & Etheridge Ave/Collector Road 01-12-2024

→	SBT	1700	0.72	0.6	0.0	9.0	180.5	176.3	6.969		2363	0	0	0	0.72	
٠	SBL	30	80.0	3.3	0:0	3.3	8.0	m1.0		20.0	399	0	0	0	80.0	
←	NBT	940	0.37	2.1	0.0	2.1	8.2	13.9	292.1		2522	0	0	0	0.37	
•	NBL	30	0.14	2.0	0.0	2.0	0.3	m1.0		70.0	208	0	0	0	0.14	
ţ	WBT	22	0.16	[-	0.0	[-	0.0	0.0	63.1		536	0	0	0	0.10	
\	WBL	9	0.47	65.3	0.0	65.3	16.9	31.7		40.0	332	0	0	0	0.20	
†	EBT	9	0.17	1.0	0.0	1:0	0.0	9.0	53.9		623	0	0	0	0.10	
4	EBL	100	0.38	47.2	0.0	47.2	22.9	37.9		40.0	262	0	0	0	0.38	
	Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Queue Delay	Total Delay	Queue Length 50th (m)	Queue Length 95th (m)	Internal Link Dist (m)	Turn Bay Length (m)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio	

Intersection Summary molecular of your North of the North of 1951 percentile queue is metered by upstream signal.

2029 Future Background AM 01-12-2024 HCM Signalized Intersection Capacity Analysis 5: Regional Rd 25 & Etheridge Ave/Collector Road

EBL EBL 100 100 100 1.00	EBT 0 0 0 0 0 0 1900 1.1.00 0.85 1.00 1.1.00 1.615 1.00 1.615 1.00 1.615	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SARR
100 100 100 30 30 1.00 1.00 1.00 1.07 1.07 1.07 1.00 1.00	0 0 0 1900 5.2 1.00 0.85 11.00 1615	ţ	*						,		5
100 1900 30 1.00 1.00 1.00 1.00 1.00 1.00 1.00	0 0 0 1900 1.00 1.00 1.00 1.00	L		æ		jr.	+		_	₩	
100 100 100 100 100 100 100 100	0 5.2 1.00 0.85 1.00 1.00 1.00	S	92	0	22	9	920	20	30	1645	55
1900 1.00 1.00 1.00 1.00 1.00 1.07 1.07 1.	1900 5.2 11.00 11.00 11.00	92	92	0	52	၉	920	50	90	1645	22
3.0 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1	5.2 11.00 0.85 11.00 11.00	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,00	1.00 0.85 1.00 1.00 1.00		5.2	5.2		3.0	5.4		5.4	5.4	
1,00 0,95 1787 1074 1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,0	0.85 1.00 1.00 1.00		1.00	1.00		1.00	0.95		1.00	0.95	
10.95 10.57 10.57 10.57 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.	1.00 1.00 1.00 1.00		1:00	0.85		1.00	1.00		1.00	1.00	
1787 1074 1.00 1.00 1.00 100 100 100 100	1615 1.00 1615		0.95	1.00		0.95	1.00		0.95	1.00	
0.57 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	1.00		1805	1615		1752	3366		1805	3420	
1004 1000 1000 1000 1000 1000 1000 1000	1615		0.71	1.00		0.08	1.00		0.30	1.00	
1.00 100 100 100 100 100 100 100 100 100	2		1358	1615		145	3399		578	3420	
100 100 1% pm+pt 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
0 100 100 100 100 100 100 100 100 100 1	0	92	92	0	22	၉	920	50	30	1645	22
100 1% pm+pt 7 7 23.2 24.2 24.2 24.2 6.19 6.19 6.0 3.0	23	0	0	20	0	0	_	0	0	_	0
1% pm+pt 7 7 7 4 4 24.2 2 24.2 2 24.0 0.19 0.019 0.000 3.0	12	0	92	2	0	၉	939	0	30	1699	0
pm+pt 7 7 7 8 23.2 2 24.2 2 24.9 6 4.0 3.0	%0	%0	%0	%0	%0	3%	%9	%0	%0	2%	%9
7 23.2 24.2 0.19 4.0 3.0	NA		Perm	Ν		pm+pt	NA		Perm	¥	
23.2 24.2 24.2 0.19 4.0 3.0	4			∞		2	2			9	
23.2 24.2 0.19 4.0 3.0			∞			7			9		
24.2 0.19 4.0 3.0	23.2		10.4	10.4		94.2	94.2		98.0	98.0	
0.19 4.0 3.0	24.2		11.4	11.4		95.2	95.2		87.0	87.0	
4.0 s) 3.0	0.19		0.09	0.09		0.73	0.73		0.67	0.67	
3.0	6.2		6.2	6.2		4.0	6.4		6.4	6.4	
	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
	300		119	141		170	2489		386	2288	
00.03	0.01			0.00		0.01	c0.28			02.00	
			c0.05			0.12			0.05		
0.40	0.04		0.55	0.03		0.18	0.38		0.08	0.74	
45.6	43.4		26.8	54.3		11.7	6.4		7.5	14.1	
1.00	1.00		1.00	1.00		0.75	0.26		0.31	0.50	
tal Delay, d2 1.0	0.1		2.0	0.1		0.4	0.4		0.3	1.7	
46.7 43	43.4		61.9	54.4		9.2	2.0		5.6	8.8	
٥	۵		ш	۵		⋖	⋖		∢	∢	
(s) /	45.4			58.4			2.3			8.7	
Approach LOS	Ω			ш			⋖			⋖	
Intersection Summary											
HCM 2000 Control Delay		10.7	오	M 2000 I	HCM 2000 Level of Service	ervice		В			
HCM 2000 Volume to Capacity ratio		0.68									
Actuated Cycle Length (s)		130.0	Sur	Sum of lost time (s)	time (s)			16.6			
Intersection Capacity Utilization	_	68.3%	ಠ	ICU Level of Service	Service			ပ			
Analysis Period (min)		15									
c Critical Lane Group											

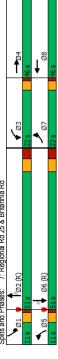
Synchro 11 Report Page 9 Britannia & RR25 BA Group - NHY

Timings 7: Regional Rd 25 & Britannia Rd

2029 Future Background AM 01-12-2024

•	SBR	*	15	15	Perm		9	9		20.0	49.7	51.0	39.2%	4.2	3.5	-1.0	6.7	Lag	Yes	C-Max	61.9	0.48	0.02	0.1	0.0	0.1	∢												
→	SBT	*	1480	1480	¥	9		9		20.0	49.7	51.0	39.5%	4.2	3.5	-1.0	6.7	Lag	Yes	C-Max	61.9	0.48	0.00	48.4	0.0	48.4	_	48.4	Ω										
٠	SBL	K.	280	280	Prot	-		-		7.0	11.0	11.0	8.5%	3.0	1:0	-1.0	3.0	Lead	Yes	None	21.1	0.16	0.49	51.0	0.0	51.0	_												
•	NBR	*	210	210	Perm		2	5		20.0	49.7	51.0	39.2%	4.2	3.5	-1.0	6.7	Lag	Yes	C-Max	47.3	0.36	0.30	2.0	0.0	2.0	∢											ш	
←	NBT	‡	800	800	₹	2		5		20.0	49.7	51.0	39.5%	4.2	3.5	-1.0	6.7	Lag	Yes	C-Max	47.3	0.36	0.64	37.5	0.0	37.5	_	32.1	ပ								LOS: D	CU Level of Service E	
•	NBL	K.	20	20	Prot	2		S		7.0	11.0	11.0	8.5%	3.0	1:0	-1.0	3.0	Lead	Yes	None	8.7	0.07	0.22	59.6	0.0	9.69	ш						Green				ntersection LOS: D	O Level o	
ţ	WBT	4413	325	325	Ϋ́	∞		∞		10.0	45.5	46.0	35.4%	4.2	3.3	-1.0	6.5	Lag	Yes	None	35.5	0.27	0.35	30.5	0.0	30.5	ပ	47.6					l, Start of				Ξ :	2	
>	WBL	F	410	410	Prot	က		ო		7.0	11.0	22.0	16.9%	3.0	1.0	-1.0	3.0	Lead	Yes	None	18.6	0.14	0.83	65.8	0.0	65.8	ш						Ind 6:SB						
†	EBT	4413	330	330	Ϋ́	4		4		10.0	45.5	46.0	35.4%	4.2	3.3	-1.0	6.5	Lag	Yes	None	23.8	0.18	92.0	46.5	0.0	46.5	_	47.6					e 2:NBT a						
4	EBF	K.	9	9	Prot	7		7		7.0	11.0	22.0	16.9%	3.0	1.0	-1.0	3.0	Lead	Yes	None	9.0	0.07	0.26	59.9	0.0	59.9	ш						d to phase		inated		2	n 89.7%	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	ros	Approach Delay	Approach LOS	Intersection Summary	Cycle Lenath: 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 Capacity Utilization 89.7%	Analysis Period (min) 15

Splits and Phases: 7: Regional Rd 25 & Britannia Rd



Synchro 11 Report Page 10 Britannia & RR25 BA Group - NHY

2029 Future Background AM 01-12-2024 Queues 7: Regional Rd 25 & Britannia Rd

	1	†	•	ţ	•	←	•	۶	→	*	
Lane Group	EBF	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Group Flow (vph)	9	099	410	435	20	800	210	280	1480	15	
v/c Ratio	0.26	92.0	0.83	0.35	0.22	0.64	0.30	0.49	06:0	0.02	
Control Delay	59.9	46.5	65.8	30.5	9.69	37.5	2.0	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	9.69	37.5	2.0	51.0	48.4	0.1	
Queue Length 50th (m)	8.0	28.7	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)	0.09		120.0		90.0		0.06	90.0		0.06	
Base Capacity (vph)	482	1371	203	1359	225	1251	669	292	1637	099	
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	0.30	0.02	
0											

Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis 7: Regional Rd 25 & Britannia Rd

2029 Future Background AM 01-12-2024

	1	†	<u>/</u>	>	ţ	4	•	←	•	٠	-	•
Movement	EB	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	K.	4413		K.	4413		K.	*	*-	K.	‡	*
Traffic Volume (vph)	09	390	270	410	325	110	20	800	210	280	1480	15
Future Volume (vph)	09	330	270	410	325	110	20	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
표	1.00	0.94		1.00	96.0		1.00	1.00	0.85	1.00	1.00	0.85
Fit 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)	9	390	270	410	325	110	20	800	210	280	1480	15
RTOR Reduction (vph)	0	6	0	0	45	0	0	0	135	0	0	œ
Lane Group Flow (vph)	09	263	0	410	330	0	20	800	75	280	1480	7
Heavy Vehicles (%)	%9	1%	1%	%/	1%	2%	4%	2%	4%	%0	2%	27%
Turn Type	Prot	NA		Prot	W		Prot	¥	Perm	Prot	NA	Perm
Protected Phases	7	4		က	∞		2	7		_	9	
Permitted Phases									7			9
Actuated Green, G (s)	9.9	23.5		17.6	34.5		6.3	45.6	45.6	20.1	59.4	59.4
Effective Green, g (s)	9.7	24.5		18.6	35.5		7.3	46.6	46.6	21.1	60.4	60.4
Actuated g/C Ratio	90:0	0.19		0.14	0.27		90.0	98.0	98.0	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	929	268	1597	290
v/s Ratio Prot	0.02	c0.13		c0.12	0.09		0.01	0.23		80.09	00.43	
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	28.7	49.4		54.2	37.7		28.8	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	96:0	1.30	1.00
Incremental Delay, d2	0.9	5.9		11.4	0.5		0.8	2.7	0.5	0.5	8.3	0.0
Delay (s)	29.6	52.2		61.9	34.8		59.5	37.5	28.6	48.2	50.9	18.8
Level of Service	ш	□		ш	ပ		ш	Δ	ပ	Δ	Δ	Ф
Approach Delay (s)		52.8			47.9			36.8			50.2	
Approach LOS		Ω						Ω				
Intersection Summary												
HCM 2000 Control Delay			47.0	ĭ	M 2000	HCM 2000 Level of Service	ervice		۵			1
HCM 2000 Volume to Capacity ratio	ty ratio		0.84									
Actuated Cycle Length (s)			130.0	S	Sum of lost time (s)	time (s)			19.2			
Intersection Capacity Utilization	uo		%2.68	೦	ICU Level of Service	f Service			ш			
Analysis Period (min)			15									
c Critical Lane Group												

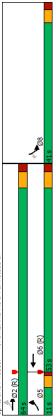
Synchro 11 Report Page 11 Britannia & RR25 BA Group - NHY

Britannia & RR25 BA Group - NHY

Timings 2029 Future Background AM 10: Britannia Rd & Farmstead Dr 01-12-2024

→	SBL SBR		90	ď			80	10.0 10.0			39.0% 39.0%				4.3 4.3			_	12.8 12.8		0.43 0.10		ľ		43.2	D	
ţ	WBT	₹	365	95 A	9		9	20.0	29.4		20.5%				5.4	Lag	Yes	С-Мах	82.3	0.78	0.12 4.3	5.0	4.3	⋖	4.3	∢	
†	EBT	₹	630	630 N	2		7	20.0	29.4	64.0	61.0%	4.2	7.7	-1.0	5.4			С-Мах	86.7	0.83	71.0	0.0	2.7	⋖	2.7	∢	
1	留	<u>r</u>	8 8	OZ ta+ma	S	2	2	7.0	11.0	11.0	10.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	88.0	28.0 28.0	0.03	4.7	2.4	∢			
	ane Group	ane Configurations	raffic Volume (vph)	-uture Volume (vph)	Protected Phases	Permitted Phases	Detector Phase	Switch Phase Minimum Initial (s)	Minimum Split (s)	Fotal Split (s)	otal Split (%)	rellow Time (s)	All-Ked lime (s)	ost Time Adjust (s)	otal Lost Time (s)	-ead/Lag	-ead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Katio	Outiful Delay	Total Delay	ros Tos	Approach Delay	Approach LOS	ntersection Summary

Splits and Phases: 10: Britannia Rd & Farmstead Dr



Britannia & RR25
BA Group - NHY
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Queues 10: Britannia Rd & Farmstead Dr

	•	†	ţ	٠	•	
Lane Group	핊	EBT	WBT	SBL	SBR	
Lane Group Flow (vph)	8	630	390	06	70	
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)	9.0	10.5	0.9	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	295	220	
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						

Britannia & RR25
BA Group - NHY
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HCM Signalized Intersection Capacity Analysis 10: Britannia Rd & Farmstead Dr

2029 Future Background AM 01-12-2024

																																						A		12.7	A	
•	SBR	R _	20	20	1900	4.3	1.00	0.85	1.00	1538	1.00	1538	1.00	50	9	2	2%	Perm		∞	8.6	10.8	0.10	5.3	3.0	158		0.00	0.01	42.3	1.00	0.0	42.3	۵				HCM 2000 Level of Service		ne (s)	Service	
بر م	WBR SBL		25 90		. 0061 0061		1.00				0.95	1703	1.00 1.00		0 0		%9 %0	Prot	∞		8.6	10.8	0.10	5.3	3.0	175	c0.05				1.00	2.5	47.2	۵	46.3	Ω		HCM 2000 Le		Sum of lost time (s)	ICU Level of Service	
ţ	WBT W	441	365		_	5.4	*0.80	0.99	1:00	4202	1:00		1.00	365	က	387	%8	A	9		7.97	7.77	0.74	6.4	3.0	3109	0.09		0.12	3.9	1.00	0.1	4.0	۷	4.0	¥		7.2	0.22	105.0	33.1%	
†	EBT	₩	630	630	1900	5.4	*0.80	1.00	1.00	4427	1.00	4427	1.00	630	0	630	3%	Ϋ́	7		83.5	84.5	0.80	6.4	3.0	3562	c0.14		0.18	2.3	1.00	0.1	2.4	⋖	2.4	⋖						
1	EBF	*	20	20	1900	3.0	1.0	1.00	0.95	1656	0.47	812	1.00	8	0	8	%6	pm+pt	2	2	83.5	84.5	0.80	4.0	3.0	989	0.00	0.02	0.03	2.1	1.00	0.0	2.1	⋖					city ratio		ation	
	Movement	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Ideal Flow (vphpl)	Total Lost time (s)	Lane Util. Factor	Ŧ	Fit Protected	Satd. Flow (prot)	FIt Permitted	Satd. Flow (perm)	Peak-hour factor, PHF	Adj. Flow (vph)	RTOR Reduction (vph)	Lane Group Flow (vph)	Heavy Vehicles (%)	Turn Type	Protected Phases	Permitted Phases	Actuated Green, G (s)	Effective Green, g (s)	Actuated g/C Ratio	Clearance Time (s)	Vehicle Extension (s)	Lane Grp Cap (vph)	v/s Ratio Prot	v/s Ratio Perm	v/c Ratio	Uniform Delay, d1	Progression Factor	Incremental Delay, d2	Delay (s)	Level of Service	Approach Delay (s)	Approach LOS	Intersection Summary	HCM 2000 Control Delay	HCM 2000 Volume to Capacity ratio	Actuated Cycle Length (s)	Intersection Capacity Utilization	

Britannia & RR25
BA Group - NHY
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Timings 2029 Future Background AM 11: Britannia Rd & Rose Way 01-12-2024

•	SBR	æ	75	75	Perm		4	4		10.0	43.0	20.0	38.5%	3.0	3.0	-1.0	5.0			None	11.8	60.0	0.35	16.3	0.0	16.3	В						een				Intersection LOS: A	CU Level of Service A	
٠	SBL	*	22	22	Prot	4		4		10.0	43.0		38.5% 3	3.0	3.0	-1.0	2.0			None	11.8	0.09	0.34	61.1	0.0	61.1	ш	35.2	Ω				Start of Gre				Inte	2	
ţ	WBT	443	0//	770	¥	9		9		20.0	29.0	65.0	20.0%	4.0	3.0	-1.0	0.9	Lag	Yes	C-Max	100.6	0.77	0.22	4.6	0.0	4.6	¥	4.6	∢				d 6:WBT, 8						
†	EBT	444	855	822	Ϋ́	2		2		20.0	29.0	80.0	61.5%	4.0	3.0	-1.0	0.9			C-Max	107.2	0.82	0.23	7.3	0.0	7.3	∢	7.2	∢				EBTL and						
^	EBL	je.	25	25	bm+pt	2	2	2		7.0	11.0	15.0	11.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	110.2	0.85	0.02	4.8	0.0	4.8	∢					130	ced to phase 2		-Coordinated	35	ау: 8.1	tilization 38.3%	2
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	SOT	Approach Delay	Approach LOS	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 Capacity Utilization 38.3%	Analysis Period (min) 15

Splits and Phases: 11: Britannia Rd & Rose Way



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Queues 2029 Future Background AM 11: Britannia Rd & Rose Way 01-12-2024

	4	†	ţ	٠	`	
Lane Group	핊	田田	WBT	SBL	SBR	
Lane Group Flow (vph)	52	855	780	22	75	
v/c Ratio	0.02	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	0.97		
Turn Bay Length (m)	20.0			20.0		
Base Capacity (vph)	293	3761	3523	624	809	
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						
managed community						

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis 11: Britannia Rd & Rose Way

on Capacity Analysis 2029 Future Background AM 01-12-2024

Movement Lane Configurations			1		į		
Lane Configurations	EBL	EBT	WBT	WBR	SBL	SBR	
	<i>y</i> -	₩	₩.		<i>y-</i>	*-	
Traffic Volume (vph)	22	822	0//	10	22	75	
Future Volume (vph)	22	822	770	9	22	75	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	3.0	0.9	0.9		2.0	5.0	
Lane Util. Factor	1:00	*0.80	*0.80		1.00	1.00	
だ	1:00	1.00	1.00		1.00	0.85	
Fit Protected	0.95	1.00	1.00		0.95	1.00	
Satd. Flow (prot)	1805	4560	4551		1805	1615	
Fit 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)	52	822	770	10	22	75	
RTOR Reduction (vph)	0	0	0	0	0	89	
Lane Group Flow (vph)	52	822	780	0	22	7	
Heavy Vehicles (%)	%0	%0	%0	%0	%0	%0	
Turn Type	pm+pt	ΑN	Ą		Prot	Perm	
Protected Phases	വ	2	9		4		
Permitted Phases	7					4	
Actuated Green, G (s)	106.2	106.2	0.86		10.8	10.8	
Effective Green, g (s)	107.2	107.2	0.66		11.8	11.8	
Actuated g/C Ratio	0.82	0.82	92.0		60.0	60:0	
Clearance Time (s)	4.0	7.0	7.0		0.9	0.9	
Vehide 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)	2.8	7.2	4.6		29.7	54.1	
Level of Service	V	⋖	⋖		ш	۵	
Approach Delay (s)		7.1	4.6		55.2		
Approach LOS		⋖	⋖		ш		
Intersection Summary							
HCM 2000 Control Delay			9.5	ľ	3M 2000	HCM 2000 Level of Service	∢
HCM 2000 Volume to Capacity ratio	icity ratio		0.24				
Actuated Cycle Length (s)			130.0	S	Sum of lost time (s)	time (s)	14.0
Intersection Capacity Utilization	ation		38.3%	೦	U Level o	ICU Level of Service	⋖
Analysis Period (min)			15				
0.11-11-0							

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Timings 2029 Future Background PM 1: Regional Rd 25 & Louis St Laurent Ave 01-12-2024

•	SBR	¥C_	195	195	Perm		9	9		20.0	32.2	26.0	40.0%	4.2	3.0	-1.0	6.2	Lag	Yes	C-Max	60.3	0.43	0.25	4.7	0.0	4.7	∢												
→	SBT	‡	802	802	Ϋ́	9		ဖ		20.0	32.2	26.0	40.0%	4.2	3.0	-1.0	6.2	Lag	Yes	C-Max	60.3	0.43	0.54	32.9	0.0	32.9	ပ	26.5	ပ										
۶	SBL		92		pm+pt	_	9	-		2.0	0.6	10.0	7.1%	3.0	1:0	-1.0	3.0	Lead	Yes	None	71.5	0.51	0.29	17.5	0.0	17.5	Ф												
•	NBR	*	420	420	Perm		2	2		20.0	32.2	0.89	48.6%	4.2	3.0	-1.0	6.2	Lag	Yes	C-Max	2.99	0.48	0.44	4.8	0.0	4.8	∢											ш	
←	NBT	*	860		A A	2		2		20.0	32.2	0.89	48.6%	4.2	3.0	-1.0	6.2	Lag	Yes	C-Max	2.99	0.48	0.53	28.1	0.0	28.1	ပ	20.4	O								ntersection LOS: D	CU Level of Service E	
•	NBL	*	205	202	pm+pt	2	2	2		5.0	0.6	22.0	15.7%	3.0	1.0	-1.0	3.0	Lead	Yes	None	80.8	0.58	0.53	20.4	0.0	20.4	ပ						Green				itersectio	CU Level	
ţ	WBT	₩	545	545	Ϋ́	80		∞		10.0	30.0	40.0	28.6%	4.0	3.0	-1.0	0.9	Lag	Yes	None	30.2	0.22	0.79	29.1	0.0	59.1	ш	55.2	ш				, Start of				_	_	
-	WBL	*	325	325	pm+pt	က	∞	က		10.0	14.0		22.9%								<u>4</u> .	0.39	0.80	47.9	0.0	47.9	_						d 6:SBTL						
†	EBT	₩	375	375	Α	4		4		10.0	30.0	30.0	21.4%	4.0	3.0	-1.0	0.9	Lag	Yes	None	23.9	0.17	0.81	63.7	0.0	63.7	ш	58.1	ш				:NBTL an						
1	EBL	*	202	202	pm+pt	7	4	7		2.0	9.0	22.0	15.7%	3.0	1.0	-1.0	3.0	Lead	Yes	None	43.8	0.31	0.70	44.7	0.0	44.7	_						phase 2		dinated		0.	on 83.4%	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	SOT	Approach Delay	Approach LOS	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 Capacity Utilization 83.4%	Analysis Period (min) 15

Splits and Phases: 1: Regional Rd 25 & Louis St Laurent Ave

10.2 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0

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Queues 1: Regional Rd 25 & Louis St Laurent Ave

2029 Future Background PM 01-12-2024

EBL EBT WBL WF 205 490 325 6: 0.70 0.81 0.80 0.1 44.7 63.7 47.9 59 0.0 0.0 0.0 0 44.7 63.7 47.9 59 10 60.2 90.8 66.4 106 126.1 35.0 10 0 0 0	ST NBL 10 205 79 0.53					
205 490 325 0.70 081 080 4.7 63.7 47.9 0.0 0.0 0.0 44.7 63.7 47.9 1) 64.0 68.5 1) 60.2 90.8 96.4 126.1 35.0 10.0 0 0		NBT	NBR	SBL	SBT	SBR
0.70 0.81 0.80 44.7 63.7 47.9 0.0 0.0 0.0 44.7 63.7 47.9 10 44.0 68.7 68.5 10 60.2 90.8 96.4 126.1 35.0 10 0 0		980	420	92	805	195
44.7 63.7 47.9 0.0 0.0 0.0 44.7 63.7 47.9 44.0 68.7 68.5 10 60.2 90.8 96.4 126.1 35.0 10 0 0 10 0 0		0.53	0.44	0.29	0.54	0.25
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0		28.1	4.8	17.5	32.9	4.7
90.0 10 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		0:0	0:0	0.0	0:0	0.0
900 87 685 1261 908 964 1261 350 100 0 0		28.1	4.8	17.5	32.9	4.7
) 602 908 964 - 126.1 35.0 90.0 90.0 90.0 90.0 90.0 90.0 90.0 9		94.7	2.0	12.1	91.8	0.0
126.1 90.0 318 634 469 In 0 0 0		118.6	26.9	22.7	126.6	16.8
90.0 35.0 318 634 469 In 0 0 0		481.0			113.5	
318 634 469 In 0 0 0	65.0		65.0	80.0		0.06
0 0 0 0	35 433	1623	920	330	1495	792
0 0 0	0 0	0	0	0	0	0
to Con Dodinate	0 0	0	0	0	0	0
Sionage Cap Reductii	0 0	0	0	0	0	0
Reduced v/c Ratio 0.64 0.77 0.69 0.71	71 0.47	0.53	0.44	0.29	0.54	0.25

Britannia & RR25 BA Group - NHY

HCM Signalized Intersection Capacity Analysis 2029 Future Background PM 1: Regional Rd 25 & Louis St Laurent Ave

Movement EBL EBT E	EBR WBL 115 325 1900 1900 2.0 2.0 1.00 1.00 1.00 1.00 1.00 1.00	WBL WBT 3.35 545 3.26 545 3.27 646 1.00		NBL NBT NB	MBT NBR 420 860 420 900 1900 6.2 6.2 6.2 6.3 1.00 0.98 1.00 0.98 1.00 0.98 1.00 0.98 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	SBL SBL 95 95 95 95 95 95 95 95 95 95 95 95 95	SBT 805	SBR 195 195
205 375 206 375 206 375 206 375 206 375 206 207 207 207 207 207 207 207 207 207 207	[E					6	\$02	195 195
205 375 205 375 1900 130 1900 130 6.0 1000 1900 1.00 1.00 1.00 1.00 1.00 1.	E					6	805	195
205 375 100 1900 1900 1900 1900 1900 1900 1900	£ , , , , , , , , , , , , , , , , , , ,			_ 0,44,66		6	802	195
1900 1900 1 3.0 6.0 1.00 1.00 1.00 1.00 1.00 1.00 0.95 1.00 0.25 1.00 1.00 1.00 1.00 1.00 2.05 375 0.21 2.05 469 5 5 69 8 8 22.9 4.08 23.9 0.29 0.17 4 3.88 22.9 4.08 23.9 3.0 3.0	£ , , , , , , , , , , , , , , , , , , ,			_ 0,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		•	000	
3.0 6.0 1.00 1.09 1.00 1.00 1.00 1.00 1.00 1.00 1.05 34.39 1.00 1.00 2.22 1.00 2.05 46.9 2.05 46.9 2.06 46.9 2.07 46.9 2.08 2.29 4.08 2.29 4.08 2.39 4.08 2.	[6]			0 ((() () ()			1900	1900
1.00 0.95 1.00 1.00 1.00 1.00 1.00 0.96 0.35 1.00 1769 3439 0.22 1.00 205 3439 1.00 1.00 205 469 5 2% 7 4 7 4 7 4 8 8 22.9 4.08 23.9 6.29 0.17 4.0 3.0	[6	" "					6.2	6.2
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00							0.95	1.00
1.00 1.00 1.00 1.00 0.96 0.96 0.96 0.25 1.00 0.22 0.20 0.21 0.20 0.21 0.20 0.22 0.20 0.29 0.29 0.29 0.29 0.29							1.00	0.98
100 0.96 1.00 1.00 0.95 1.00 0.95 1.00 0.22 1.00 0.22 1.00 0.22 1.00 0.21 0.00 0.21 0.00 0.21 0.00 0.21 0.00 0.21 0.00 0.21 0.00 0.22 0.00 0.22 0.00 0.00	. , , _ ,					0 1:00	1.00	1.00
0.95 100 1769 3439 0.22 1.00 405 3439 1.00 1.00 7.0 205 375 0 21 205 469 2 27 2 4 2 4 3 8 8 22.9 4 0 8 23.9 3 0 3.0	, _ ,						1.00	0.85
1769 3439 0.22 1.00 405 3439 1.00 1.00 2 205 375 0 21 205 469 5 4 7 7 4 7 7 4 3.8 8 22.9 40.8 23.9 3.0 3.0	L O I	8 6 8 6 7					1.00	1.00
0.22 1.00 4.05 3.0 4.39 1.00 1.00 1.00 1.00 1.00 2.00 469 5 5 2 469 5 469 469 469 469 469 469 469 469 469 469	ud lud	- m					3471	1582
405 3439 1.00 1.00 1.00 205 205 469 25 2% 1% 205 469 27 2% 1% 205 469 22.9 40.8 22.9 40.8 23.9 6.29 6.29 6.29 6.29 6.29 6.29 6.29 6.	Į,	8 2 3					1.00	1.00
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	[_		3471	1582
205 375 0 21 205 469 5 5 1% 7 4 4 4 4 388 22.9 40.8 23.9 0.29 0.17 4.0 3.0 3.0	lg.		ñ	1.00 1.0		00.1	1.00	1.00
205 469 5 5 1% pm+pt NA 7 4 4 38 8 229 40.8 23.9 0.29 0.17 4.0 3.0	ď		3	205 86	860 420		802	195
205 469 5 2% 1% pm+pt NA 7 4 38 22.9 40.8 23.9 6.29 0.17 4.0 7.0	튭		0				0	=
2% 1% 2% 1% 2% 1% 2% 2% 2% 2% 2% 2% 2% 2% 2% 2% 2% 2% 2%			0	205 86	860 216	3 95	802	84
2% 1% pm+pt NA 7 4 4 4 38.8 22.9 40.8 23.9 0.29 0.17 4.0 3.0			2	2		5		5
pm+pt 7 7 4 38.8 40.8 0.29 4.0	md		2%	1% 6	6% 1%	%0 %	4%	%0
7 4 38.8 40.8 4.0 4.0			ud	pm+pt N	NA Perm	n pm+pt	¥	Perm
38.8 38.8 40.8 0.29 4.0							9	
38.8 40.8 0.29 4.0 3.0				2		2 6		9
40.8	4						59.3	59.3
0.29 C	5			7.77 66.7			60.3	60.3
s) 4.0	0					3 0.49	0.43	0.43
3.0							7.2	7.2
							3.0	3.0
Lane Grp Cap (vph) 282 587	(,)	395 762		379 1622	2 746	318	1495	681
	8	Ü	5	0.06 0.25			0.23	
v/s Ratio Perm 0.12	0	0.15	5	c0.24	0.14	4 0.13		0.05
0.73	0						0.54	0.12
	ಹ						29.5	24.0
Progression Factor 1.00 1.00	_	1.00 1.00		1.00 1.00	00 1:00		1.00	1.00
	_					0.5	1.4	0.4
Delay (s) 49.4 63.3	4	49.1 57.5		19.6 26	26.9 23.2		30.9	24.3
٥		D E		ш		0	ပ	O
Approach Delay (s) 59.2		54.6		24.9	6.		28.9	
Approach LOS		۵			O		ပ	
Intersection Summary								
lav	38.2	HCM 2000	HCM 2000 Level of Service	vice				
pacity ratio	0.67							
	140.0	Sum of lost time (s)	time (s)		18.2	2		
Intersection Capacity Utilization 83.	83.4%	ICU Level of Service	f Service		_	ш		
Analysis Period (min)	15							

Britannia & RR25 BA Group - NHY

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Timings 2: Regional Rd 25 & Whitlock Ave

2029 Future Background PM 01-12-2024

Splits and Phases: 2: Regional Rd 25 & Whitlock Ave



Britannia & RR25 BA Group - NHY

Queues 2: Regional Rd 25 & Whitlock Ave 01-12-2024

	4	†	\	ļ	4	•	—	4	٠	→	*	
ane Group	BB	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
ane Group Flow (vph)	105	8	22	4	75	6	1485	9	09	066	135	
//c Ratio	09:0	0.32	0.15	0.17	0.29	0.20	09:0	0.03	0.21	0.41	0.12	
Control Delay	67.4	31.8	50.2	20.0	13.0	1.6	7.1	د .	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	20.0	13.0	1.6	7.1	 6.	4.8	9.4	3.9	
Queue Length 50th (m)	27.2	10.6	6.1	8.6	0.0	4.	20.7	0.4	5.6	52.7	4.8	
Jueue 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	
nternal Link Dist (m)		67.9		68.1			6.969			481.0		
Furn Bay Length (m)	35.0		65.0		65.0	100.0		25.0	100.0		25.0	
Sase 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	09:0	0.03	0.21	0.41	0.12	
ofersection Summary												

m Volume for 95th percentile queue is metered by upstream signal.

Britannia & RR25
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HCM Signalized Intersection Capacity Analysis 2: Regional Rd 25 & Whitlock Ave

2029 Future Background PM 01-12-2024

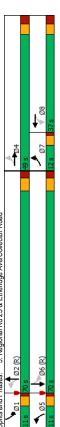
Movement		1	†	<i>></i>	>	ţ	4	•	•	•	۶	→	•
ph) 105 40 40 25 40 75 90 1485 40 60 990 ph) 105 40 40 25 40 75 90 1485 40 60 990 ph) 105 40 40 25 40 75 90 1485 40 60 990 ph) 105 40 40 25 40 75 90 1485 40 60 990 ph) 105 40 40 25 40 75 90 1485 40 60 990 ph) 105 40 40 25 5.5 5.5 3.0 5.5 5.5 5.5 5.5 5.5 5.5 5.5 5.5 5.5 5	Movement	EB	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
105 40 40 25 40 75 90 1485 40 60 990	Lane Configurations	*	£,		F	*	*	*	*	*	*	‡	*
τρή) 105 40 40 25 40 75 90 1485 40 60 990 10 100 190	Traffic Volume (vph)	105	40	40	25	40	75	90	1485	40	90	066	135
1900 1900 1900 1900 1900 1900 1900 190	Future Volume (vph)	105	40	40	22	40	75	90	1485	40	09	066	135
(ipp) 5.5 5.5 5.5 5.5 5.5 5.5 5.7 3.0 5.5 3.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
1,00	Total Lost time (s)	5.5	5.5		5.5	2.5	2.5	3.0	5.5	2.5	3.0	2.5	5.5
1,00	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
1,000 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
(vpr) 0.99	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
1,000	Ĕ	1.00	0.93		1.00	1.00	0.85	1.00	1.00	0.85	1:00	9.	0.85
1776 1699 1795 1795 1787 3438 1565 1769 3406 1789 1787 1787 1787 3438 1565 1769 3406 1787 1887	Fit Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
1367 1000 0.77 100 1000 0.25 100 1.00 0.13 1.00 1.00 0.13 1.00 1.00	Satd. Flow (prot)	1776	1699		1795	1900	1539	1787	3438	1565	1769	3406	1615
1367 1699	Flt Permitted	0.73	1.00		0.70	1.00	1.00	0.25	1.00	1.00	0.13	0.1	9:
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Satd. Flow (perm)	1367	1699		1332	1900	1539	4/4	3438	1565	221	3406	1615
105 40 40 25 40 75 90 1485 40 60 990 106 32 0 0 65 0 0 1485 40 60 990 107 108 5 5 5 5 5 5 5 5 5 176 186 186 186 186 186 191 191 191 191 191 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 17	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
10 32 0 0 0 0 0 0 0 0 0	Adj. Flow (vph)	105	40	40	52	40	75	06	1485	4	09	066	135
105	RTOR Reduction (vph)	0	32	0	0	0	65	0	0	Ξ	0	0	21
5	Lane Group Flow (vph)	105	48	0	22	40	10	90	1485	59	09	066	114
1% 5% 0% 3% 1% 5% 0% 2% 6% Perm NA NA <t< td=""><td>Confl. Peds. (#/hr)</td><td>വ</td><td></td><td>2</td><td>2</td><td></td><td>2</td><td></td><td></td><td>2</td><td>2</td><td></td><td></td></t<>	Confl. Peds. (#/hr)	വ		2	2		2			2	2		
Perm NA	Heavy Vehides (%)	1%	2%	%0	%0	%0	3%	1%	2%	%0	2%	%9	%0
4	Turn Type	Perm	NA		Perm	¥	Perm	pm+pt	¥	Perm	pm+pt	NA	Perm
15.6 15.7 10.7	Protected Phases		4			∞		2	2		-	9	
156 156	Permitted Phases	4			∞		∞	2		2	9		9
166 166 166 166 166 167 1927 927 977 910 917 913	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
6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5	Effective Green, g (s)	16.6	16.6		16.6	16.6	16.6	101.1	92.7	92.7	7.76	91.0	91.0
6.5 6.5 6.5 6.5 6.5 6.5 6.5 4.0 6.5 6.5 4.0 6.5 6.5 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	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
30 30 30 30 30 30 30 30	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
174 216 170 242 196 453 2451 1115 266 2384 1	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
c0.08 0.02 c0.01 c0.43 c0.01 c0.04 c0.01 c0.09 0.09 0.22 0.01 0.01 0.01 0.01 0.01 0.60 0.22 0.15 0.17 0.05 0.20 0.01 0.01 0.50 50.9 50.4 50.5 49.8 4.1 9.4 5.5 6.3 8.2 1.00 1.00 1.00 1.00 1.00 0.2 0.9 0.0 0.4 0.5 5.9 5.1 5.0 5.0 5.0 4.0 0.5 0.2 0.4 0.5 8.8 5.9 5.1 0.4 0.3 0.1 0.2 0.9 0.0 0.4 0.5 8.8 5.0 5.0 5.0 4.0 4.0 A.A. A.A. </td <td>Lane Grp Cap (vph)</td> <td>174</td> <td>216</td> <td></td> <td>170</td> <td>242</td> <td>196</td> <td>453</td> <td>2451</td> <td>1115</td> <td>566</td> <td>2384</td> <td>1130</td>	Lane Grp Cap (vph)	174	216		170	242	196	453	2451	1115	566	2384	1130
Color	v/s Ratio Prot		0.03			0.02		c0.01	c0.43		00.01	0.29	
0.66 0.22	v/s Ratio Perm	c0.08			0.02		0.01	0.14		0.02	0.16		0.07
53.6 50.9 50.4 50.5 49.8 4.1 94 5.5 6.3 8.2 1.0 1.00 1.00 1.00 1.00 0.2 0.60 1.54 1.00 1.00 1.00 1.00 1.00 0.2 0.60 1.54 1.00 1.00 1.00 1.00 1.00 0.2 0.60 1.54 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	v/c Ratio	0.60	0.22		0.15	0.17	0.05	0.20	0.61	0.03	0.23	0.45	0.10
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	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
5 8 0.5 0.4 0.3 0.1 0.2 0.9 0.0 0.4 0.5 5 5 9.4 5 1.4 50.8 5 0.9 4.9 1.3 6.6 8.4 6.7 8.8 6 5 9.4 5 1.3 6.6 8.4 6.7 8.8 8 4 6.5 9.4 5 1.3 6.6 8.4 6.7 8.8 8 4 6.3 9.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0	Progression Factor	1:00	1.00		1.00	1:00	1.00	0.28	09:0	1.54	1.00	9.	1.00
594 514 508 509 499 13 66 84 67 88 55 9	Incremental Delay, d2	2.8	0.5		0.4	0.3	0.1	0.5	0.9	0.0	0.4	0.5	0.2
E D D D A A A A A A A A A A A A A A A A	Delay (s)	59.4	51.4		20.8	50.9	49.9	د .	9.9	8.4	6.7	ω 	6.5
55.9 50.3 65.3 (A	Level of Service	ш	Ω		Ω	Ω	Ω	∢	∢	<	∢	∢	∢
A 12.0 HCM 2000 Level of Service Capacity ratio 0.59 Sum of lost time (s) 13.0 Sum of lost time (s) 74.2% ICU Level of Service 15.00 Column 15.00 Co	Approach Delay (s)		52.9			50.3			6.3			8.4	
12.0 HCM 2000 Level of Service 12.0 HCM 2000 Level of Service 0.59 Sum of lost time (s) 130.0 Sum of lost time (s) 14.2% ICU Level of Service 15 ICU Level of Serv	Approach LOS		ш						∢			∢	
12.0	Intersection Summary												
Capacity ratio 0.59 h (s) 130.0 Sum of lost time (s) Utilization 74.2% ICU Level of Service 15	HCM 2000 Control Delay			12.0	H	3M 2000	Level of	Service		В			
h (s) 130.0 Sum of lost time (s) Utilization 74.2% ICU Level of Service 15	HCM 2000 Volume to Capac	city ratio		0.59									
Utilization 74.2% ICU Level of Service 15 ICU Level of Service 15	Actuated Cycle Length (s)			130.0	S	ım of lost	time (s)			14.0			
Analysis Period (min) 15 c. Critical Lane Group	Intersection Capacity Utiliza	tion		74.2%	೦	U Level o	of Service			□			
c Critical Lane Group	Analysis Period (min)			15									
	c Critical Lane Group												

Britannia & RR25 BA Group - NHY

Timings 2029 Future Background PM 5: Regional Rd 25 & Etheridge Ave/Collector Road 01-12-2024

→	SBT	₩.	882	882	Ϋ́	9		9		20.0	38.4	0.07	53.8%	4.2	2.2	-1.0	5.4	Lag	Yes	C-Max	93.5	0.72	0.41	4.4	0.0	4.4	∢	4.5	∢										
۶	SBL	*	22	22	pm+pt	Ψ-	9	Ψ.		7.0	11.0	11.0	8.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	101.5	0.78	0.21	5.2	0.0	5.2	∢											O	
←	NBT	₩.	1500	1500	¥	7		7		20.0	38.4	0.07	53.8%	4.2	2.2	-1.0	5.4	Lag	Yes	C-Max	93.3	0.72	0.63	6.7	0.0	6.7	∢	9.9	∢								LOS: A	f Service	
•	NBL	<u>, </u>	9	9	pm+pt	2	2	2		7.0	11.0														0.0		4						of Green				Intersection LOS: A	CU Level of Service C	
ţ	WBT	Ť,	0	0				œ		10.0	36.2	37.0	28.5%	3.3	5.9	-1.0	5.2	Lag	Yes	None	11.7	0.09	0.13	0.8	0.0	0.8	4	31.4	ပ				TL, Start				ī	⊴	
\	WBL	<u>, </u>	4	4	Perm		∞	œ		10.0	36.2	37.0	28.5%	3.3	5.9	-1.0	5.2	Lag	Yes	None	11.7	0.09	0.31	62.0	0.0	62.0	ш						and 6:SB						
†	EBT	Ť,	0	0	Ä	4		4		10.0	36.2						5.2								0.0			36.2	٥				2:NBTL						
•	EBF	*	75	75	pm+pt	7	4	7		7.0	11.0	12.0	9.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	22.5	0.17	0.33	48.2	0.0	48.2	_						d to phase		dinated			on 69.5%	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	SOT	Approach Delay	Approach LOS	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 Capacity Utilization 69.5%	Analysis Period (min) 15

Splits and Phases: 5: Regional Rd 25 & Etheridge Ave/Collector Road



Britannia & RR25
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Queues 5: Regional Rd 25 & Etheridge Ave/Collector Road

→	SBT	1000	0.41	4.4	0.0	4.4	68.4	9.8	96.9		2462	0	0	0	0.41	
٠	SBL						8.0			70.0	265	0	0	0	0.21	
←	NBT	1565	0.63	6.7	0.0	6.7	53.9	74.4	292.1		2482	0	0	0	0.63	
•	NBL	09	0.13	2.7	0.0	2.7	1.5	m3.4		70.0	454	0	0	0	0.13	
ţ	WBT	40	0.13	0.8	0.0	0.8	0.0	0.0	63.5		535	0	0	0	0.07	
•	WBL	40	0.31	62.0	0.0	62.0	10.3	22.4		40.0	344	0	0	0	0.12	
†	EBT	25	90:0	0.2	0.0	0.2	0.0	0.0	53.9		219	0	0	0	0.04	
•	EBL	75	0.33	48.2	0.0	48.2	17.2	31.1		40.0	529	0	0	0	0.33	
	Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Queue Delay	Total Delay	Queue Length 50th (m)	Queue Length 95th (m)	Internal Link Dist (m)	Turn Bay Length (m)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio	

Intersection Summary m Volume for 95th percentile queue is metered by upstream signal. Britannia & RR25
BA Group - NHY
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2029 Future Background PM 01-12-2024 HCM Signalized Intersection Capacity Analysis 5: Regional Rd 25 & Etheridge Ave/Collector Road

2
900 1900 5.2 1.00
0.95 0.95 1805 0.74 1408
25 40 0 0 0
9% Perm
8 8.7 9.7 0.07 6.2
1.00 1.00 2.3 0.1 59.6 55.8 E E E 57.7
8.4 HCM 2000 Level of Service 0.60 Sun of lost time (s) 19.00 KU Level of Service 15

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Timings 7: Regional F

2029 Future Background PM	01-12-2024
	l Rd 25 & Britannia Rd

•	SBR	*-	20	20	Perm		9	9		20.0	49.7	54.0	41.5%	4.2	3.5	-1.0	6.7	Lag	Yes	C-Max	61.6	0.47	90.0	0.1	0:0	0.1	⋖												
→	SBT	ŧ	780	780	Ϋ́	9		9		20.0	49.7	54.0	41.5%	4.2	3.5	-1.0	6.7	Lag	Yes	C-Max	61.6	0.47	0.47	17.3	0.0	17.3	В	23.3	ပ										
۶	SBL	F	120	120	Prot	-		Ψ.		7.0	11.0	12.0	9.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	10.8	0.08	0.42	72.1	0.0	72.1	ш												
•	NBR	*	445	445	Perm		2	2		20.0	49.7	58.0	44.6%	4.2	3.5	-1.0	6.7	Lag	Yes	C-Max	65.7	0.51	0.45	6.1	0.0	6.1	∢											۵	
—	NBT	‡	1290	1290	≨	7		7		20.0	49.7	58.0	44.6%	4.2	3.5	-1.0	6.7	Lag	Yes	C-Max	65.7	0.51	0.73	29.8	0.0	29.8	ပ	28.1	ပ								LOS: D	CU Level of Service D	
•	NBL	K.	235	235	Prot	2		2		7.0	11.0	16.0	12.3%	3.0	1.0	-1.0	3.0	Lead	Yes	None	14.9	0.11	0.58	60.3	0.0	60.3	ш						Green				ntersection LOS: D	:U Level o	
ţ	WBT	4413	470	470	Ϋ́	∞		∞		10.0	45.5	49.0	37.7%	4.2	3.3	-1.0	6.5	Lag	Yes	None	28.5	0.22	0.74	38.9	0.0	38.9	٥	59.1	ш				r, Start of				≟ :	2	
>	WBL	K.	285	285	Prot	က		က		7.0	11.0	14.0	10.8%	3.0	1.0	-1.0	3.0	Lead	Yes	None	11.0	0.08	0.93	113.4	0.0	113.4	ш						and 6:SB						
†	EBT	4413	302	302	Ϋ́	4		4		10.0	45.5	46.0	35.4%	4.2	3.3	-1.0	6.5	Lag	Yes	None	23.3	0.18	0.42	45.8	0.0	45.8	٥	47.3	۵				e 2:NBT						
4	EBL	F	4	40	Prot	7		7		7.0	11.0	11.0	8.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	8.0	90:0	0.20	60.5	0.0	60.5	ш						d to phas		inated		٥.	n 80.7%	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	ros	Approach Delay	Approach LOS	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 Capacity Utilization 80.7%	Analysis Period (min) 15

Splits and Phases: 7: Regional Rd 25 & Britannia Rd



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2029 Future Background PM 01-12-2024 Queues 7: Regional Rd 25 & Britannia Rd

	•	†	•	ļ	•	-	•	۶	→	*	
Lane Group	BB	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Group Flow (vph)	4	345	285	765	235	1290	445	120	780	20	
v/c Ratio	0.20	0.42	0.93	0.74	0.58	0.73	0.45	0.42	0.47	90:0	
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	45.4	43.1	31.4	141.8	10.8	17.0	38.9	0.0	
Queue Length 95th (m)	11.7	45.0	#70.1	46.5	4.1	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)	0.09		120.0		0.06		0.06	0.06		0.06	
Base Capacity (vph)	203	1372	302	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	90:0	

Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

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Britannia & RR25 BA Group - NHY

HCM Signalized Intersection Capacity Analysis 7: Regional Rd 25 & Britannia Rd

2029 Future Background PM 01-12-2024

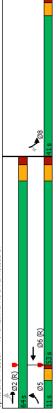
	4	†	<i>></i>	/	ţ	4	•	•	•	۶	→	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	K.	4413		K.	4413		K.	‡	*	K.	‡	*
Traffic Volume (vph)	8	302	40	285	470	295	235	1290	445	120	780	20
Future Volume (vph)	40	302	40	282	470	295	235	1290	445	120	780	20
Ideal Flow (vphpl)	1900	1900	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
표	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)	9	302	40	282	470	295	235	1290	445	120	780	20
RTOR Reduction (vph)	0	12	0	0	101	0	0	0	184	0	0	27
Lane Group Flow (vph)	4	333	0	285	664	0	235	1290	261	120	780	23
Heavy Vehicles (%)	%9	%0	%0	2%	1%	1%	%0	3%	2%	1%	4%	%0
Turn Type	Prot	ΑN		Prot	≸		Prot	¥	Perm	Prot	ΑA	Perm
Protected Phases	7	4		က	∞		2	7		_	9	
Permitted Phases									2			9
Actuated Green, G (s)	9.9	23.1		10.0	27.5		13.9	63.9	63.9	8.6	29.8	59.8
Effective Green, g (s)	9.9	24.1		11.0	28.5		14.9	64.9	64.9	10.8	8.09	8.09
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		302	932		401	1749	790	288	1623	755
v/s Ratio Prot	0.01	0.07		c0.08	0.16		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	9.99	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	[.	0.9	1.0	0.1
Delay (s)	0.09	46.9		112.6	44.0		26.8	28.6	50.6	69.3	16.5	18.8
Level of Service	ш	□		ш	Ω		ш	ပ	ပ	ш	В	В
Approach Delay (s)		48.3			9.79			30.2			23.3	
Approach LOS		Ω			ш			ပ			ပ	
Intersection Summary												
HCM 2000 Control Delay			38.1	Ĭ	HCM 2000 Level of Service	evel of S	ervice		۵			1
HCM 2000 Volume to Capacity ratio	ity ratio		92.0									
Actuated Cycle Length (s)			130.0	જ	Sum of lost time (s)	time (s)			19.2			
Intersection Capacity Utilization	ion		%2.08	೦	ICU Level of Service	f Service			۵			
Analysis Period (min)			15									
c Critical Lane Group												

Britannia & RR25 BA Group - NHY

Timings 2029 Future Background PM 10: Britannia Rd & Farmstead Dr 01-12-2024

	1	†	¥	٠	*	
Lane Group	EB	EBT	WBT	SBL	SBR	
Lane Configurations	*	***	441	×	R.	
Traffic Volume (vph)	15	330	675	22	15	
Future Volume (vph)	15	330	675	22	15	
Turn Type	pm+pt	ΑN	ΑΝ	Prot	Perm	
Protected Phases	2	2	9	œ		
Permitted Phases	2				80	
Detector Phase	2	2	9	∞	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%	20.5%	39.0%	%0.6	
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	0.0	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	
SOT	∢	∢	∢	□	Ф	
Approach Delay		2.1	4.0	41.4		
Approach LOS		∢	∢	Ω		
Intersection Summary						
Cycle Length: 105						
Actuated Cycle Length: 105						
Offset 0 (0%), Referenced to	phase 2:	EBTL and	6:WBT,	Start of G	ue	
Natural Cycle: 60						
Control Type: Actuated-Coordinated	dinated					
Maximum v/c Ratio: 0.29						
Intersection Signal Delay: 5.7	_			Ξ	Intersection LOS: A	
Intersection Capacity Utilization 33.1%	ion 33.1%			೦	ICU Level of Service A	
Analysis Period (min) 15						

Splits and Phases: 10: Britannia Rd & Farmstead Dr



Britannia & RR25
Synchro 11 Report
BA Group - NHY
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Queues 2029 Future Background PM 10: Britannia Rd & Farmstead Dr 01-12-2024

	4	†	ţ	٠	•	
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)	9.0	4.8	12.0	1.1	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)	287	3822	3545	909	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						

Britannia & RR25 BA Group - NHY Page 14

HCM Signalized Intersection Capacity Analysis 10: Britannia Rd & Farmstead Dr

2029 Future Background PM 01-12-2024

ph) (ph) (ph) (ph) (ph) (ph) (ph) (ph) (EB.	EBT	TO/V	WBR	踞		
<u> </u>	ŀ		MB.			SBR	
=	r	+++	4413		r	¥.	
~	5	330	675	8	22	15	
	15	330	675	8	22	15	
·	006	1900	1900	1900	1900	1900	
	3.0	5.4	5.4		4.3	4.3	
Lane Util. Factor	1.00	*0.80	*0.80		1.00	1.00	
Frt	8	1.00	0.98		1.00	0.85	
Flt Protected 0	36.0	1.00	1.00		0.95	1.00	
	1805	4560	4448		1736	1615	
	3.31	1.00	1.00		0.95	1.00	
Satd. Flow (perm)	581	4560	4448		1736	1615	
Peak-hour factor, PHF 1	0.	1.00	1.00	1.00	1.00	1.00	
	5	330	675	8	22	15	
RTOR Reduction (vph)	0	0	2	0	0	14	
Lane Group Flow (vph)	15	330	750	0	52	_	
Heavy Vehicles (%)	%0	%0	1%	%0	4%	%0	
Turn Type pm	pm+pt	NA	AA		Prot	Perm	
Protected Phases	2	7	9		∞		
Permitted Phases	7					æ	
_	84.9	84.9	78.1		8.4	8.4	
Effective Green, g (s) 8	35.9	85.9	79.1		9.4	9.4	
J	0.82	0.82	0.75		0.09	60:0	
	4.0	6.4	6.4		5.3	5.3	
/ehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	519	3730	3350		155	144	
	0.00	c0.07	c0.17		c0.03		
v/s Ratio Perm 0	.02					0.00	
//c Ratio 0	0.03	0.0	0.22		0.35	0.01	
Jniform Delay, d1	.	1.9	3.8		44.9	43.6	
_	8.	0.1	1.00		1.00	1.00	
Incremental Delay, d2	0:0	0.0	0.2		4.	0.0	
Delay (s)	.	1.9	4.0		46.3	43.6	
Level of Service	⋖	∢	∢		Ω	_	
Approach Delay (s)		1.9	4.0		45.8		
Approach LOS		⋖	Υ		۵		
ntersection Summary							
HCM 2000 Control Delay			5.9	오	M 2000 L	HCM 2000 Level of Service	4
HCM 2000 Volume to Capacity ratio	iţi		0.23				
Actuated Cycle Length (s)			105.0	Sur	Sum of lost time (s)	ime (s)	12.7
ntersection Capacity Utilization			33.1%	ם כ	ICU Level of Service	Service	Þ
Analysis Period (min)			15				
c Critical Lane Group							

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Timings 2029 Future Background PM 11: Britannia Rd & Rose Way

ses (s)	80 80 80 2 2 2 2 5 7.0 11.0 11.5 11.5%	790 790 790 NA 29.0 29.0 80.0 61.5%	1000 1000 NA 6 6 720.0 29.0 65.0 65.0 50.0%	30 30 30 44 44 43.0 50.0 38.5%	50 50 50 50 10.0 4 4 4 43.0 50.0 38.5%	
Hallow Time (s) All-Red Time (s) All-Red Time (s) Coal Time Adjust (s) Total Lost Time (s) each-ag Optimize? each-ag Optimize? each-ag Optimize? each-ag Optimize? And Effet Green (s) Actualed g/C Ratio Are Ratio Control Delay Oueue Delay Oueue Delay Oueue Delay	3.0 -1.0 -1.0 3.0 Lead Yes None 114.2 0.8 0.19 1.9	4.0 3.0 -1.0 6.0 6.0 112.4 0.86 0.20 1.2 0.0	4.0 3.0 -1.0 6.0 1.0 7es 7es 7es 103.5 0.8 0.29 4.9	3.0 3.0 -1.0 -1.0 0.08 0.08 0.0 5.0 5.0	3.0 -1.0 -1.0 None 11.0 0.08 0.27 18.8 18.8	
A A A E B	A inated	1.3 A A S:EBTL	A A A A A A A A A A A A A A A A A A A	33.8 C C C Start o	B of Green of Green CLI I avel of Service	B of Green of Green Intersection LOS: A CL Level of Service A

Splits and Phases: 11: Britannia Rd & Rose Way



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2029 Future Background PM Quenes

11: Britannia Rd & Rose Way	Rose W	/ay				01-12-2024
	4	†	ţ	٠	*	
Lane Group	EBL	EB	WBT	SBL	SBR	
Lane Group Flow (vph)	8	790	1060	9	20	
v/c Ratio	0.19	0.20	0.29	0.20	0.27	
Control Delay	1.9	1.2	4.9	28.7	18.8	
Queue Delay	0:0	0.0	0.0	0.0	0.0	
Total Delay	1.9	1.2	4.9	28.7	18.8	
Queue Length 50th (m)	1.3	8.9	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	97.6		
Turn Bay Length (m)	20.0			20.0		
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	0.02	0.08	
Interception Summary						
Intersection Summary						

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HCM Signalized Intersection Capacity Analysis 11: Britannia Rd & Rose Way

2029 Future Background PM 01-12-2024

																																						A		14.0	A		
`	SBR	W.	20	20	1900	5.0	1.00	0.85	1.00	1615	1.00	1615	1.00	50	47	3	%0	Perm		4	8.0	0.6	0.07	0.9	3.0	111		0.00	0.03	56.4	1.00	0.1	56.5	ш				HCM 2000 Level of Service		t time (s)	of Service		
و √	WBR SBL	<i>y</i> -			1900 1900	5.0	1.00	1.00	0.95	1805	0.95	$\lceil \rceil$	1.00 1.00		0		%0 %0	Prot	4		8.0	0.6	0.07	0.9	3.0	124	c0.02		0.24	57.3	1.00	J.0	58.3	ш <u>;</u>	57.2	Ш		HCM 2000		Sum of lost time (s)	ICU Level of Service		
↓	EBT WBT	44 44	790 1000	ľ	_		*			1		4		790 1000		-	%0 %0	NA NA	2 6			_	_		3.0 3.0		c0.17 c0.23		٥		0.56 1.00		1.2 4.6		1.2 4.6	۷ ۷		5.2	0.29	130.0	47.3%	15	
٠	EB	F	80	80	1900		*						1.00	80	0	80	%0	pm+pt	2	2				4.0	3.0				0.20				1.6	€					acity ratio		ration		
	Movement	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Ideal Flow (vphpl)	Total Lost time (s)	Lane Util. Factor	Ŧ.	Fit Protected	Satd. Flow (prot)	Flt Permitted	Satd. Flow (perm)	Peak-hour factor, PHF	Adj. Flow (vph)	RTOR Reduction (vph)	Lane Group Flow (vph)	Heavy Vehides (%)	Turn Type	Protected Phases	Permitted Phases	Actuated Green, G (s)	Effective Green, g (s)	Actuated g/C Ratio	Clearance Time (s)	Vehicle Extension (s)	Lane Grp Cap (vph)	v/s Ratio Prot	v/s Ratio Perm	v/c Ratio	Uniform Delay, d1	Progression Factor	Incremental Delay, d2	Delay (s)	Level of Service	Approach Delay (s)	Approach LOS	Intersection Summary	HCM 2000 Control Delay	HCM 2000 Volume to Capacity ratio	Actuated Cycle Length (s)	Intersection Capacity Utilization	Analysis Period (min)	c Critical Lane Group

Britannia & RR25 BA Group - NHY

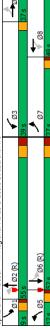
Timings 1: Regional Rd 25 & Louis St Laurent Ave

2032 Future Background AM 01-12-2024

	_	4	2	5	≨	9		9		0	2	0	%	2	0	0	2	б	S	×	တ	4	0	6	0	6	۵	5	۵										
→	SB	444	9	9	z					20.0	32.2	55	37.1%	4.2	s.	-1.0	6.2	ď	₹	ე Ma	47.	0.3	0.7	42.9	0.0	42.9		42.5											
۶	SBL	-	65	65	pm+pt	_	9	-		5.0	9.0	9.0	6.4%	3.0	1.0	-1.0	3.0	Lead	Yes	None	57.3	0.41	0.48	35.2	0.0	35.2	Δ											LL.	
—	NBT	4413	910	910	≨	2		2		20.0	32.2	55.0	39.3%	4.2	3.0	-1.0	6.2	Lag	Yes	C-Max	52.5	0.38	0.77	41.2	0.0	41.2	۵	40.7	٥								LOS: D	CU Level of Service F	
•	NBL	*	105	105	pm+pt	2	2	2		2.0	9.0	12.0	8.6%	3.0	1.0	-1.0	3.0	Lead	Yes	None	67.9	0.45	0.55	34.7	0.0	34.7	ပ						Green				Intersection LOS: D	U Level of	
ţ	WBT	₩	260		Ϋ́			∞		10.0	30.0	49.0	32.0%	4.0	3.0	-1.0	0.9	Lag	Yes	None	46.3	0.33	0.57	40.4	0.0	40.4	٥	50.1	۵				. Start of				드	⊇	
>	WBL	*	485	485	pm+pt	က	∞	က		10.0	14.0															63.1	ш						d 6:SBTL						
†	EBT	₩	535	535	Ϋ́	4		4		10.0	30.0	37.0	26.4%	4.0	3.0	-1.0	0.9	Lag	Yes	None	31.2	0.22	0.92	69.1	0.0	69.1	ш	58.4	ш				NBTL an						
1	BB	*	270	270	pm+pt	7	4	7		2.0	0.6	27.0	19.3%	3.0	1.0	-1.0	3.0	Lead	Yes	None	52.9	0.38	0.65	29.6	0.0	29.6	ပ						to phase 2:		ordinated		17.4	ation 93.1%	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	ros	Approach Delay	Approach LOS	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 Capacity Utilization 93.1%	Analysis Period (min) 15

2032 Future Background Traffic Conditions

Splits and Phases: 1: Regional Rd 25 & Louis St Laurent Ave



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Britannia & RR25 BA Group - NHY

2032 Future Background AM 01-12-2024 Queues 1: Regional Rd 25 & Louis St Laurent Ave

	•	†	•	ţ	•	—	۶	→	
Lane Group	EBF	EBI	WBL	WBT	NBL	NBT	SBL	SBT	
Lane Group Flow (vph)	270	725	ı	655	105	1215	92	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		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	
Total Delay	29.6	69.1		40.4	34.7	41.2	35.2	42.9	
Queue Length 50th (m)		105.5		79.1	18.2	128.5	11.0	107.2	
Queue Length 95th (m)		#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	248	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.

Synchro 11 Report Page 2 Britannia & RR25 BA Group - NHY

HCM Signalized Intersection Capacity Analysis 1: Regional Rd 25 & Louis St Laurent Ave

2032 Future Background AM 01-12-2024

Movement EB EB WB WB WB WB WB WB WB SB SB SB SB SB SB SB SB SB S		4	†	1	>	ţ	✓	•	←	•	۶	→	•
270 555 190 485 560 95 105 910 305 65 915 105 190 1900 1900 1900 1900 1900 1	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
270 555 190 485 560 95 105 910 305 65 91 305 65 91 305 65 91 305 65 91 305 65 91 305 65 91 305 65 91 305 65 91 305 65 91 305 65 91 305 65 91 305 65 915 91 305 61 100	Lane Configurations	¥	₩		r	₩		F	4413		r	4413	
100 100	Traffic Volume (vph)	270	535	190	485	260	92	105	910	302	65	915	95
1900 1900	Future Volume (vph)	270	535	190	482	260	92	105	910	302	65	915	8
100 0.35 1.00 0.95 1.00 0.96 1.00 0.96 1.00 1	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
1,00	Total Lost time (s)	3.0	0.9		5.0	0.9		3.0	6.2		3.0	6.2	
1.00	Lane Util. Factor	1:00	0.95		1.00	0.95		1.00	*0.80		1.00	*0.80	
1.00	Frpb, ped/bikes	1:00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
1,00 0.96 1,00 0.98 1,00 0.96 1,00 0.99 1,00	Flpb, ped/bikes	1:00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
1767 3409 1863 3427 1703 4140 1719 4220 1767 3409 1863 3427 1703 4140 1719 4220 1703 100 100 1100 1100 1100 1100 1100 11	Ft	1.00	96.0		1.00	0.98		1.00	96.0		1.00	0.99	
1767 3409 1863 3427 1703 4140 1719 4220 1700 1.00 1.0	Fit Protected	0.95	1.00		1.00	1.00		0.95	1.00		0.95	1.00	
100 0.39 1.00 0.12 1.00 0.09 1.00 1	Satd. Flow (prot)	1767	3409		1863	3427		1703	4140		1719	4220	
723 3409 224 3427 215 4140 162 4220 1.00 </td <td>Flt Permitted</td> <td>0.39</td> <td>1.00</td> <td></td> <td>0.12</td> <td>1.00</td> <td></td> <td>0.12</td> <td>1.00</td> <td></td> <td>0.0</td> <td>1.00</td> <td></td>	Flt Permitted	0.39	1.00		0.12	1.00		0.12	1.00		0.0	1.00	
1.00 1.00	Satd. Flow (perm)	723	3409		224	3427		215	4140		162	4220	
270 535 190 485 560 95 105 910 305 65 915 270 699 0 485 646 0 105 1177 0 65 1003 270 699 0 485 646 0 105 1177 0 65 1003 270 280 190 2485 646 0 105 1177 0 65 1003 270 280 190 280 280 77% 6% 7% 3% 5% 7% 2% 1/% 2/% 2/% 2/% 2/% 2/% 2/% 2/% 2/% 2/% 2	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
γρή) 0 26 0 9 0 0 38 0 0 7 w(γρή) 5 6 6 0 1177 0 65 1003 (%) 5 2% 2% 2% 7% 6% 7% 3% 5% 7% ess 4 pm+pt NA pm+pt NA pm+pt NA pm+pt NA ess 4 3 8 2 6 6 6 6 7% ess 4 3 8 2 6 6 6 6 6 6 6 6 103 ess 4 3 8 2 6 6 6 6 6 6 6 6 7% ess 4 30.2 67.1 45.3 58.5 50.7 50.9 46.9 47.9 60.9 46.9 47.9 60.9 47.9 60	Adj. Flow (vph)	270	535	190	485	260	92	105	910	302	65	915	95
ph 270 699 0 485 646 0 105 117 0 65 1003 ph 2% 2% 1% 2% 2% 7% 8% 5% 7% pm+pl NA pm+pl NA pm+pl NA pm+pl NA pm+pl NA pm+pl NA pm+pl NA pm+pl NA q 4 3 2% 2% 7% 3% 5% 7% s) 500 312 68.1 46.3 56.5 50.7 50.9 46.9 s) 500 312 68.1 46.3 59.7 51.7 52.9 47.9 s) 500 31.2 68.1 46.3 59.7 51.7 40.9 40.9 40.9 40.9 40.9 40.9 40.9 40.9 40.9 40.9 40.9 40.9 40.9 40.9 40.9 40.9 40.9 40.9	RTOR Reduction (vph)	0	56	0	0	6	0	0	38	0	0	7	0
1,	Lane Group Flow (vph)	270	669	0	485	646	0	105	1177	0	65	1003	0
Part	Confl. Peds. (#/hr)	2					2						
Pm+pt NA	Heavy Vehicles (%)	5%	5%	1%	5%	5%	%/	%9	%/	3%	2%	%/	5%
7	Turn Type	pm+pt	ΑN		pm+pt	¥		pm+pt	¥		pm+pt	AN	
4 8 8 2 5 5 5 5 5 5 5 5 5	Protected Phases	7	4		က	∞		2	7		-	9	
(s) 480 30.2 67.1 45.3 58.5 50.7 50.9 s) 50.0 31.2 68.1 46.3 58.7 50.7 50.9 0.36 0.21 0.49 0.35 0.43 0.77 0.38 4.0 7.0 3.0 7.0 4.0 7.2 4.0 s) 3.0 3.0 3.0 3.0 3.0 3.0 3.0 0.09 0.21 1.03 1.03 1.00 0.02 0.15 0.22 0.23 0.19 0.27 0.77 0.16 0.22 0.24 0.77 0.75 0.16 0.25 0.24 0.77 0.77 0.56 0.24 6.15 24.8 0.7 4.0 38 6.1 0.07 0.10 1.00 1.00 1.00 1.00 1.00 0.24 6.15 24.8 0.7 4.0 38 6.1 0.25 0.39 3.3 3.4 4.2 36.9 0.26 0.39 3.3 3.4 4.2 36.9 0.27 0.39 0.30 0.30 0.38 7 66.0 39.3 3.4 4.2 36.9 0.39 0.31 0.00 0.00 0.00 0.00 0.00 0.39 0.31 0.00 0.00 0.00 0.00 0.00 0.30 0.30 0.30	Permitted Phases	4			∞			7			9		
s) 500 312 681 46.3 597 51.7 529 1 0.36 0.22 0.49 0.33 0.43 0.37 0.38 4.0 7.2 0.49 0.33 0.43 0.37 0.38 4.0 7.2 0.49 0.33 0.49 0.37 0.38 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 0.38 759 517 1133 152 1528 116 0.09 0.21 0.22 0.29 0.21 0.79 0.08 0.92 0.94 0.57 0.57 0.56 0.08 0.92 0.94 0.57 0.57 0.56 2.4 6 16.5 24.8 0.7 4.0 38 6.1 0.4 6 16.5 24.8 0.7 4.0 38 6.1 0.8 0.97 66.0 39.3 3.14 42.7 36.9 0.9 0.94 0.97 0.90 0.90 0.90 0.94 0.97 0.90 0.95 0.99 0.90 0.90 0.90 0.90 0.90 0.90 0.90	Actuated Green, G (s)	48.0	30.2		67.1	45.3		58.5	50.7		50.9	46.9	
0.36 0.22 0.49 0.33 0.43 0.37 0.38 0.43 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.	Effective Green, g (s)	20.0	31.2		68.1	46.3		29.7	51.7		52.9	47.9	
s) 4,0 7,0 3,0 7,0 4,0 7,2 4,0 7,0 3,0 3,0 3,0 3,0 3,0 3,0 3,0 3,0 3,0 3	Actuated g/C Ratio	0.36	0.22		0.49	0.33		0.43	0.37		0.38	0.3 \$	
Sign	Clearance Time (s)	4.0	7.0		3.0	7.0		4.0	7.2		4.0	7.2	
388 759 517 1133 185 1528 116 0.09 0.021 0.022 0.04 0.028 0.02 0.16 0.92 0.94 0.57 0.57 0.77 0.56 0.16 0.92 0.94 0.57 0.57 0.77 0.56 0.16 0.15 0.10 1.00 1.00 1.00 1.00 0.17 0.15 0.15 0.15 0.15 0.15 0.18 0.19 0.10 0.10 1.00 1.00 0.19 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.	Vehide Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
0.09 c0.21 c0.23 0.19 c0.04 c0.28 0.02 0.15 0.22 0.27 0.27 0.27 0.18 0.22 0.27 0.27 0.19 0.18 0.22 0.27 0.27 0.19 0.19 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.10	Lane Grp Cap (vph)	398	759		517	1133		185	1528		116	1443	
0.15 0.22 0.21 0.19 0.18 0.22 0.24 0.57 0.75 0.18 0.22 0.24 0.57 0.75 0.56 0.24 0.23 0.24 0.57 0.25 0.25 0.24 0.7 0.00 1.00 1.00 1.00 0.25 0.24 0.7 0.7 0.8 0.1 0.25 0.24 0.7 0.7 0.8 0.1 0.25 0.24 0.7 0.7 0.8 0.1 0.25 0.25 0.25 0.2 0.2 0.25 0.25 0.25 0.2 0.25 0.25 0.25 0.2 0.25 0.25 0.25 0.2 0.25 0.25 0.25 0.2 0.25 0.25 0.25 0.2 0.25 0.25 0.25 0.2 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25	v/s Ratio Prot	0.09	c0.21		c0.23	0.19		c0.04	c0.28		0.02	0.24	
0.68 0.92 0.94 0.57 0.57 0.75 0.56 342 53.2 41.2 38.6 27.5 38.9 30.8 4.6 16.5 24.8 0.7 4.0 3.8 6.1 5.7 10.0 1.00 1.00 1.00 1.00 5.7 10.0 1.00 1.00 1.00 5.7 10.0 1.00 1.00 1.00 5.7 10.0 1.00 1.00 1.00 5.7 10.0 1.00 5.7 10.0 1.00 5.7 10.0	v/s Ratio Perm	0.15			0.22			0.21			0.19		
342 53.2 41.2 38.6 27.5 38.9 30.8 1.00 1.00 1.00 1.00 1.00 1.00 1.00 4.6 4.6 5 24.8 0.7 4.0 38 6.1 8.7 66.0 33.3 31.4 42.7 36.9 9.0 9.7 E D C D D D D F F D C D D D D D Delay 48.4 HCM 2000 Level of Service D D D D D publication 0.86 31.% ICU Level of Service F F P D	v/c Ratio	0.68	0.92		0.94	0.57		0.57	0.77		0.56	0.69	
100 100 100 100 100 100 100 100 100 100	Uniform Delay, d1	34.2	53.2		41.2	38.6		27.5	38.9		30.8	39.7	
d2 4.6 16.5 24.8 0.7 4.0 3.8 6.1 8.1 8.2 8.1 8.1 8.1 8.1 8.1 8.2 8.1 8.1 8.1 8.1 8.2 8.2 8.2 8.2 8.2 8.2 8.2 8.2 8.2 8.2	Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
38.7 69.7 66.0 39.3 31.4 42.7 36.9 D E E D C D D 1.3 50.7 41.8 D Dalay 1.4 4.4 HCM 2000 Level of Service 1.4 5 LC Level of Service 1.4 18 D D DB DB DB DB D D 1.4 18.2 D D DB DB DB D D DB DB DB DB DB DB DB DB	Incremental Delay, d2	4.6	16.5		24.8	0.7		4.0	3.8		6.1	2.8	
D E E D C D D	Delay (s)	38.7	69.7		0.99	39.3		31.4	42.7		36.9	42.5	
61.3 50.7 41.8 E D D Delay A8.4 HCM 2000 Level of Service D 140.0 Sum of lost time (s) 140.0 Sum of lost time (s) 140.1 Sum of lost time (s) 15 ICU Level of Service F 162 170 182	Level of Service	□	ш		ш	□		ပ	_		_	۵	
And the control of th	Approach Delay (s)		61.3			20.7			41.8			42.2	
48.4 HCM 2000 Level of Service 0.86 140.0 Sum of lost time (s) 93.1% ICU Level of Service 15	Approach LOS		ш			۵						٥	
48.4 HCM 2000 Level of Service 0.86 140.0 Sum of lost time (s) 93.1% ICU Level of Service 15	Intersection Summary												
0.86 140.0 Sum of lost time (s) 93.1% ICU Level of Service 15	HCM 2000 Control Delay			48.4	Ĭ	3M 2000	evel of S	ervice		۵			
140.0 Sum of lost time (s) 93.1% ICU Level of Service 15	HCM 2000 Volume to Capac	city ratio		0.86									
93.1% ICU Level of Service 15	Actuated Cycle Length (s)			140.0	ઝ	ım of lost	time (s)			18.2			
15	Intersection Capacity Utilizat	tion		93.1%	೨	U Level o	f Service			ш			
c. Critical Lane Groun	Analysis Period (min)			15									
	Critical I and Group												

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Timings 2032 Future Background AM 2: Regional Rd 25 & Whitlock Ave 01-12-2024

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Lane Group	EBL	EBT	WBL	WBT	WBR	BE	NBT	SBL	SBT	
Lane Configurations	*	æ,	r	*	*	F	443	*	443	
Traffic Volume (vph)	145	20	20	32	8	45	1105	20	1740	
Future Volume (vph)	145	20	22	33	32	45	1105	20	1740	
Turn Type	Perm	¥	Perm	Ϋ́	Perm	pm+pt	Ϋ́	pm+pt	Ϋ́	
Protected Phases		4		∞		2	2	Ψ	9	
Permitted Phases	4		∞		∞	2		9		
Detector Phase	4	4	∞	∞	æ	2	7	Ψ	9	
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	32.5	
Total Split (s)	38.0	38.0		38.0		11.0	81.0		81.0	
Fotal Split (%)	29.2%	29.2%		29.5%		8.5%	62.3%		62.3%	
rellow Time (s)	3.3	3.3		3.3		3.0	4.2		4.2	
All-Red Time (s)	3.2	3.2	3.2	3.2		1.0	2.3		2.3	
ost Time Adjust (s)	-1.0	-1.0		-1.0	ľ	-1.0	-1.0		-1.0	
Total Lost Time (s)	5.5	5.5		5.5		3.0	5.5		5.5	
-ead/Lag						Lead	Lag		Lag	
-ead-Lag Optimize?						Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	None	None	C-Max	~	C-Max	
Act Effct Green (s)	20.4	20.4	20.4	20.4	20.4	28.7	89.7	28.7	9.68	
Actuated g/C Ratio	0.16	0.16	0.16	0.16	0.16	0.76	0.69	92.0	69.0	
//c Ratio	69.0	0.49	0.33	0.13	0.31	0.25	0.38	0.14	0.62	
Sontrol Delay	68.1	30.2	52.5	45.3	10.9	12.9	0.9	5.1	13.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Fotal Delay	68.1	30.2	52.5	45.3	10.9	12.9	0.9	5.1	13.4	
SO:	ш	ပ	۵	Ω	ш	ш	⋖	∢	Ф	
Approach Delay		49.2		29.2			6.2		13.2	
Approach LOS		۵		ပ			∢		В	
ntersection Summary										
Sycle Length: 130										
Actuated Cycle Length: 130										
Offset 64 (49%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	I to phase	2:NBTL a	nd 6:SBT	L, Start o	of Green					
Natural Cycle: 95										
Control Type: Actuated-Coordinated	dinated									
Maximum v/c Ratio: 0.69										
ntersection Signal Delay: 14.7	7.			₹	Intersection LOS: B	LOS: B				
Intersection Capacity Utilization 75.1%	on 75.1%			೦	CU Level of Service D	of Service	۵			
Analysis Period (min) 15										

Splits and Phases: 2. Regional Rd 25 & Whitlock Ave

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Queues
2032 Future Background AM
2: Regional Rd 25 & Whitlock Ave

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ane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	
ane Group Flow (vph)	145	145	20	35	92	45	1115	20	1840	
//c Ratio	69.0	0.49	0.33	0.13	0.31	0.25	0.38	0.14	0.62	
Sontrol Delay	68.1	30.2	52.5	45.3	10.9	12.9	0.9	5.1	13.4	
tueue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0:0	
otal Delay	68.1	30.2	52.5	45.3	10.9	12.9	0.9	5.1	13.4	
Queue Length 50th (m)	37.5	18.2	12.1	8.2	0.0	1.6	22.7	5.6	107.5	
Queue Length 95th (m)	57.3	37.4	23.8	17.1	14.7	6.9	103.4	7.2	153.1	
nternal Link Dist (m)		67.9		68.1			6.969		481.0	
urn Bay Length (m)	32.0		65.0		65.0	100.0		100.0		
Sase 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	
terepotion Summary										

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2032 Future Background AM 01-12-2024 HCM Signalized Intersection Capacity Analysis 2: Regional Rd 25 & Whitlock Ave

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	BE	NBT	NBR.	SBL	SBT	SBR
Lane Configurations	je.	2,		×	*	¥.	F	4413		*	441	
Traffic Volume (vph)	145	20	92	20	32	92	45	1105	10	20	1740	100
Future Volume (vph)	145	20	92	20	32	92	45	1105	10	20	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	1.0	*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	
T.	1.00	0.90		1.00	1.00	0.85	1.00	1.00		1.00	0.99	
Fit 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	
Fit Permitted	0.73	1.00		0.53	1.00	1.00	90.0	1.00		0.19	1.00	
Satd. Flow (perm)	1333	1516		965	1759	1455	108	4289		322	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
Adi. Flow (vph)	145	20	92	20	32	92	45	1105	10	20	1740	100
RTOR Reduction (vph)	C	20	C	C	C	8	C	C	C	C	c	C
Lane Group Flow (vph)	145	88	0	20	32	15	45	1115	0	20	1837	0
Confl. Peds. (#/hr)	S		22	2		2						
Heavy Vehicles (%)	4%	32%	1%	4%	%8	%6	%8	%9	25%	%0	2%	7%
Turn Type	Perm	Ϋ́		Perm	ΑΝ	Perm	ta+ma	Ϋ́		ta+ma	ΑN	
Protected Phases		4			∞		, ro	2		<u>.</u> –	9	
Permitted Phases	4			∞		00	2			ç		
Actuated Green G (s)	19.4	19.4		19.4	19.4	19.4	93.6	87.9		93.6	87.9	
Effective Green, a (s)	20.4	20.4		20.4	20.4	20.4	92.6	88.9		92.6	88.9	
Actuated o/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 Gro Cap (vph)	500	237		151	276	228	159	2933		335	2942	
v/s Ratio Prot		90.0			0.02		c0.01	0.26		0.0	c0.43	
v/s Ratio Perm	00.11			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		2.0	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	6.0		 5.	0.2	0.1	6.0	4.0		0.2	1.0	
Delay (s)	61.4	49.9		20.0	47.3	46.8	18.8	5.5		5.2	12.3	
Level of Service	ш	۵		□	□	□	മ	⋖		∢	ω	
Approach Delay (s)		55.7			47.8			0.9			12.2	
Approach LOS		ш			۵			∢			В	
Intersection Summary												
ICM 2000 Carter Dalar		ı	40.0		0000) je lerre	oo iioo	ı	0	ı		
HCM 2000 Control Delay HCM 2000 Volume to Casacity ratio	oity ratio		0.53	Ĕ	HUM ZUUU LEVEI OT SEMICE	Level of 3	Service		מ			
Troin 2000 Volume to Capac	out) latio		70.07	ć	to all to an	(4)			4			
Actuated Cycle Length (s)			130.0	ನ ⊆	Sum or lost time (s)	(s)			5.0			
Intersection Capacity Utilization			%1.0/	٥	ICU Level of Service	o Service			2			
Analysis Period (min)			15									
minute of the state of the												

Critical Lane Group

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Timings 5: Regional Rd 25 & Etheridge Ave/Collector Road

2032 Future Background AM 01-12-2024

ane Group	\ =	† 🛱	₩ MB	₩	√ 🕏	← NB1	,	→ SBT	
figuratione	•	4	×	4	×	AAA	*	AAA	
raffic Volume (vmh)	- 6	<u>•</u> c	85	<u>•</u> c	30	1005	- S	1800	
file Volume (vph)	9 5	0	8 8	o c	3 8	2001	3 6	1000	

+	r nbl nbt sbl sbt	1 44b N	0 30 1005 30 1800	30 1005 30	pm+pt NA Perm	2		8 5 2 6 6		7.0	11.0 38.4 38.4	11.0 81.0 70.0	8.5% 62.3% 53.8% 53	3.0 4.2 4.2	1.0 2.2 2.2	-1.0 -1.0	3.0 5.4 5.4	Lead Lag	Yes Yes	None C-Max C-Max C	98.8 96.4 89.8	0.76 0.74 0.69	0.17 0.32 0.10	11.6 2.1	0.0 0.0 0.0	11.6 2.1 3.4	B A A	0 2.3 6.4) A A				of Green				Intersection LOS: A	ICU Level of Service B
•	WBL WB1		65	65 0			∞	80			36.2 36.2															65.3 1.3	Е	36.0	_				6:SBTL, Start					
Ť	EBT	æ	0	0	Ϋ́	4		4		10.0	36.2													1.4	0.0	1.4	∢	29.5	ပ				NBTL and					
\	EBL	#	100	100	pm+pt	7	4	7		7.0	11.0	12.0	9.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	25.2	0.19	0.38	47.2	0.0	47.2	□						phase 2:		dinated		~	nn 57 0%
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	SOT	Approach Delay	Approach LOS	Intersection Summary	Cycle Lenath: 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 Capacity Hilization 57 0%

Splits and Phases: 5: Regional Rd 25 & Etheridge Ave/Collector Road



Synchro 11 Report Page 7 Britannia & RR25 BA Group - NHY

2032 Future Background AM 01-12-2024 Regional Rd 25 & Etheridge Ave/Collector Road Queues 5: Regior

2032 Future Background AM 01-12-2024

	4	†	>	ţ	•	←	٠	→	
ane Group	田田	EBT	WBL	WBT	NBL	NBT	SBL	SBT	
ane Group Flow (vph)	100	65	92	22	æ	1025	8	1855	
/c Ratio	0.38	0.17	0.47	0.18	0.17	0.32	0.10	0.62	
Sontrol Delay	47.2	1.4	65.3	1.2	11.6	5.1	3.4	6.4	
tueue Delay	0:0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
otal Delay	47.2	1.4	65.3	1.2	11.6	5.1	3.4	6.4	
Queue Length 50th (m)	22.9	0.0	16.9	0.0	4.0	8.1	6:0	138.2	
Jueue Length 95th (m)	37.9	1.5	31.7	0.0	m1.4	12.7	m1.0	62.9	
nternal Link Dist (m)		53.9		63.1		292.1		6.969	
urn Bay Length (m)	40.0		40.0		0.07		0.07		
sase Capacity (vph)	262	620	332	519	179	3184	303	2988	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	
pillback Cap Reductn	0	0	0	0	0	0	0	0	
torage Cap Reductn	0	0	0	0	0	0	0	0	
teduced v/c Ratio	0.38	0.10	0.20	0.11	0.17	0.32	0.10	0.62	
C									
itersection Summary									

Volume for 95th percentile queue is metered by upstream signal

HCM Signalized Intersection Capacity Analysis 5: Regional Rd 25 & Etheridge Ave/Collector Road 65 65 65 1900 1.00 1.00 0.95 1.00 65 65 65 65 8 11.4 0.09 6.2 3.0 65 65 1900 00.1 9 2 9 0 Frit Fit Protected Satd. Flow (part) Fit Permitted Satd. Flow (perm) Adi. Flow (ph) RTOR Reduction (vph) Lane Group Flow (vph) Turn Type
Protected Phases
Permitted Phases
Aduated Green, G (s)
Effective Green, g (s)
Aduated g/C Ratio
Glearance Time (s)
Vehicle Extension (s)
Lane Grp Cap (vph)
ws Ratio Port
ws Ratio Port Lane Configurations
Traffic Volume (vph)
Future Volume (vph)
Ideal Flow (vphpl)
Total Lost time (s)
Lane Util. Factor Heavy Vehicles (%)

SBT 1800 11800 11800 11.

20 20

55 55 900

30 30 30 30 1000 11.00 0.95 0.95 0.95 11.00 30 30 30

86.0 87.0 0.67 6.4 3.0 2892 c0.43

94.2 95.2 0.73 6.4 3.0 3144

10.4 11.4 0.09 6.2 3.0 141 0.00

23.2 24.2 0.19 6.2 3.0 300 0.01

94.2 95.2 0.73 4.0 3.0 141 0.01 0.01 9.0 2.03 0.6 18.9

23.2 24.2 0.19 4.0 253 0.04 0.04 45.6 1.00 1.00 46.7

6 86.0 87.0 0.67 6.4 3.0 293

₹ 1854 5%

0 0 0

.00 55 0 0 0

0.64 0.44 0.9 6.4

0.07 0.10 7.6 0.28 0.6 2.7 A

0.03 54.3 1.00 0.1 0.1 54.4 E

0.04 43.4 1.00 0.1 0.1 43.4 D D

v/c Ratio Uniform Delay, d1 Progression Factor Incremental Delay, d2

Delay (s) Level of Service

6.3

⋖ 16.6 B

HCM 2000 Level of Service

Sum of lost time (s) ICU Level of Service

9.0 0.60 130.0 57.0%

HCM 2000 Control Delay
HCM 2000 Volume to Capacity ratio
Aduated Cycle Length (s)
Intersection Capacity Ulitzation
Analysis Period (min)
c Critical Lane Group

ntersection Summary Approach Delay (s) Approach LOS

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Synchro 11 Report Page 8

Britannia & RR25 BA Group - NHY

2032 Future Background AM 01-12-2024 Timings 7: Regional Rd 25 & Britannia Rd

-	SBT	443	1620	1620	Ϋ́	9		9		20.0	49.7	51.0	39.2%	4.2	3.5	-1.0	6.7	Fag	Yes	C-Max	60.3	0.46	0.81	43.9	0.0	43.9		45.6											
۶	SBL	K	295	295	Prot	Ψ-		-		7.0	11.0	11.0	8.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	21.8	0.17	0.50	55.4	0.0	55.4	ш											ے	
←	NBT	4413	880	880	Ϋ́	7		5		20.0	49.7	51.0	39.2%	4.2	3.5	-1.0	6.7	Lag	Yes	C-Max	45.0	0.35	0.74	39.7	0.0	39.7	۵	40.6	٥								LOS: D	ICU Level of Service D	
•	NBL	K	20	20	Prot	2		2		7.0	11.0		8.5%									0.07				9.69	ш						Green				Intersection LOS: D) Level o	
ţ	WBT	4413	345	345	ΑN	∞		œ		10.0	45.5	46.0	35.4%	4.2	3.3	-1.0	6.5	Lag	Yes	None	37.2	0.29	0.36	30.5	0.0	30.5	ပ	48.9	٥				, Start of				<u>=</u> 3	2	
>	WBL	K.	430	430	Prot	က		က		7.0	11.0	22.0	16.9%	3.0	1.0	-1.0	3.0	Lead	Yes	None	18.8	0.14	0.87	68.7	0.0	2.89	ш						nd 6:SBT						
†	EBT	4413	415	415	Ϋ́	4		4		10.0	45.5	46.0	35.4%	4.2	3.3	-1.0	6.5	Lag	Yes	None	25.2	0.19	92.0	46.4	0.0	46.4	۵	47.5	٥				2:NBT						
4	EBL	K.	8	9	Prot	7		7		7.0	11.0	22.0	16.9%	3.0	1:0	-1.0	3.0	Lead	Yes	None	9.0	0.07	0.26	59.9	0.0	59.9	ш						to phase		inated		56	%8.T&n	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	ROS	Approach Delay	Approach LOS	Intersection Summary	Cvcle Lenath: 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 Capacity Utilization 81.8%	Analysis Period (min) 15

4 ∮ 104 03 Splits and Phases: 7: Regional Rd 25 & Britannia Rd Ø2 (R) ↑ Ø5 • • Ø6 (R)

Synchro 11 Report Page 10 Britannia & RR25 BA Group - NHY

Queues 7: Regional Rd 25 & Britannia Rd

2032 Future Background AM 01-12-2024

SBT 1635 0.81 43.9 0.0 43.9 147.0 #214.8 2008 SBL 295 0.50 55.4 0.0 55.4 43.7 59.3 90.0 1105 0.74 39.7 0.0 39.7 105.0 165.3 50 0.22 59.6 0.0 59.6 6.7 90.0 WBT 460 0.36 30.5 30.5 36.3 50.0 182.4 60.0 120.0 482 1370 503 0 0 0 0 0 0 0 0 0 0.12 0.51 0.85 WBL 430 0.87 68.7 68.7 68.7 59.0 700 0.76 46.4 0.0 46.4 62.7 76.0 60 0.26 59.9 0.0 59.9 8.0 15.3 Control Delay

Queue Delay

Total Delay

Queue Enright 50th (m)

Queue Length 95th (m)

Internal Link Dist (m)

Turn Bay Length (m)

Base Capacity (nph)

Sanvation Cap Reduch

Spillback Cap Reduch

Sorage Cap Reduch

Sorage Cap Reduch

Reduced v/c Ratio Lane Group Lane Group Flow (vph)

95th percentile volume exceeds capacity, queue may be longer Queue shown is maximum after two cycles.

Synchro 11 Report Page 11 Britannia & RR25 BA Group - NHY

HCM Signalized Intersection Capacity Analysis 2032 Future Background AM 7: Regional Rd 25 & Britannia Rd 01-12-2024

Maintenant		•	†	/	\	ţ	4	•	←	•	۶	→	•
March Marc	Novement	EB	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
60 415 286 430 345 115 50 880 225 255 1620 1900 1900 1900 1900 1900 1900 1900 19	ane Configurations	£	444		K.	4413		F	441		F	444	
100 1900 1	raffic Volume (vph)	9	415	285	430	345	115	20	88	225	295	1620	15
(e) 1900 1900 1900 1900 1900 1900 1900 190	uture Volume (vph)	9	415	282	430	345	115	20	880	225	292	1620	15
(c) (5) (65 G) (65 G) (67 G) (leal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
opt 0.947 '0.80 0.947 '0.80 0.947 '0.80 0.947 '0.80 0.947 '0.80 '0.94 '0.96 '1.00 0.945 '1.00 '0.94 '1.00 '0.95 '1.00 '0.94 '1.00 '0.95 '1.00 '0.95 '1.00 '0.95 '1.00 '0.95 '1.00 '	otal Lost time (s)	3.0	6.5		3.0	6.5		3.0	6.7		3.0	6.7	
1.00 0.94 1.00 0.96 1.00 0.97 1.00 1.00 0.95 1.00	ane Util. Factor	0.97	*0.80		0.97	*0.80		0.97	*0.80		0.97	*0.80	
(i) 0.95 1.00 1.00 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 0.095 0.00 0.95 0.00 0.95 0.00 0.95 0.00 0.95 0.00 0.95 0.00 0.95 0.00 0.95 0.00 0.95 0.00 0.95 0.00 0.95 0.00 0.95 0.00 0.95 0.00 0.95 0.00 0.95 0.00 0.95 0.00 0.95 0.00 0.00	±	1:00	0.94		1.00	96.0		1.00	0.97		1.00	1.00	
(γ) 3303 4239 3445 4335 3367 4218 3502 4229 m) 3303 4239 3445 4335 3367 4218 3502 4329 m) 3303 4239 3445 433 3367 4218 3502 4329 n (γph) 0 415 288 433 345 15 80 225 250 100 n (γph) 6 666 606 0 430 442 0 26 0 0 100	t Protected	0.95	1.00		1.00	1.00		0.95	1.00		0.95	1.00	
Display Capacity Display Dis	atd. Flow (prot)	3303	4239		3445	4335		3367	4218		3502	4329	
m) 3303 4239 3345 4335 3367 4218 3502 4329 n; PHF 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	t Permitted	0.95	1.00		1.00	1.00		0.95	1.00		0.95	1.00	
Physical Phy	atd. Flow (perm)	3303	4239		3445	4335		3367	4218		3502	4329	
Main	eak-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
0 94 0 42 0 0 26 0 0 0 0 0 0 0 0 0	dj. Flow (vph)	9	415	285	430	345	115	20	880	225	295	1620	15
6% 1% 1% 7% 1% 2% 4% 5% 4% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5%	TOR Reduction (vph)	0	ᆶ	0	0	45	0	0	56	0	0	_	0
6% 1% 1% 7% 1% 2% 4% 5% 4% 5% 4% 5% 4% 5% 4% 5% 4% 5% 4% 5% 5% 5% 5% 5% 4% 5% 5% 5% 4% 5% 5% 4% 5% 5% 4% 5% 4% 5% 4% 5% 4% 5% 4% 5% 4% 5% 4% 5% 4% 5% 4% 5% 4% 5% 4% 5% 4% 5% 5% 4% 5% 5% 4% 5% 4% 5% 4% 5% 4% 5% 4% 5% 4% 5% 4% 5% 4%<	ane Group Flow (vph)	09	909	0	430	418	0	20	1079	0	295	1634	0
Prot NA Prot NA Prot NA Prot 7 4 3 8 5 2 1 6 25.0 17.8 36.2 6.3 43.2 20.8 7.6 26.0 18.8 37.2 7.3 44.2 21.8 0.0 0.20 18.8 37.2 4.0 7.7 4.0 1.0 7.5 4.0 7.5 4.0 7.7 4.0 1.0 3.0 3.0 3.0 3.0 3.0 3.0 1.0 4.0 7.5 4.0 7.7 4.0 1.0 4.0 7.5 4.0 7.7 4.0 1.0 4.0 7.5 4.0 7.7 4.0 5.8 1.4 0.1 0.0 0.2 6.0 8.0 5.8 1.0 1.0 0.0 0.0 0.0 9.0 9.0 5.8 1.0 1.0 1.0	eavy Vehicles (%)	%9	1%	1%	%/	1%	2%	4%	2%	4%	%0	2%	27%
6.6 250 178 362 6.3 43.2 20.8 7.6 250 188 37.2 7.3 44.2 21.8 7.6 250 0.14 0.29 0.06 0.34 0.17 4.0 2.0 0.04 0.17 4.0 2.0 0.04 0.17 4.0 2.0 0.04 0.17 4.0 2.0 0.04 0.17 4.0 2.0 0.04 0.17 4.0 2.0 0.05 0.34 0.17 4.0 2.0 0.04 0.17 4.0 2.0 0.02 0.04 0.17 4.0 0.10 0.02 0.04 0.10 0.02 0.14 4.0 0.12 0.10 0.01 0.26 0.008 0.2 0.10 0.10 0.01 0.00 0.03 0.2 0.0 0.00 0.03 0.03 0.03 0	urn Type	Prot	Ν		Prot	NA		Prot	NA		Prot	¥	
6.6 25.0 17.8 36.2 6.3 43.2 20.8 7.6 26.0 18.8 37.2 7.3 44.2 21.8 0.06 0.20 0.14 0.29 0.06 0.34 0.17 4.0 7.5 4.0 7.5 4.0 7.7 4.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 133 8.7 4.0 7.5 4.0 7.7 4.0 0.02 0.14 0.20 3.0 3.0 3.0 3.0 3.0 0.21 0.14 0.20 0.70 0.26 0.05 <td>otected Phases</td> <td>7</td> <td>4</td> <td></td> <td>က</td> <td>∞</td> <td></td> <td>2</td> <td>7</td> <td></td> <td>_</td> <td>9</td> <td></td>	otected Phases	7	4		က	∞		2	7		_	9	
6.6 25.0 17.8 36.2 6.3 43.2 20.8 7.6 20.0 18.8 37.2 7.3 44.2 21.8 0.06 0.34 0.75 4.0 0.77 4.0 7.1 4.0 7.5 4.0 7.5 4.0 7.7 4.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 1.00 1.03 84.7 4.9 1.7 4.0 7.7 4.0 1.02 2.0.14 4.0 7.5 4.0 7.7 4.0 9.7 4.0 9.7 4.0 9.7 4.0 9.7 4.0 9.7 4.0 9.0 <t< td=""><td>ermitted Phases</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	ermitted Phases												
76 26.0 18.8 37.2 7.3 44.2 21.8 4.0 7.5 0.04 0.02 0.04 0.07 0.17 4.0 7.5 0.02 0.04 0.7 4.0 7.7 4.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 0.17 4.0 0.17 4.0 0.17 4.0 0.17 4.0 0.0 <t< td=""><td>ctuated Green, G (s)</td><td>9.9</td><td>25.0</td><td></td><td>17.8</td><td>36.2</td><td></td><td>6.3</td><td>43.2</td><td></td><td>20.8</td><td>27.7</td><td></td></t<>	ctuated Green, G (s)	9.9	25.0		17.8	36.2		6.3	43.2		20.8	27.7	
0.06 0.20 0.14 0.29 0.06 0.34 0.17 4.0 1.3	fective Green, g (s)	9.7	26.0		18.8	37.2		7.3	44.2		21.8	28.7	
4.0 7.5 4.0 7.5 4.0 7.7 4.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 13.3 3.4 3.0 3.0 3.0 3.0 3.0 10.0 0.02 0.01 0.01 0.26 0.75 6.008 0.008 0.31 0.71 0.86 0.34 0.26 0.75 0.05 0.50 58.7 48.5 54.3 36.7 58.8 38.0 49.2 1.04 1.00 1.00 0.93 0.93 1.00 1.00 1.04 1.04 0.9 2.9 14.2 0.2 0.8 3.7 0.6 6.9 6.1 6.1 6.1 6.1 6.1 6.1 6.1 6.1 6.1 6.1 6.1 6.1 6.1 6.1 6.1 6.2 6.2 6.2 6.5 6.1 6.1 6.2 6.2 6.5 6.1 6.1 6.2 6.2 <td>ctuated g/C Ratio</td> <td>90:0</td> <td>0.20</td> <td></td> <td>0.14</td> <td>0.29</td> <td></td> <td>90.0</td> <td>0.34</td> <td></td> <td>0.17</td> <td>0.45</td> <td></td>	ctuated g/C Ratio	90:0	0.20		0.14	0.29		90.0	0.34		0.17	0.45	
30 30 30 30 30 30 30 30	earance Time (s)	4.0	7.5		4.0	7.5		4.0	7.7		4.0	7.7	
193 847 498 1240 189 1434 587 1434 587 1434 587 1434 587 1434 587 1434 587 1434 587 1434 587 1434 587 1434	ehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
0.02 c0.14 c0.12 0.10 0.01 0.26 c0.08 c 0.31 0.71 0.86 0.34 0.26 0.75 0.50 58.7 48.5 54.3 36.7 58.8 38.0 49.2 1.00 1.00 0.93 0.93 1.00 1.00 1.04 59.6 51.4 64.8 34.1 69.5 41.7 51.9 E D E C E D C E D C 52.1 48.5 HCM 2000 Level of Service D 3exity ratio 0.79 Sum of lost time (s) 19.2 action 155 11.00 1.00 1.00 1.00 1.00 1.00 1.00	ane Grp Cap (vph)	193	847		498	1240		189	1434		287	1954	
0.31 0.71 0.86 0.34 0.26 0.75 0.50 58.7 48.5 54.3 36.7 58.8 38.0 49.2 1.00 1.00 0.93 0.93 1.00 1.00 1.04 0.9 2.9 14.2 0.2 0.8 3.7 0.6 59.6 51.4 64.8 34.1 55.5 41.7 51.9 E D E C E C D D 52.1 46.5 HCM 2000 Level of Service 1.30.0 Sum of lost time (s) 130.0 Sum of lost time (s) 15.2 1 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1	s Ratio Prot	0.02	c0.14		c0.12	0.10		0.01	0.26		c0.08	c0.38	
0.31 0.71 0.86 0.34 0.26 0.75 0.50 58.7 48.5 54.3 36.7 58.8 38.0 49.2 1.00 1.00 0.39 0.93 0.93 1.00 1.00 1.04 0.9 2.9 14.2 0.2 0.8 3.7 0.6 59.6 51.4 64.8 34.1 59.5 41.7 51.9 E D E C E D D 52.1 48.9 1.00 1.00 D D Ascity ratio 0.79	s Ratio Perm												
587 485 543 367 588 38.0 49.2 100 1.00 0.93 0.93 1.00 1.04 100 1.00 1.00 1.00 1.04 142 0.2 0.8 3.7 0.6 59.6 51.4 64.8 34.1 59.5 41.7 51.9 E D E C E D D D D D D D D D D D D D D D D D D D	c Ratio	0.31	0.71		0.86	0.34		0.26	0.75		0.50	0.84	
1.00 1.00 0.93 0.93 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	niform Delay, d1	58.7	48.5		54.3	36.7		58.8	38.0		49.2	31.4	
142 0.2 0.8 3.7 0.6 59.6 51.4 64.8 34.1 59.5 41.7 51.9 E D E C E D D D D D D D D D D D D D D D	ogression Factor	1.00	1.00		0.93	0.93		1.00	1.00		1.04	1.30	
59.6 51.4 64.8 34.1 59.5 41.7 51.9 E D E C E D D 52.1 48.9 42.5 D D D D D A6.5 HCM 2000 Level of Service D acity ratio 0.79 Sum of lost time (s) 24.5 19.2 19.2 25.1 51.9 51.9	cremental Delay, d2	6.0	5.9		14.2	0.2		0.8	3.7		9.0	3.6	
E C E D D D D D D D D D D D D D D D D D	elay (s)	9.69	51.4		64.8	84.1		59.5	41.7		51.9	4.4	
52.1 48.9 42.5 D D D A6.5 HCM 2000 Level of Service D 7.79 Sum of lost time (s) 19.2 ration 81.8% ICU Level of Service D 15	evel of Service	ш	Δ		ш	ပ		ш	□		Δ	Ω	
D D D 46.5 HCM 2000 Level of Service D 20.79 Sum of lost time (s) 19.2 zation 81.8% ICU Level of Service D 15	oproach Delay (s)		52.1			48.9			45.5			45.5	
46.5 HCM 2000 Level of Service 0.79 Sum of lost time (s) zation 81.8% ICU Level of Service 15	oproach LOS		۵			۵			۵			۵	
46.5 HCM 2000 Level of Service 0.79 Sum of lost time (s) ration 81.8% ICU Level of Service 15	tersection Summary												
20-20	CM 2000 Control Delay			46.5	Ĭ	3M 2000	Level of S	Service		۵			1
130.0 Sum of lost time (s) cation 81.8% ICU Level of Service 15	CM 2000 Volume to Capaci	ity ratio		0.79									
Utilization 81.8% ICU Level of Service 15 15 Pervice	ctuated Cycle Length (s)			130.0	ઝ	im of lost	time (s)			19.2			
15 p	tersection Capacity Utilization	ou		81.8%	೦	U Level o	of Service			□			
Critical Lane Group	nalysis Period (min)			15									
	Critical Lane Group												

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BA Group - NHY
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Timings 2032 Future Background AM 10: Britannia Rd & Farmstead Dr 01-12-2024

•	SBR	R.	20	20	Perm		œ	8		10.0	15.3	41.0	39.0%	3.3	2.0	-1.0	4.3			None	12.8	0.12	0.10	17.3	0.0	17.3	В						reen				Intersection LOS: A	CU Level of Service A	
بر ا	ST SBL		35 90		NA Prot	8		8					33	4.2 3.3	2.2 2.0		5.4 4.3	Lag	Yes	_	.3 12.8			7	0.0 0.0	49		4.4 43.2	Р				BT, Start of G				Ξ	೨	
+	EBT WBT	444 44				2		2			29.4 29.4		61.0% 50.5%		2.2 2		5.4 5	L _o	*	Ċ	86.7 82.3		0.18 0.12		0.0			2.8 4	∢				BTL and 6:WI						
4	EBL	#	20	70	pm+pt	2	7	2		7.0	11.0	11.0	10.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	88.0	0.84	0.03	2.4	0.0	2.4	A					5	to phase 2:E		ordinated		0.7	ation 33.1%	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	SOT	Approach Delay	Approach LOS	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 Capacity Utilization 33.1%	Analysis Period (min) 15

Splits and Phases: 10: Britannia Rd & Farmstead Dr



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2032 Future Background AM 01-12-2024 Queues 10: Britannia Rd & Farmstead Dr

		5				
	4	†	ţ	٠	<i>*</i>	
Lane Group	EBL	EBI	WBT	SBL	SBR	
Lane Group Flow (vph)	20	029	410	6	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)	9.0	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	292	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						

Synchro 11 Report Page 14 Britannia & RR25 BA Group - NHY

HCM Signalized Intersection Capacity Analysis 10: Britannia Rd & Farmstead Dr

2032 Future Background AM

Mar		4	†	ţ	4	۶	•	
20 670 385 25 90 20 20 670 385 25 90 20 20 670 385 25 90 20 100 1900 1900 1900 1900 1900 100 0.089 100 0.085 100 0.099 1.00 0.085 100 0.099 1.00 0.085 100 0.099 1.00 0.085 100 0.099 1.00 0.085 100 1.00 0.099 1.00 20 670 427 4203 1773 1538 100 1.00 1.00 1.00 1.00 1.00 20 670 447 0 90 2 20 670 447 0 90 2 20 670 447 0 90 2 20 670 407 0 90 2 20 670 0 90	vement	B	EBT	WBT	WBR	SBL	SBR	
20 670 385 25 90 20 20 670 385 25 90 20 30 670 385 25 90 20 30 5.4 5.4 4.3 4.3 4.3 1.00 1080 1900 1900 1900 1900 0.46 1.00 1.00 0.99 1.00 0.46 1.00 1.00 1.00 1.00 1.00 0.00 1.00 1.00	ne Configurations	*	444	4413		*	8 C.	
20 670 385 25 90 20 30 670 986 1900 1900 30 670 1900 1900 1900 30 670 880 100 085 100 100 0.99 100 085 100 100 0.99 100 085 100 0.95 1.00 20 670 385 25 90 20 20 670 385 25 90 20 20 670 385 25 90 20 20 670 386 25 90 20 20 670 407 0 100 100 20 670 670 670 670 670 20 670 670 670 670 670 20 670 670 670 670 20 670 670 670 670 20 670 670 670 670 20 670 670 670 670 20 670 670 20 670 670 670 20 670 670 670 20 670 670 670 20 670 670 670 20 670 670 670 20 670 670 670 20 670 670 670 20 670 670 670 20 670 670 670 20 670 670 670 20 670 670 670 20 670 670 670 20 670 670 670 20 670 670 670 20 670 670 670 20 670 670 670 20 670 670 670 20 670 670 670 20 670 20 670 20 670 20 670 20 670 20 670 20 670 20 670 20 670 20 670 20 670 20 670	affic Volume (vph)	20	029	382	52	90	20	
1900 1900 1900 1900 1900 1900 1900 1900	ture Volume (vph)	20	670	382	52	90	20	
3.0 5.4 5.4 4.3 4.3 1.00 1.08 0.98 1.00 0.85 0.95 1.00 0.95 1.00 0.85 0.96 1.00 1.00 0.95 1.00 0.97 4.27 4.203 1.703 1538 0.40 1.00 1.00 1.00 1.00 1.00 0.0 3 0.9 20 0.0 3 0.9 20 0.0 3 0.0 1.8 0.0 670 407 0 90 2 0.0 670 407 0 90 2 0.0 670 407 0 90 2 0.0 670 407 0 90 2 0.0 8% 6% 6% 6% 0.0 8% 0.74 0.10 0.10 0.0 0.80 0.74 0.10 0.10 0.0 0.80 0.74 0.10 0.10 0.0 0.1 0.1 0.0 1.00 0.10 0.1 0.1 0.1 0.0 1.00 1.0	al Flow (vphpl)	1900	1900	1900	1900	1900	1900	
1.00 '0.80 '0.80 '1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.	tal Lost time (s)	3.0	5.4	5.4		4.3	4.3	
100 100 099 100 085 100 100 100 099 100 085 1656 4427 4203 1703 1538 046 1,00 1,00 100 100 095 1,00 20 670 385 25 90 20 20 670 385 25 90 20 20 670 38 8% 0% 6% 5% 100 1,00 1,00 1,00 1,00 20 88.5 88.5 76.7 9.8 9.8 88 88.5 84.5 77.7 0.8 10.8 10.8 84.5 84.5 77.7 0.8 10.8 10.8 84.5 84.5 77.7 0.9 10.0 0.10 2.1 2.4 3.9 44.6 42.3 1.00 0.1 0.1 0.1 0.0 1.00 0.00 0.1 0.1 0.1 0.5 0.00 0.0 0.1 0.1 0.1 0.5 0.00 0.0 0.1 0.1 0.1 0.2 0.0 0.0 0.1 0.1 0.1 0.2 0.0 0.0 0.1 0.1 0.1 0.2 0.0 0.0 0.1 0.1 0.1 0.2 0.0 0.0 0.1 0.1 0.1 0.2 0.0 0.0 0.1 0.1 0.1 0.2 0.0 0.0 0.1 0.1 0.1 0.0 0.0 0.0 0.1 0.1 0.1 0.0 0.0 0.0 0.1 0.1 0.1 0.2 0.0 0.0 0.1 0.1 0.1 0.0 0.0 0.0 0.1 0.1 0.1 0.1 0.0 0.0 0.1 0.1 0.1 0.0 0.0 0.0 0.1 0.1 0.1 0.0 0.0 0.0 0.1 0.1 0.1 0.1 0.0 0.0 0.1 0.1 0.1 0.0 0.0 0.0 0.1 0.1 0.1 0.0 0.0 0.0 0.1 0.1 0.1 0.0 0.0 0.0 0.1 0.1 0.1 0.0 0.0 0.0 0.1 0.1 0.1 0.0 0.0 0.0 0.1 0.1 0.1 0.0 0.0 0.0 0.1 0.1 0.1 0.0 0.0 0.0 0.1 0.1 0.1 0.0 0.0 0.0 0.1 0.1 0.1 0.0 0.0 0.0 0.1 0.1 0.1 0.0 0.0 0.0 0.1 0.1 0.1 0.0 0.0 0.0 0.1 0.1 0.1 0.0 0.0 0.0 0.1 0.1 0.1 0.0 0.0 0.0 0.1 0.1 0.1 0.0 0.0 0.0 0.1 0.1 0.1 0.0 0.0 0.0 0.1 0.1 0.1 0.0 0.0 0.0 0.1 0.1 0.1 0.0 0.0 0.0 0.1 0.1 0.1 0.0 0.0 0.0 0.1 0.1 0.1 0.0 0.0 0.1 0.1 0.1 0.1 0.0 0.0 0.1 0.1 0.1 0.1 0.0 0.0 0.1 0.1 0.1 0.1 0.0 0.0 0.1 0.1 0.1 0.1 0.0 0.0 0.1 0.1 0.1 0.1 0.0 0.0 0.1 0.1 0.1 0.1 0.0 0.0 0.1 0.1 0.1 0.1 0.0 0.0 0.1 0.1 0.1 0.1 0.0 0.0 0.1 0.1 0.1 0.1 0.0 0.0 0.1 0.1 0.1 0.1 0.0 0.0 0.1 0.1 0.1 0.1 0.0 0.0 0.1 0.1 0.1 0.1 0.0 0.0 0.1 0.1 0.1 0.1 0.0 0.0 0.1 0.1 0.1 0.1 0.0 0.0 0.1 0.1 0.1 0.0 0.0 0.0 0.1 0.1 0.1 0.0 0.0 0.0 0.1 0.1 0.1 0.0 0.0 0.0 0.0 0.1 0.1 0.1 0.0 0.0 0.0 0.0 0.1 0.1 0.1 0.0 0.0 0.0 0.0 0.1 0.1 0.1 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1 0.1 0.0 0.0 0.0 0.0 0.0 0.0	ne Util. Factor	1.00	*0.80	*0.80		1.00	1.00	
1656 1,00 1,00 0,95 1,00 1,656 4,427 4,203 1,703 1,538 1,00 1,	_	1.00	1.00	0.99		1.00	0.85	
1656 4477 4203 1703 1538 1046 1100 1100 1100 100 100 20 670 385 25 90 20 20 670 407 0 90 2 20 670 407 0 90 2 20 670 407 0 90 2 20 670 407 0 90 2 20 670 407 0 90 2 20 670 407 0 90 2 20 670 407 0 90 2 20 670 407 0 90 2 20 670 407 0 90 2 883.5 83.5 76.7 9.8 9.8 9.8 84.5 84.5 77.7 108 108 60.80 60.8 77.7 108 108 60.00 60.15 0.10 0.10 7.0 6.4 6.4 6.4 5.3 5.3 60.00 60.15 0.10 0.10 7.0 6.4 6.4 3.9 446 42.3 7.0 1.00 1.00 1.00 7.0 0.1 0.1 0.1 2.5 0.0 7.0 0.1 0.1 0.1 2.5 0.0 8.5 4.0 46.3 9 7.0 HCM 2000 Level of Service racity ratio 105.0 Sum of lost time (s) 15.5 4.0 46.3 A A A D 2.5 4.0 46.3 A A A B D 2.5 4.0 100 100 100 100 33.1% ICU Level of Service 165.0 Sum of lost time (s) 15.0 Level of Service	Protected	0.95	1.00	1.00		0.95	1.00	
0.46 1,00 1,00 0.95 1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,0	atd. Flow (prot)	1656	4427	4203		1703	1538	
797 4427 4203 1703 1538 100 100 100 100 100 0 0 3 0 0 18 0 0 0 3 0 0 18 20 670 407 0 90 2 9% 5% 6% 5% Phi+pt NA NA NA Prof Perm 5 2 6 77.7 9,8 9,8 9,8 84.5 84.5 77.7 9,8 9,8 9,8 84.5 84.5 77.7 10.8 10.8 10.8 68.0 88 0.74 0.10 0.10 0.00 0.1 0.1 175 158 0.00 0.01 0.1 0.1 0.0 0.00 0.1 0.1 0.1 2.5 0.0 0.0 0.1 0.1 0.1 47.2 42.3 A A A A D A A A A D Cation 33.1% ICU Level of Service 165.0 Sum of lost time (s) 166.0 San of Carrice 167.0 San of Carrice 168.0 San of Carrice 170 HCM 2000 Level of Service 169.0 San of Carrice 169.0 San of Carrice 170 HCM 2000 Level of Service	Permitted	0.46	1.00	1.00		0.95	1.00	
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	atd. Flow (perm)	797	4427	4203		1703	1538	
20 670 385 25 90 20 20 670 407 0 90 22 20 670 407 0 90 22 20 670 407 0 90 22 21 2 6 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	ak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	
20 670 407 0 9 18 9% 8% 0% 6% 5% pm+pt NA NA Prot Perm 5 2 88.5 88.5 76.7 9.8 9.8 9.8 84.5 84.5 77.7 10.8 10.8 84.5 84.5 77.7 10.8 10.8 84.5 84.5 77.7 10.8 10.8 84.5 84.5 77.7 0.10 0.10 4.0 6.8 6.4 5.3 5.3 3.0 3.0 3.0 3.0 3.0 67.2 3562 3110 175 158 60.0 0.01 0.13 0.51 0.01 2.1 2.4 3.9 44.6 42.3 1.00 1.00 1.00 1.00 0.0 0.1 0.1 0.1 2.5 0.0 2.1 2.5 4.0 46.3 A A A D A A A A D A A A A B A A A A B A A A A B A A A A	jj. Flow (vph)	20	029	382	22	90	20	
20 670 407 0 90 2 9% 3% 8% 0% 6% 5% 2 6 8 8 8 8 6 0% 6% 5% 83.5 84.5 77.7 10.8 10.8 84.5 84.5 77.7 10.8 10.8 8.6 84.5 77.7 10.8 10.8 8.6 84.5 77.7 10.8 10.8 8.7 84.5 77.7 10.8 10.8 8.8 84.5 77.7 10.8 10.8 8.8 84.5 77.7 10.8 10.8 8.9 8 8 9.8 8.4 84.5 77.7 10.8 10.8 8.0 0.80 0.74 0.10 0.10 8.0 0.80 0.74 0.10 0.10 8.0 0.2 3.0 3.0 8.0 0.2 3.0 3.0 8.0 0.3 0.0 1.0 0.1 8.0 0.3 0.0 1.0 1.0 1.0 8.0 0.1 0.1 0.1 1.0 1.0 8.1 0.2 4.3 3.9 44.6 42.3 8.1 0.0 1.0 1.0 1.0 1.0 1.0 8.2 1 2.4 3.9 44.6 42.3 8.1 0.0 1.0 1.0 1.0 1.0 1.0 8.2 1 2.4 3.9 46.3 0.1 8.2 4.0 4.3 4.3 0.1 8.3 4.0 4.3 0.1 8.4 A A A B D 8.5 4.0 46.3 D	TOR Reduction (vph)	0	0	က	0	0	18	
9% 3% 8% 0% 6% 5% pm+pt NA NA Prot Perm 2	ne Group Flow (vph)	20	670	407	0	90	2	
Pm+pt NA NA Prot Perm 5 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	avy Vehides (%)	%6	3%	8%	%0	%9	2%	
5 2 6 8 8 83.5 83.5 83.5 84.5 84.5 84.5 84.5 87.7 10.8 10.8 10.8 0.80 0.80 0.74 10.0 10.0 10.0 0.00 0.00 0.00 0.00 0.0	rn Type	pm+pt	۸	NA		Prot	Perm	
2 83.5 76.7 9.8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	otected Phases	ည	2	9		∞		
83.5 83.5 76.7 9.8 9.8 9.8 84.5 77.7 10.8 10.8 0.80 0.80 0.80 0.80 0.80 0.80	rmitted Phases	5					80	
845 845 777 108 108 646 048 074 0.10 0.10 4.0 6.4 6.4 5.3 5.3 3.0 3.0 3.0 3.0 3.0 672 3562 3110 175 158 600 c0.15 0.10 c0.05 0.03 0.19 0.13 0.51 0.01 0.01 0.1 0.1 0.0 1.00 0.0 0.1 0.1 0.1 2.5 0.0 0.1 0.1 0.1 2.5 4.0 46.3 A A A D D D D A A A D D A A B A B A A B A A B A A B A A B B A A B B A B A B B A B A B B A B B A B B A B B A B	tuated Green, G (s)	83.5	83.5	7.97		8.6	8.6	
0.80 0.80 0.74 0.10 0.10 4.0 6.4 6.4 5.3 5.3 3.0 3.0 3.0 3.0 3.0 3.0 672 3.652 3.10 175 158 0.00 0.015 0.10 0.05 0.00 0.02 0.19 0.13 0.51 0.01 0.0 0.1 0.0 1.00 1.00 1.00 1.00 0.0 0.1 0.1 0.1 2.5 0.0 0.1 0.1 0.1 2.5 0.0 0.1 0.1 4.4 42.3 0.0 0.1 0.1 4.4 42.3 0.0 0.1 0.1 4.4 42.3 0.0 0.1 0.1 0.1 0.0 1.00 0.1 0.1 0.1 2.5 0.0 0.1 0.1 0.1 46.3 0.1 0.1 0.1 2.5 0.0 0.1 0.1 0.1 46.3 0.1 0.1 0.1 1.00 1.00 0.1 0.1 0.1 0.1 0.0 1.00 0.1 0.1 0.1 0.0 1.00 0.1 0.1 0.1 0.0 1.00 0.1 0.1 0.1 0.0 1.00 0.1 0.1 0.1 0.0 1.00 0.1 0.1 0.1 0.0 1.00 0.1 0.1 0.1 0.0 1.00 0.1 0.1 0.1 0.0 1.00 0.1 0.1 0.1 0.0 1.00 0.1 0.1 0.1 0.0 1.00 0.1 0.1 0.1 0.0 1.00 0.1 0.1 0.1 0.0 1.00 0.1 0.1 0.1 0.1 0.0 1.00 0.1 0.1 0.1 0.0 1.00 0.1 0.1 0.1 0.0 1.00 0.1 0.1 0.1 0.0 1.00 0.1 0.1 0.1 0.0 1.00 0.1 0.1 0.1 0.0 1.00 0.1 0.1 0.1 0.0 1.00 0.1 0.1 0.1 0.0 1.00 0.1 0.1 0.1 0.0 1.00 0.1 0.1 0.1 0.0 1.00 0.1 0.1 0.1 0.0 1.00 0.1 0.1 0.1 0.0 1.00 0.1 0.1 0.1 0.0 1.00 0.1 0.1 0.1 0.0 1.00 0.1 0.1 0.1 0.1 0.0 1.00 0.1 0.1 0.1 0.0 1.00 0.1 0.1 0.1 0.1 0.0 1.00 0.1 0.1 0.1 0.1 0.0 1.00 0.1 0.1 0.1 0.1 0.0 1.00 0.1 0.1 0.1 0.1 0.0 1.00 0.1 0.1 0.1 0.1 0.1 0.0 1.00 0.1 0.1 0.1 0.1 0.0 1.00 0.1 0.1 0.1 0.1 0.0 1.00 0.1 0.1 0.1 0.1 0.1 0.0 1.00 0.1 0.1 0.1 0.1 0.1 0.0 1.00 0.1 0.1 0.1 0.1 0.1 0.0 1.00 0.1 0.1 0.1 0.1 0.1 0.0 1.00 0.1 0.1 0.1 0.1 0.1 0.0 1.00 0.1 0.1 0.1 0.1 0.1 0.0 1.00 0.1 0.1 0.1 0.1 0.1 0.0 1.00 0.1 0.1 0.1 0.1 0.1 0.1 0.0 1.00 0.1 0.1 0.1 0.1 0.1 0.0 1.00 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1	fective Green, g (s)	84.5	84.5	7.77		10.8	10.8	
4.0 6.4 6.4 5.3 5.3 3.0 3.0 3.0 3.0 3.0 672 3.0 3.0 3.0 3.0 0.00 60.15 0.10 60.05 0.00 0.03 0.19 0.13 0.51 0.01 2.1 2.4 3.9 4.46 42.3 1.00 1.00 1.00 1.00 1.00 0.0 0.1 0.1 2.5 0.0 2.1 2.5 4.0 46.3 D A A A A D A A A A D A A A A D A A A A A A A A A A A A A A A A A A A A A A A A A <td>tuated g/C Ratio</td> <td>0.80</td> <td>0.80</td> <td>0.74</td> <td></td> <td>0.10</td> <td>0.10</td> <td></td>	tuated g/C Ratio	0.80	0.80	0.74		0.10	0.10	
3.0 3.0 3.0 3.0 3.0 3.0 672 3562 3110 175 158 60.0 60.15 0.10 60.05 0.00 60.15 0.10 60.05 0.00 60.3 0.19 0.13 0.51 0.01 60.0 0.0 0.1 0.0 1.00 1.00 1.00 1	earance Time (s)	4.0	6.4	6.4		5.3	5.3	
672 3562 3110 175 158 000 60.15 0.10 60.05 0.03 0.19 0.13 0.51 0.01 0.00 1.00 1.00 1.00 1.00 0.0 0.1 0.1 2.5 0.0 0.1 0.1 0.7 4.2 42.3 0.0 0.1 0.1 47.2 42.3 0.1 0.2 4.0 46.3 0.2 5 4.0 46.3 0.2 5 4.0 46.3 0.2 6 4.0 46.3 0.2 6 4.0 46.3 0.2 7.0 HCM 2000 Level of Service 105.0 Sum of lost time (s) 115.0 Level of Service 115.1 25 4.0 46.3 0.2 1.05 0.2 1.05 0.0 1.00 0.0 0.	hide Extension (s)	3.0	3.0	3.0		3.0	3.0	
0.00	ne Grp Cap (vph)	672	3562	3110		175	158	
0.02 0.03 0.09 0.03 0.19 0.13 0.100	: Ratio Prot	0.00	c0.15	0.10		c0.05		
0.03 0.19 0.13 0.51 0.01 2.1 2.4 3.9 44.6 42.3 1.00 1.00 1.00 1.00 0.0 0.1 0.1 2.5 0.0 2.1 2.5 4.0 46.3 A A A D D D D D Consisty ratio 0.23 Cation 33.1% ICU Level of Service 16	s Ratio Perm	0.02					0.00	
2.1 2.4 3.9 44.6 42.3 1.00 1.00 1.00 1.00 1.00 0.0 1.0 1.2 2.0 0.0 2.1 2.5 4.0 47.2 42.3 A A D D D D D D A 46.3 2.5 4.0 46.3 D D D A 46.3 A A D D D D D D D D D D D D D D D D D D	: Ratio	0.03	0.19	0.13		0.51	0.01	
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	iform Delay, d1	2.1	2.4	3.9		44.6	42.3	
0.0 0.1 0.1 2.5 0.0 2.1 2.5 4.0 47.2 42.3 A A A D D D A 2.5 4.0 46.3 A A B D D D D D D D D D D D D D D D D D D D	ogression Factor	1.00	1.00	1.00		1.00	1.00	
2.1 2.5 4.0 472 42.3 A A A D D D D D D D D D D D D D D D D D	cremental Delay, d2	0.0	0.1	0.1		2.5	0.0	
A A A D D 2.5 4.0 46.3 A A A D D TO HCM 2000 Level of Service 7.0 HCM 2000 Level of Service 105.0 Sum of lost time (s) 12 T2	alay (s)	2.1	2.5	4.0		47.2	42.3	
2.5 4.0 46.3 A A D 7.0 HCM 2000 Level of Service 105.0 Sum of lost time (s) 12 arition 33.1% ICU Level of Service 15 ICU Leve	vel of Service	¥	⋖	∢		Ω	۵	
A A D 7.0 HCM 2000 Level of Service 7.0 A D 7.0 HCM 2000 Level of Service 105.0 Sum of lost time (s) 12	proach Delay (s)		2.5	4.0		46.3		
7.0 HCM 2000 Level of Service 33.1% ICU Level of Service 105.0 Sum of lost time (s) 12 15 ICU Level of Service 15	proach LOS		⋖	⋖		Ω		
7.0 HCM 2000 Level of Service 0.23 0.00 Sum of lost time (s) 12 105.0 Sum of lost time (s) 12 zation 33.1% ICU Level of Service	tersection Summary							
nacity ratio 0.23 105.0 Sum of lost time (s) zation 33.1% ICU Level of Service 15 15	M 2000 Control Delay			7.0	ĭ	3M 2000	Level of Service	A
105.0 Sum of lost time (s) zation 33.1% ICU Level of Service	M 2000 Volume to Capa	city ratio		0.23				
filization 33.1% 15	tuated Cycle Length (s)			105.0	S	m of lost	time (s)	12.7
15	ersection Capacity Utiliza	tion		33.1%	೨	U Level o	f Service	Ą
Critical Lane Group	alysis Period (min)			15				
	critical Lane Group							

Britannia & RR25 BA Group - NHY

Timings 2032 Future Background AM 11: Britannia Rd & Rose Way 01-12-2024

11: Britannia Rd & Rose Way	Rose W	/ay				01-12-2024
	1	†	ţ	۶	*	
Lane Group	EBE	EB	WBT	SBL	SBR	
Lane Configurations	*	+++	441	r	ĸ	
Traffic Volume (vph)	22	910	815	55	75	
Future Volume (vph)	52	910	815	22	75	
Turn Type	pm+pt	¥	ΑN	Prot	Perm	
Protected Phases	2	2	9	4		
Permitted Phases	2				4	
Detector Phase	2	2	9	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	20.0	50.0	
Total Split (%)	11.5%	61.5%	20.0%	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	0.9	0.9	2.0	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	0.02	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	
SOT	⋖	4	⋖	ш	В	
Approach Delay		6.2	4.7	35.2		
Approach LOS		∢	∢	٥		
Intersection Summary						
Cycle Length: 130						
Actuated Cycle Length: 130						
Offset 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green	o phase 2:	EBTL and	1 6:WBT,	Start of G	ireen	
Natural Cycle: 85						
Control Type: Actuated-Coordinated	rdinated					
Maximum v/c Ratio: 0.35						
Intersection Signal Delay: 7.5	2			드	Intersection LOS: A	
Intersection Capacity Utilization 38.3%	tion 38.3%			೦	ICU Level of Service A	
Analysis Period (min) 15						

Britannia & RR25
BA Group - NHY
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Queues 2032 Future Background AM 11: Britannia Rd & Rose Way 01-12-2024

•	SBR	75	0.35	16.3	0.0	16.3	0.0	15.3			809	0	0	0	0.12		
٠	SBL	55	0.34	61.1	0.0	61.1	14.3	27.8	0.92	20.0	624	0	0	0	0.09		
Ļ	WBT	825	0.23	4.7	0.0	4.7	25.1	34.0 0.	155.7		3523	0	0	0	0.23		la
†	EBT	910	0.24	6.3	0.0	6.3	41.4	49.5	182.4		3761	0	0	0	0.24		Lange of the san
4	EBL	25	0.05	4.2	0.0	4.2	2.0	m3.7		20.0	268	0	0	0	0.04		Alle mineral in
	Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Queue Delay	Total Delay	Queue Length 50th (m)	Queue Length 95th (m)	Internal Link Dist (m)	Turn Bay Length (m)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio	Intersection Cummany	1110 300 and 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

Britannia & RR25 BA Group - NHY Page 17

HCM Signalized Intersection Capacity Analysis 11: Britannia Rd & Rose Way

2032 Future Background AM 01-12-2024

	4	†	ţ	4	٠	<i>*</i>	
Movement	EBL	EBI	WBT	WBR	SBL	SBR	
Lane Configurations	r	‡	4413		F	¥.	
Traffic Volume (vph)	52	910	815	9	22	75	
Future Volume (vph)	52	910	812	9	22	75	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	3.0	0.9	0.9		2.0	5.0	
Lane Util. Factor	9.	20.80	\$0.80		9.	1.00	
	0.1	0.0	0.5		0.1	0.85	
Fit Protected	0.95	9.	3.		0.95	1.00	
Satd. Flow (prot)	1802	4560	4552		1805	1615	
FIt 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)	52	910	815	10	22	75	
RTOR Reduction (vph)	0	0	0	0	0	89	
Lane Group Flow (vph)	52	910	825	0	22	7	
Heavy Vehicles (%)	%0	%0	%0	%0	%0	%0	
	pm+pt	Ϋ́	ΑN		Prot	Perm	
Protected Phases	2	2	9		4		
Permitted Phases	7					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	97.0		0.09	60:0	
Clearance Time (s)	4.0	7.0	7.0		0.9	0.9	
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	0.02	0.24	0.24		0.34	0.05	
Uniform Delay, d1	5.1	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		12	0.1	
Delay (s)	5.2	6.1	4.7		26.7	54.1	
Level of Service	⋖	⋖	⋖		ш	۵	
Approach Delay (s)		6.1	4.7		55.2		
Approach LOS		⋖	¥		ш		
Intersection Summary							
HCM 2000 Control Delay			8.9	H	3M 2000 L	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	ratio		0.26				
Actuated Cycle Length (s)			130.0	Su	Sum of lost time (s)	ime (s)	14.0
Intersection Capacity Utilization	_		38.3%	₫	ICU Level of Service	Service	A
Analysis Period (min)			5				
 c Critical Lane Group 							

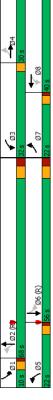
Synchro 11 Report Page 18 Britannia & RR25 BA Group - NHY

Timings 1: Regional Rd 25 & Louis St Laurent Ave

2032 Future Background PM 01-12-2024

→	SBT	4413	880	880	₹	9		ဖ		20.0	32.2	26.0	40.0%	4.2	3.0	-1.0	6.2	Lag	Yes	C-Max	59.5	0.42	0.58	33.0	0.0	33.0	ပ	32.7	ပ										
۶	SBL	-	92	92	pm+pt	-	9	-		2.0	9.0	10.0	7.1%	3.0	1.0	-1.0	3.0	Lead	Yes	None	20.8	0.51	0.53	29.9	0.0	29.9	ပ											ш	
←	NBT	4413	980	980	≨	2		7		20.0	32.2	68.0	48.6%	4.2	3.0	-1.0	6.2	Lag	Yes	C-Max	66.5	0.48	0.70	29.7	0.0	29.7	ပ	29.5	O								Intersection LOS: D	CU Level of Service E	
•	NBL	<u>, </u>	210	210	pm+pt	2	2	2		2.0	9.0	22.0	15.7%	3.0	1.0	-1.0	3.0	Lead	Yes	None	9.08	0.58	0.68	28.6	0.0	28.6	ပ						Sreen				ersection	U Level o	
Ļ	WBT	₩	542	542	Ϋ́	∞		∞		10.0	30.0	40.0	28.6%	4.0	3.0	-1.0	0.9	Lag	Yes	None	30.4	0.22	0.79	28.7	0.0	28.7	ш	55.1	ш				Start of (= 9	೨	
>	WBL	<u>, </u>	330	330	pm+pt	က	∞	ო		10.0	14.0	32.0	22.9%	3.0	0.0	-1.0	2.0	Lead	Yes	None	54.3	0.39	0.81	48.4	0.0	48.4	_						6:SBTL,						
†	EBT	₽	375	375	ΑĀ	4		4		10.0	30.0	30.0	21.4%	4.0	3.0	-1.0	0.9	Lag	Yes	None	23.9	0.17	0.81	63.9	0.0	63.9	ш	58.1	ш				VBTL and						
4	田田	*	202	202	pm+pt	7	4	7		2.0	0.6	22.0	15.7%	3.0	1.0	-1.0	3.0	Lead	Yes	None	43.7	0.31	0.70	4.4	0.0	44.4	۵						o phase 2:h		rdinated).3	tion 84.0%	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	SOT	Approach Delay	Approach LOS	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 Capacity Utilization 84.0%	Analysis Period (min) 15

Splits and Phases: 1: Regional Rd 25 & Louis St Laurent Ave



Synchro 11 Report Page 1 Britannia & RR25 BA Group - NHY

2032 Future Background PM 01-12-2024 Queues 1: Regional Rd 25 & Louis St Laurent Ave

	•	†	\	ţ	•	←	۶	→	
Lane Group	EBF	EBT	WBL	WBT	BE	NBT	SBL	SBT	
Lane Group Flow (vph)	205	490	330	610	210	1410	92	1075	
//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	28.7	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	28.7	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)	28.7	8.06	98.6	106.9	53.1	154.1	#28.3	128.6	
nternal Link Dist (m)		126.1		117.1		481.0		113.5	
Turn Bay Length (m)	90.0		35.0		65.0		80.0		
Sase Capacity (vph)	319	633	470	865	322	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.

Synchro 11 Report Page 2

Britannia & RR25 BA Group - NHY

Č <u>.</u> HCM Signalized Inter 1: Regional Rd 25 & I

	1	†	<i>></i>	\	ţ	4	•	•	•	٠	→	•
Movement	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	₽		r	₩		F	443		r	4413	
Traffic Volume (vph)	202	375	115	330	545	65	210	086	430	92	880	195
Future Volume (vph)	202	375	115	330	545	65	210	980	430	92	880	195
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	0.9		2.0	0.9		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		0.0	1:00	
Flpb, ped/bikes	1:00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Fit	1:00	96.0		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		0.0	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)	202	375	115	330	545	92	210	086	430	92	880	195
RTOR Reduction (vph)	0	21	0	0	7	0	0	53	0	0	9	0
Lane Group Flow (vph)	202	469	0	330	603	0	210	1357	0	92	1057	0
Confl. Peds. (#/hr)	2		2	2		2	2		2	2		2
Heavy Vehicles (%)	2%	1%	%0	%0	%0	2%	1%	%9	1%	%0	4%	%0
Turn Type	pm+pt	Ν		pm+pt	¥		pm+pt	¥		pm+pt	NA	
Protected Phases	7	4		က	∞		2	5		-	9	
Permitted Phases	4			∞			2			9		
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	2.0		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)	784	287		398	89/		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		69.0	69.0		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	9: 1	0 ;		00.5	00.		1.00	0.5		0.5	9:	
Incremental Delay, d2	8.7	7.5		13.3	5.3		6.3	5.0		3.2	4.	
Delay (s)	49.1	63.3		49.4	22.0		26.2	30.7		25.7	32.1	
Level of Service	0	ш		_	ш		ပ	ပ		ပ	ပ	
Approach Delay (s)		59.1			54 4.			30.1			31.6	
Approach LOS		ш			۵			ပ			O	
Intersection Summary												
HCM 2000 Control Delay			40.2	Ĭ	HCM 2000 Level of Service	evel of S	envice		_			
HCM 2000 Volume to Capacity ratio	city ratio		0.77			5			1			
Actuated Cycle Length (s)			140.0	જ	ım of lost	time (s)			18.2			
Intersection Capacity Utilization	tion		84.0%	ಲ	ICU Level of Service	Service			ш			
Analysis Period (min)			15									
Care												

c Critical Lane Group

Britannia & RR25 BA Group - NHY

Timings 2032 Future Background PM 2: Regional Rd 25 & Whitlock Ave 01-12-2024

→	SBT	4413	1070	1070	Ϋ́	9		9		20.0	35.5	81.0	62.3%	4.2	2.3	-1.0	5.5	Lag	Yes	C-Max	91.1	0.70	0.40	8.9	0.0	8.9	∢	8.7	∢								
۶	SBL	*	8	9	pm+pt	-	9	~		7.0	11.0	11.0	8.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	101.8	0.78	0.26	0.9	0.0	0.9	∢										
•	NBT	4413	1620	1620	Ϋ́	7		7		20:0	35.5	81.0	62.3%	4.2	2.3	-1.0	5.5	Lag	Yes	C-Max	93.4	0.72	0.53	9.6	0.0	9.6	∢	5.4	∢								ر
•	NBL	F	6	6	pm+pt	2	2	2		7.0	11.0	11.0	8.5%	3.0	1:0	-1.0	3.0	Lead	Yes	None	102.7	0.79	0.27	2.7	0.0	2.7	∢									300	Mel section Los. B
4	WBR	*	75	75	Perm		∞	∞		10.0	37.5	38.0	29.5%	3.3	3.2	-1.0	5.5			None	16.6	0.13	0.29	13.0	0.0	13.0	Ω						of Green			O. O. I mojecular	ICI Seculor
ţ	WBT	*	8	4	Ϋ́	∞		∞		10.0	37.5	38.0	29.5%	3.3	3.2	-1.0	5.5			None	16.6	0.13	0.17	20.0	0.0	20.0	□	30.2	ပ				TL, Start			_5	= 5
>	WBL	*	52	22	Perm		∞	∞		10.0	37.5	38.0	29.5%	3.3	3.2	-1.0	5.5			None	16.6	0.13	0.15	50.2	0.0	50.2	۵						and 6:SB				
†	EBT	23	9	4	Ϋ́	4		4		10.0	37.5	38.0	29.2%	3.3	3.2	-1.0	5.5			None	16.6	0.13	0.32	31.8	0.0	31.8	O	52.0	٥				2:NBTL				
1	EBF	*	105	105	Perm		4	4		10.0	37.5	38.0	29.2%	3.3	3.2	-1.0	5.5			None	16.6	0.13	09:0	67.4	0.0	67.4	ш					30	ced to phase	7	oordinated	604	Totion 65 20/
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	SOT	Approach Delay	Approach LOS	Intersection Summary	Cvcle Lenath: 130	Actuated Cycle Length: 130	Offset 40 (31%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	Natural Cycle: 85	Control I ype: Actuated-Coordinated	Maximum v/c Ratio: 0.60	Intersection Capacity Hilization 65 3%

Splits and Phases: 2. Regional Rd 25 & Whitlook Ave

Britannia & RR25
Synchro 11 Report
BA Group - NHY
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Queues 2032 Future Background PM 2: Regional Rd 25 & Whitlock Ave

	4	†	/	ļ	4	•	—	۶	→	
Lane Group	EBF	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	
Lane Group Flow (vph)	105	80	25	40	75	06	1660	09	1205	
v/c Ratio	09:0	0.32	0.15	0.17	0.29	0.27	0.53	0.26	0.40	
Control Delay	67.4	31.8	50.2	20.0	13.0	2.7	9.6	0.9	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	20.0	13.0	2.7	9.6	0.9	8.9	
Queue Length 50th (m)	27.2	10.6	6.1	8.6	0.0	1.6	46.4	5.6	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)		67.9		68.1			6.969		481.0	
Turn Bay Length (m)	35.0		65.0		65.0	100.0		100.0		
Base Capacity (vph)	84	452	333	475	44	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										

Britannia & RR25
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HCM Signalized Intersection Capacity Analysis 2032 Future Background PM 2: Regional Rd 25 & Whitlock Ave 01-12-2024

FEI FEI FEI FEI WEI WEI WEI WEI NEI NEI NEI SEI		١	Ť	-	•		/		-		k.	+	*
105 40 25 40 75 90 1620 40 60 1600 1900 1900 1900 1900 1900 1900	Novement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
105 40 40 25 40 75 90 1620 40 60 160 100 100 100 1900 1900 1900 1900	ane Configurations	*	2		<u>, </u>	*	*-	*	444		*	4413	
105 40 40 25 40 75 90 1620 40 60 190	raffic Volume (vph)	105	4	4	52	4	75	8	1620	40	09	1070	135
1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1000	olume (vph)	105	8	9	52	8	75	6	1620	40	09	1070	135
1,00	v (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
1,00	t time (s)	5.5	5.5		5.5	5.5	5.5	3.0	5.5		3.0	5.5	
1.00 0.99 1.00 1.00 1.00 1.00 1.00 1.00	Factor	1.00	1.00		1.00	1.00	1.00	1.0	*0.80		1.00	*0.80	
1,00	/bikes	1.00	0.99		9.	9.	0.98	1.00	1.00		1.00	1.00	
1,00 0,93 1,00 1,00 0,08 1,00	bikes	0.39	1.00		0.39	1.00	1:00	1.00	1.00		1.00	1.00	
1367 1699 1795 1900 1539 1787 4329 1770		1.00	0.93		1.00	1.00	0.85	1.00	1.00		1.00	0.98	
1776 1699 1795 1900 1533 1787 4329 1770 1367 100	ted	0.95	1.00		0.95	1.00	1:00	0.95	1.00		0.95	1.00	
0.73 100 0.70 100 0.16 100 0.09 1367 1699 1332 1900 1539 308 4329 164 1 100 1.00 1.00 1.00 1.00 1.00 1.00 1.0	v (prot)	1776	1699		1795	1900	1539	1787	4329		1770	4257	
1367 1699 1332 1900 1539 308 4329 164 100 100 100 100 100 100 100 100 100 105 48 0 25 40 10 90 1620 40 60 105 48 0 25 40 10 90 1659 0 60 105 48 0 25 40 10 90 1659 0 60 105 48 0 25 40 10 90 1659 0 60 105 48 0 25 40 10 90 1659 0 60 106 48 0 25 40 10 90 1659 0 60 106 126 156	ted	0.73	1.00		0.70	1.00	1:00	0.16	1.00		0.09	1.00	
1,00 1,00	v (perm)	1367	1699		1332	1900	1539	308	4329		164	4257	
105 40 40 25 40 75 90 1620 40 60 0 105 40 105 40 22 40 10 90 1620 40 60 0 1 105 48 5 5 5 40 10 90 1629 0 60 60 60 60 60 60 60 60 60 60 60 60 6	r 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
105 48 0 0 0 0 0 0 0 0 0	(hdv)	105	4	40	22	4	75	6	1620	40	09	1070	135
15	eduction (vph)	0 10	88	0	0 8	0 9	92	0 8	- 6	0	0 8	_	0
1,	up Flow (vpn)	2	\$	5 L	53 L	9	2 4	3	600	D I	9	1198	>
176 176	ds. (#/nr)	ი პ	à	n è	ი გ	ò	o è	76	è	o 5	ဂ	ò	ò
NA Perm NA NA Perm N	shicles (%)	°.	2%	%	%	% :	3%	%	%6	%0	%7.	%	% O
156 156 156 156 156 159 916 95.8 156	ā	Perm	Š,		Perm	¥°	Perm	bm+pt	¥°		bm+pt	≨ '	
156 156	Phases		4		•	œ	•	ဂ (7			٥	
156 156 156 156 156 195 991 916 958 160 160 166 166 1010 926 97.8 0.13 0.13 0.13 0.13 0.13 0.78 0.78 0.13 0.13 0.13 0.13 0.78 0.78 0.75 0.13 0.13 0.13 0.13 0.78 0.75 144 216 170 242 196 0.34 308 3.0 0.03 0.02 0.01 0.19 0.20 0.08 0.22 0.15 0.14 0.19 0.20 0.09 0.22 0.15 0.14 0.10 0.19 0.10 0.10 1.00 1.00 1.00 0.33 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.2	Phases	4			∞ !		∞ !	2			9		
166 166 166 166 161 0 926 978 167 168 166 166 161 0 926 978 168 168 168 168 161 0 101 0 926 978 169 169 170 242 196 334 308 3.0 174 216 170 242 196 334 3083 207 174 216 170 242 196 334 3083 207 108 0.02 0.02 0.01 0.03 0.02 109 0.02 0.04 0.04 0.04 0.05 100 1.00 1.00 1.00 0.03 0.20 100 1.00 1.00 1.00 0.03 0.05 100 1.00 1.00 1.00 0.04 0.06 100 100 1.00 1.00 0.04 0.06 100 101 0.04 0.06 0.08 111 HCM2000 Level of Service B 1300 Sum of lost time (s) 14.0 140 140 140 140 140 150 150 150 140 140 150 150 150 140 140 150 150 150 140 140 150 150 150 140 140 150 150 150 140 140 150 150 150 140 140 150 150 150 140 140 150 150 150 150 140 150 150 150 150 140 150 150 150 150 140 150 150 150 150 140 150 150 150 150 140 150 150 150 150 140 150 150 150 150 140 150 150 150 150 140 150 150 150 150 140 150 150 150 150 140 150 150 150 150 140 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150	Green, G (s)	15.6	15.6		15.6	15.6	15.6	0.06	91.6		92.8	0.0	
0.13 0.13 0.13 0.13 0.13 0.14 0.78 0.71 0.75 9.5 6.5 6.5 6.5 6.5 6.5 4.0 6.5 4.0 1.7 216 170 242 196 334 3083 207 0.03 0.22 0.05 0.07 0.02 0.03 0.00 0.06 0.22 0.15 0.17 0.05 0.27 0.54 0.29 5.36 50.9 50.4 50.5 49.8 4.1 8.7 5.6 0.20 0.20 0.10 1.00 1.00 1.00 0.33 0.53 0.53 0.20 0.20 0.4 0.3 0.1 0.0 0.6 0.8 1.00 0.20 0.4 0.3 0.1 0.4 0.6 0.8 E	Green, g (s)	16.6	16.6		16.6	16.6	16.6	101.0	92.6		8.76	91.0	
Signature Sign	g/C Ratio	0.13	0.13		0.13	0.13	0.13	0.78	0.71		0.75	0.70	
s) 30 30 30 30 30 30 30 30 30 30 30 30 30	Time (s)	6.5	6.5		6.5	6.5	6.5	4.0	6.5		4.0	6.5	
174 216	xtension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
0.03 0.02 c0.02 c0.08 c0.02 c0.06 c0.02 c0.04 c0.19 c0.02 c0.04 c0.19 c0.02 c0.04 c0.19 c0.02 c0.04 c0.10 c	Cap (vph)	174	216		170	242	196	334	3083		207	2979	
60.08 0.02 0.07 0.01 0.19 0.29 0.20 0.00 0.20 0.00 0.22 0.01 0.05 0.29 0.29 0.05 0.02 0.05 0.05 0.05 0.05 0.02 0.02	Prot		0.03			0.02		c0.02	c0.38		c0.02	0.28	
0.60 0.22 0.15 0.17 0.05 0.27 0.54 0.29 0.59 0.50 0.50 0.50 0.50 0.50 0.50 0.5	Perm	90.09			0.02		0.01	0.19			0.20		
536 509 504 505 498 41 87 56 1.00 1.00 1.00 1.00 1.00 0.33 0.53 1.00 42 594 514 50.8 60.9 49.9 1.7 5.2 6.4 E D D D D A A A A S5.9 50.3 1.1 A A A A In HCM 2000 Level of Service B In Capacity ratio 0.54 30.0 Sum of lost time (s) 14.0		0.60	0.22		0.15	0.17	0.05	0.27	0.54		0.29	0.40	
1.00 1.00 1.00 1.00 1.00 0.33 0.53 1.00 0.8 0.8 0.5 0.4 0.5 0.4 0.6 0.8 0.8 0.5 0.4 0.5 0.4 0.6 0.8 0.8 0.9 0.7 0.4 0.6 0.8 0.8 0.9 0.7 0.7 0.7 0.8 0.9 0.8 0.9 0.7 0.7 0.8 0.9 0.8 0.9 0.7 0.7 0.8 0.9 0.8 0.9 0.8 0.7 0.8 0.9 0.8 0.7 0.8 0.8 0.7 0.8 0.8 0.8 0.8 0.8 0.8 0.8 0.8 0.8 0.8	Jelay, d1	53.6	50.9		50.4	50.5	49.8	4.1	8.7		9.9	8.1	
d2 5.8 0.5 0.4 0.3 0.1 0.4 0.6 5.2 5.8 0.5 5.9 4.9 1.7 5.2 5.2 5.9 5.0 4.9 1.7 5.2 5.9 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0	on Factor	1.00	1.00		1.00	1.00	1:00	0.33	0.53		1.00	1.00	
59.4 51.4 50.8 50.9 49.9 1.7 5.2 E D D D A A A S 55.9 50.3 5.1 E D D D A A A A A A A A A A A A A A A A	tal Delay, d2	2.8	0.5		0.4	0.3	0.1	0.4	9.0		0.8	0.4	
E D D D A A A 5.1 any Total Capacity ratio		59.4	51.4		20.8	20.9	49.9	1.7	5.2		6.4	8.5	
55.9 50.3 5.1 Bary 11.1 HCM 2000 Level of Service 0.54 (24) (24) (24) (24) (24) (24) (24) (24	Service	ш	□		□	□	۵	⋖	⋖		∢	∢	
11.1 HCM 2000 Level of Service 0.54 Sum of lost time (s)	Delay (s)		55.9			50.3			5.1			8.4	
11.1 HCM 2000 Level of Service 0.54 Sum of lost time (s)	SOT		ш			۵			∢			∢	
11.1 HCM 2000 Level of Service 0.54 Sum of lost time (s)	on Summary												
0.54 130.0 Sum of lost time (s)	0 Control Delay			11.1	Ĭ	3M 2000	Level of	Service		В			
130.0 Sum of lost time (s)	0 Volume to Capac	ity ratio		0.54									
	Cyde Length (s)			130.0	ઝ	um of lost	time (s)			14.0			
ntersection Capacity Utilization 65.3% ICU Level of Service C	on Capacity Utilizat	ion		65.3%	೦	U Level o	of Service			ပ			
Analysis Period (min) 15	Period (min)			15									
	(

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Timings 5: Regional Rd 25 & Etheridge Ave/Collector Road

2032 Future Background PM 01-12-2024

	_	4	2	5	⋖	9		9		0	4	0	%	2	2	0	4	б	S	×	2	2	2	7	0	7	A	0	ℴ										
→	SBT	¥	965	965	₹					20.0	38.4	70.0	53.8%	4	2	-1.0	5.4	Б	Yes	C-Max	93.5	0.7	0.3	3.7	0.0	സ്	_	4.0	_										
۶	SBL	-	22	22	pm+pt	Ψ-	9	Ψ.		7.0	11.0	11.0	8.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	101.5	0.78	0.25	10.9	0.0	10.9	В										ı	m	
←	NBT	4413	1635	1635	≨	7		7		20.0	38.4	70.0	23.8%	4.2	2.2	-1.0	5.4	Lag	Yes	C-Max	93.3	0.72	0.54	6.5	0.0	6.5	∢	6.4	∢								LOS: A	1 Service	
•	NBL	۴	09	09	pm+pt	2	2	2		7.0	11.0	11.0	8.5%	3.0	1.0										0.0	3.0	∢						of Green				Intersection LOS: A	CU Level of Service B	
ţ	WBT	£,	0	0	¥	∞		∞		10.0	36.2	37.0	28.5%	3.3	5.9	-1.0	5.2	Lag	Yes	None	11.7	0.09	0.13	8.0	0.0	0.8	∢	31.4	ပ				TL, Start				<u></u> = 9	೨	
\	WBL	*	40	40	Perm		∞	∞		10.0	36.2	37.0	28.5%	3.3	5.9	-1.0	5.2	Lag	Yes	None	11.7	0.09	0.31	62.0	0.0	62.0	ш						and 6:SB						
†	EBT	\$	0	0	¥	4		4		10.0	36.2		37.7%				5.2				21.3	0.16	90.0	0.3	0.0	0.3	∢	36.2	۵				2:NBTL						
•	EBL	<u>"</u>	75	75	pm+pt	7	4	7		7.0	11.0	12.0	9.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	22.5	0.17	0.33	48.2	0.0	48.2	٥						d to phase		inated		Š	on 61.9%	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effet Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	ros	Approach Delay	Approach LOS	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 Capacity Utilization 61.9%	Analysis Period (min) 15

Splits and Phases: 5: Regional Rd 25 & Etheridge Ave/Collector Road



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2032 Future Background PM 01-12-2024 Queues 5: Regional Rd 25 & Etheridge Ave/Collector Road

	₹	†	\	↓	√	← إ	ع مر	→ 5	
	EBL	EBI	WBL	WBT	NBL	NBT	SBL	SBI	
ane Group Flow (vph)	75	52	9	9	9	1700	22	1080	
	0.33	90.0	0.31	0.13	0.16	0.54	0.25	0.35	
	48.2	0.3	62.0	0.8	3.0	6.5	10.9	3.7	
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	48.2	0.3	62.0	0.8	3.0	6.5	10.9	3.7	
Jueue Length 50th (m)	17.2	0.0	10.3	0.0	7.	46.5	1.4	47.6	
λueue Length 95th (m)	31.1	0.0	22.4	0.0	m3.0	64.9	7.1	7.5	
ntemal Link Dist (m)		53.9		63.5		292.1		6.969	
urn Bay Length (m)	40.0		40.0		0.07		0.07		
iase Capacity (vph)	529	664	344	531	380	3134	221	3113	
tarvation Cap Reductn	0	0	0	0	0	0	0	0	
pillback Cap Reductn	0	0	0	0	0	0	0	0	
torage Cap Reductn	0	0	0	0	0	0	0	0	
teduced v/c Ratio	0.33	0.04	0.12	0.08	0.16	0.54	0.25	0.35	
terrection Cummany									
ıaı y									

m Volume for 95th percentile queue is metered by upstream signal

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2032 Future Background PM 01-12-2024 00.00 65 900 88.4 89.4 0.69 6.4 3.0 3002 0.57 10.4 0.53 0.4 5.9 A A 5.8 A A 1900 60 60 1900 3.0 1.00 1.00 0.95 1805 0.20 374 1.00 60 60 60 60 00% 94.1 96.1 96.1 4.0 3.0 3.0 0.01 4.9 0.60 0.17 A.9 40 00. 0 0 0 0 0 0 0.02 55.8 1.00 0.1 0.1 55.8 E 57.7 8.7 9.7 0.07 6.2 3.0 120 0.00 HCM Signalized Intersection Capacity Analysis 5: Regional Rd 25 & Etheridge Ave/Collector Road 8 8.7 9.7 0.07 6.2 3.0 25 25 1900 0.00 0.00 0.00 0.00 20.1 0.15 6.2 3.0 249 0.00 0.02 46.6 0.0 0.0 D D D D 75 75 75 3.0 3.0 1.00 1.00 0.95 1752 0.56 1.00 75 75 19.1 20.1 4.0 3.0 200 200 200 20.0 60.03 48.6 1.2 1.2 49.8 Frit Fit Protected Satd. Flow (part) Fit Permitted Satd. Flow (perm) Adi. Flow (ph) RTOR Reduction (vph) Lane Group Flow (vph) Turn Type
Protected Phases
Protected Phases
Actuated Green, G (s)
Effective Green, g (s)
Actuated Green, g (s)
Actuated Green, g (s)
Actuated Green, g (s)
Vehicle Extension (s)
Lane Grp Cap (vph)
Ws Ratio Port v/c Ratio Uniform Delay, d1 Progression Factor Incremental Delay, d2 Lane Configurations
Traffic Volume (vph)
Future Volume (vph)
Ideal Flow (vphpl)
Total Lost time (s)
Lane Util. Factor Heavy Vehicles (%)

88.6 89.6 0.69 6.4 3.0 3.0 2979 0.25

₹

pm+pt

0.36 8.4 0.37 0.3 3.4

⋖ 16.6 B

HCM 2000 Level of Service

Sum of lost time (s) ICU Level of Service

7.9 0.53 130.0 61.9%

HCM 2000 Control Delay
HCM 2000 Volume to Capacity ratio
Aduated Cycle Length (s)
Intersection Capacity Ulitzation
Analysis Period (min)
c Critical Lane Group

ntersection Summary

Delay (s) Level of Service Approach Delay (s) Approach LOS

94.5 96.5 0.74 4.0 3.0 1.97 0.19 0.28 6.9 1.97 0.7 1.97

55 55 3.0 3.0 11.00 0.95 0.08 148 148 1.00 55 0

Britannia & RR25 BA Group - NHY

Britannia & RR25 BA Group - NHY

2032 Future Background PM 01-12-2024 Timings 7: Regional Rd 25 & Britannia Rd

-	SBT	4	822	822	¥	9		9		20.0	49.7	<u>\$</u>	41.5%	4.2	3.5	-1.0	6.7	Lag	Yes	C-Max	59.7	0.46	0.45	17.6	0.0	17.6	Ф	24.5	O										
۶	SBL	K	125	125	Prot	Ψ-		-		7.0	11.0	12.0	9.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	11.0	0.08	0.43	74.4	0.0	74.4	ш										ı	ш	
-	NBT	4413	1410	1410	Ϋ́	5		5		20.0	49.7	58.0	44.6%	4.2	3.5	-1.0	6.7	Lag	Yes	C-Max	64.2	0.49	0.87	35.0	0.0	35.0	۵	38.0	۵								LOS: D	1 Service	
•		ı	250			ა		2		7.0	11.0	16.0	12.3%	3.0	1.0	-1.0	3.0	Lead				0.12				60.1	ш						Green				Intersection LOS: D	CU Level of Service E	
ţ	WBT	4413	200	200	Ϋ́	80		80		10.0	45.5	49.0	37.7%	4.2	3.3	-1.0	6.5	Lag	Yes	None	29.7	0.23	92.0	39.0	0.0	39.0	۵	61.8	ш				, Start of				≝	2	
>	WBL	K	300	300	Prot	က		က		7.0	11.0	14.0	10.8%	3.0	1.0	-1.0	3.0	Lead	Yes	None	11.0	0.08	0.38	123.2	0.0	123.2	ட						nd 6:SBT						
†	EBT	4413	320	320	Ϋ́	4		4		10.0	45.5	46.0	35.4%	4.2	3.3	-1.0	6.5	Lag	Yes	None	24.5	0.19	0.42	45.0	0:0	45.0	□	46.6	۵				2:NBT						
4	EBL	K	9	40	Prot	7		7		7.0	11.0	11.0	8.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	8.0	90:0	0.20	60.5	0:0	60.5	ш						to phase		inated		ò	n 83.6%	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	SOT	Approach Delay	Approach LOS	Intersection Summary	Cvcle Lenath: 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 Capacity Utilization 83.6%	Analysis Penod (min) 15

100 € Ø3 Splits and Phases: 7: Regional Rd 25 & Britannia Rd 1 Ø5 V Ø6(R) Ø2 (R)

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Queues 7: Regional Rd 25 & Britannia Rd

2032 Future Background PM 01-12-2024

	SBT	905	0.45	7.6	0.0	7.6	5.1	0.7	2.1		2007	0	0	0	0.45	
ر ب	SBL S		0.43 0						23	0.06	298 20	0	0	0	0.42 0	
←	NBT	1875	0.87	35.0	0.0	35.0	181.3	#258.8	165.3		2146	0	0	0	0.87	
•	NBL	250	09.0	60.1	0.0	60.1	33.4	46.3		90.0	425	0	0	0	0.59	
ţ	WBT	810	92.0	39.0	0.0	39.0	45.5	48.5	190.1		1478	0	0	0	0.55	
>	WBL	300	0.98	123.2	0.0	123.2	9.44	#74.9		120.0	302	0	0	0	0.98	
†	EBT	360	0.42	45.0	0.0	45.0	¥.	43.2	377.9		1371	0	0	0	0.26	
1	EBL	40	0.20	60.5	0.0	60.5	5.3	11.7		0.09	203	0	0	0	0.20	
	Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Queue Delay	Total Delay	Queue Length 50th (m)	Queue Length 95th (m)	Internal Link Dist (m)	Turn Bay Length (m)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio	

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cydes.

Synchro 11 Report Page 11 Britannia & RR25 BA Group - NHY

HCM Signalized Intersection Capacity Analysis 2032 Future Background PM 7: Regional Rd 25 & Britannia Rd 01-12-2024

→	SBT SBR	44	855 50		900 1900	6.7	08.0	0.99	00.1	4358	1.00	358	1.00 1.00		4 0	901 0	4% 0%	W	9		58.0	59.0	0.45	7.7	3.0	1977	0.21		0.46	24.4	99.0	0.7	17.0	В	23.6	O							
٠	SBL	* **			_		*			3467 4		4	1.00		0	125	1%	Prot	_						3.0	293 1							. 9.17		•								
•	NBR		465	465	1900								1.00	465	0	0	5%																					٥		19.2	ш		
•	NBT	444	1410	1410	1900	6.7	*0.80	96.0	1.00	4273	1.00	4273	1.00	1410	34	1841	3%	A	2		62.5	63.5	0.49	7.7	3.0	2087	c0.43		0.88	29.9	1.00	5.8	35.7	Ω	38.2	Ω							
•	NBL	<u>.</u>	250	220	1900	3.0	0.97	1.00	0.95	3502	0.95	3502	1.00	220	0	250	%0	Prot	2		14.5	15.5	0.12	4.0	3.0	417	c0.07		0.60	54.3	1:00	2.3	9.99	ш				Service			an.		
4	WBR		310	310	1900								1.00	310	0	0	%																					HCM 2000 Level of Service		t time (s)	ICU Level of Service		
ţ	WBT	444	200	200	1900	6.5	*0.80	0.94	1.00	4256	1.00	4256	1.00	200	66	711	1%	N	∞		28.7	29.7	0.23	7.5	3.0	972	c0.17		0.73	46.5	0.88	2.8	43.7	Ω	9.59	ш		ICM 2000		ol Jo mn	CU Level		
>	WBL	F	300	900	1900	3.0	0.97	1.00	1.00	3614	1.00	3614	1.00	300	0	300	2%	Prot	က		10.0	11.0	0.08	4.0	3.0	305	c0.08		0.98	59.4	1.33	45.9	124.8	ш				ľ		(J)	<u>⊆</u>		
<i>></i>	EE		40	8	1900								1.00	9	0	0	%0																					42.3	0.85	130.0	83.6%	15	
†	EBT	441	320	320	1900	6.5	*0.80	0.98	1.00	4484	1:00	4484	1.00	320	=	349	%0	A	4		24.3	25.3	0.19	7.5	3.0	872	0.08		0.40	45.7	1.00	0.3	46.0	Ω	47.4	□							
^	田田	£	4	8	1900	3.0	0.97	1.00	0.95	3303	0.95	3303	1.00	9	0	9	%9	Prot	7		5.6	9.9	0.02	4.0	3.0	167	0.01		0.24	59.3	1.00	0.7	0.09	ш					ity ratio		ion		
	Movement	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Ideal Flow (vphpl)	Total Lost time (s)	Lane Util. Factor	ž	Flt Protected	Satd. Flow (prot)	FIt Permitted	Satd. Flow (perm)	Peak-hour factor, PHF	Adj. Flow (vph)	RTOR Reduction (vph)	Lane Group Flow (vph)	Heavy Vehicles (%)	Turn Type	Protected Phases	Permitted Phases	Actuated Green, G (s)	Effective Green, g (s)	Actuated g/C Ratio	Clearance Time (s)	Vehicle Extension (s)	Lane Grp Cap (vph)	v/s Ratio Prot	v/s Ratio Perm	v/c Ratio	Uniform Delay, d1	Progression Factor	Incremental Delay, d2	Delay (s)	Level of Service	Approach Delay (s)	Approach LOS	Intersection Summary	HCM 2000 Control Delay	HCM 2000 Volume to Capacity ratio	Actuated Cycle Length (s)	Intersection Capacity Utilization	Analysis Period (min)	

Britannia & RR25 BA Group - NHY Page 12

Timings 2032 Future Background PM 10: Britannia Rd & Farmstead Dr 01-12-2024

•	SBR	¥.	15	15	Perm		œ	8	10.0	15.3	41.0	39.0%	3.3	2.0	-1.0	4.3			None	11.4	0.11	0.08	19.9	0.0	19.9	a						reen				ntersection LOS: A	CU Level of Service A	
<u>و</u>	L SBL	<u>بر</u>			Ę	8 9		9				39		2 2.0		4.3	_	"	_					0.0			41.4	٥				T, Start of G				Ĭ	ਹ	
†	T WBT	4		7	z	2 (2 (4 29.4		20				4 5.4	Lag		ن			0		0.0			4	۷ V				and 6:WB						
T	. EBJ	4			z					29.4		6) 2.2		5.	-		ن			C		0.0		- , -	2.1	`				2:EBTL					%	
•	Lane Group EBL	Lane Configurations		Future Volume (vph) 15	-wd		Se	Detector Phase 5	9	Minimum Split (s) 11.0		9		All-Red Time (s) 1.0	(s	Total Lost Time (s) 3.0	_	Lead-Lag Optimize? Yes	_	Act Effct Green (s) 89.3	g/C Ratio	v/c Ratio 0.03		×	Total Delay 1.9	V SOT	Approach Delay	Approach LOS	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 Capacity Utilization 33.1%	Analysis Period (min) 15

Splits and Phases: 10: Britannia Rd & Farmstead Dr



Britannia & RR25 BA Group - NHY Page 13

2032 Future Background PM 01-12-2024 Queues 10: Britannia Rd & Farmstead Dr

	•	†	ţ	٠	*	
Lane Group	EBF	EBT	WBT	SBL	SBR	
Lane Group Flow (vph)	15	345	800	22	15	
v/c Ratio	0.03	0.0	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	2.0	12.8	1.1	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	909	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	0.00	0.03	
Intersection Summary						

Synchro 11 Report Page 14 Britannia & RR25 BA Group - NHY

HCM Signalized Intersection Capacity Analysis 10: Britannia Rd & Farmstead Dr

2032 Future Background PM 01-12-2024 12.7 HCM 2000 Level of Service Sum of lost time (s) ICU Level of Service 8 8.4 9.4 0.09 3.0 144 8.4 9.4 0.09 5.3 3.0 155 c0.03 55 55 55 1900 1.00 1.00 0.95 1.736 0.95 1.00 55 55 0.35 44.9 1.00 1.4 46.3 D D D D 80 80 78.1 79.1 0.75 6.4 3.0 3353 c0.18 5.8 0.24 105.0 33.1% 720 720 720 1900 5.4 *0.80 0.98 1.00 4452 1.00 720 5 5 720 5 720 720 720 720 720 720 720 720 720 0.24 3.9 1.00 0.2 4.1 A 84.9 85.9 0.82 6.4 3.0 3730 c0.08 N S HCM 2000 Control Delay
HCM 2000 Volume to Capacity ratio
Aduated Cycle Length (s)
Interesction Capacity Utilization
Analysis Period (min)
c Critical Lane Group 84.9 85.9 0.82 4.0 3.0 4.0 0.00 0.00 0.03 1.8 1.00 0.0 0.0 15 15 3.0 3.0 1.00 1.00 1.00 0.29 548 548 548 548 1.00 1.00 1.00 Fit Protected Satt Fow (pot)

Fit Permitted (pot)

Fit Permitted (perm)

Peak-hour fector, PHF

Adj. Frow (phh)

Lane Group Flow (pth) v/c Ratio Uniform Delay, d1 Progression Factor Incremental Delay, d2 Turn Type
Prosteded Phases
Permited Phases
Actuated Green, G (s)
Effective Green, g (s)
Actuated g/C Ratio
Clearance Time (s)
Vehicle Extension (s)
Lane Grp Cap (vph)
WS Ratio Perm Lane Configurations
Traffic Volume (vph)
Future Volume (vph)
Ideal Flow (vphpl)
Total Lost time (s)
Lane Util. Factor ntersection Summary Delay (s) Level of Service Approach Delay (s) Approach LOS Heavy Vehides (%)

Synchro 11 Report Page 15 Britannia & RR25 BA Group - NHY

Timings 2032 Future Background PM 11: Britannia Rd & Rose Way 01-12-2024

	4	†	ţ	٠	`	
Lane Group	EBL	EBT	WBT	SBL	SBR	
Lane Configurations	*	**	4413	*	ĸ_	
Traffic Volume (vph)	8	830	1060	8	50	
Future Volume (vph)	8	830	1060	8	20	
Turn Type	pm+pt	Ϋ́	¥	Prot	Perm	
Protected Phases	2	2	9	4		
Permitted Phases	7				4	
Detector Phase	2	2	9	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	
Total Split (%)	11.5%	61.5%	%0.09		3.5%	
Yellow Time (s)	3.0	4.0	4.0		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	
Total Lost Time (s)	3.0	0.9	0.9	2.0	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	28.7	18.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	2.8	2.5	2.0	28.7	18.8	
ros	∢	∢	∢	ш	В	
Approach Delay		5.6	2.0	33.8		
Approach LOS		∢	∢	ပ		
Intersection Summary						
Cycle Length: 130						
Actuated Cycle Length: 130						
Offset 65 (50%), Referenced to phase 2:EBTL and 6:WBT, Start of Green	to phase	2:EBTL a	Ind 6:WB	T, Start of	ireen	
Natural Cycle: 85						
Control Type: Actuated-Coordinated	dinated					
Maximum v/c Ratio: 0.31						
Intersection Signal Delay: 5.0	_			흐	Intersection LOS: A	
Intersection Capacity Utilization 48.5%	on 48.5%			⊇	ICU Level of Service A	
Analysis Period (min) 15						

Britannia & RR25
BA Group - NHY
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Queues 11: Britannia Rd & Rose Way 2032 Future Background PM

Lane Group El Lane Group Flow (vph)	EBL				
		EBT	WBT	SBL	SBR
	8	830	1120	30	50
	0.20	0.21	0.31	0.20	0.27
Control Delay 2	2.8	2.5	2.0	28.7	18.8
Queue Delay (0.0	0.0	0.0	0.0	0.0
Total Delay 2	2.8	2.5	2.0	28.7	18.8
Queue Length 50th (m)	5.9	18.5	36.9	7.7	0.0
	m4.5 r	m23.7	44.3	18.0	13.0
Internal Link Dist (m)		190.1	148.0	97.6	
Turn Bay Length (m) 50	50.0			20.0	
Base Capacity (vph) 4	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.	0.18	0.21	0.31	0.05	0.08
Intersection Summary					
m Welliams for OFth momentals and		pososom	, orton , id	ou oio ou	
 M. Volume for 95th percentile queue is metered by upstream signal 	ene is	metered	by upsire,	am Sigria	

Britannia 8, RR25 BA Group - NHY

HCM Signalized Intersection Capacity Analysis 11: Britannia Rd & Rose Way

2032 Future Background PM 01-12-2024

																																						A		14.0	A		
•	SBR	R.	20	20	1900	5.0	1:00	0.85	1.00	1615	1.00	1615	1:00	20	47	က	%0	Perm		4	8.0	0.6	20.0	0.9	3.0	111		0.00	0.03	56.4	1:00	0.1	56.5	ш				HCM 2000 Level of Service		time (s)	Service		
<u>م</u> ر	SBL ×		8		1900	2.0	1.00	1:00	0.95	1805	0.95		0.1		0 0		%0 %	Prot	4		8.0	9.0	0.07	0.9	3.0	124	c0.02		0.24	57.3	1:0	1.0	58.3	ш	57.2	ш		HCM 2000 I		Sum of lost time (s)	ICU Level of Service		
4	WBR				1900									_			%0																										
ţ	WBT	4₩₽	1060	1060	1900		*		1.00		1.00	4523	1.00	1060	2	1118	%0	Ϋ́	9		99.4	100.4	0.77	7.0	3.0	3493	c0.25		0.32	4.5	1.00	0.2	4.7	¥	4.7	⋖		5.7	0.31	130.0	48.5%	15	
†	EBT	₩	830	830	1900	0.9	*0.80	1.00	1.00	4560	1.00	4560	1:00	830	0	830	%0	Ϋ́	2		109.0	110.0	0.85	7.0	3.0	3858	c0.18		0.22	9.	1.24	0.1	2.4	∢	2.5	⋖							
1	田田	*	8	8	1900	3.0	1.00	1.00	0.95	1805	0.19	363	1.00	8	0	8	%0	pm+pt	2	2	109.0	110.0	0.85	4.0	3.0	380	0.01	0.17	0.21	6.1	1.35	0.2	2.8	¥					city ratio		tion		
	Movement	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Ideal Flow (vphpl)	Total Lost time (s)	Lane Util. Factor	Fr	Fit Protected	Satd. Flow (prot)	Flt Permitted	Satd. Flow (perm)	Peak-hour factor, PHF	Adj. Flow (vph)	RTOR Reduction (vph)	Lane Group Flow (vph)	Heavy Vehicles (%)	Turn Type	Protected Phases	Permitted Phases	Actuated Green, G (s)	Effective Green, g (s)	Actuated g/C Ratio	Clearance Time (s)	Vehicle Extension (s)	Lane Grp Cap (vph)	v/s Ratio Prot	v/s Ratio Perm	v/c Ratio	Uniform Delay, d1	Progression Factor	Incremental Delay, d2	Delay (s)	Level of Service	Approach Delay (s)	Approach LOS	Intersection Summary	HCM 2000 Control Delay	HCM 2000 Volume to Capacity ratio	Actuated Cycle Length (s)	Intersection Capacity Utilization	Analysis Period (min)	c Critical Lane Group

Bynchro 11 Report
BA Group - NHY
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2037 Future Background Traffic Conditions

2037 Future Background AM 01-12-2024 Timings 1: Regional Rd 25 & Louis St Laurent Ave

→	SBT	4413	1255	1255	ΑĀ	9		9		20.0	32.2	52.0	37.1%	4.2	3.0	-1.0	6.2	Lag	Yes	C-Max	47.8	0.34	0.93	9.99	0.0	9.99	ш	55.8	ш										
٠	SBL	*	92	92	pm+pt	-	9	Ψ.		2.0	0.6				1.0	-1.0	3.0	Lead		None	57.3	0.41	0.50	36.3	0:0	36.3	٥											ш	
-	NBT	4413	1100	1100	Ϋ́	7		2		20.0	32.2	22.0	39.3%	4.2	3.0	-1.0	6.2	Lag	Yes	C-Max	52.5	0.38	0.89	48.5	0.0	48.5	٥	48.2	٥								J.SOJ.	ICU Level of Service F	
•	NBL	*	105	105	pm+pt	2	7	2		2.0	0.6									None			0.65			44.1	_						Green				Intersection LOS: D	U Level	
ţ	WBT	₩	260	290	¥	∞		∞		10.0	30.0											0.33	0.57	40.4	0.0	40.4	Ω	50.1	Ω				., Start of				드	9	
•	WBL	*	485	485	pm+pt	က	∞	က		10.0	14.0							Lead	Yes	None	72.1	0.52	0.93	63.1	0.0	63.1	ш						d 6:SBTL						
†	EBT	₩	535	535	¥	4		4		10.0	30.0									None					0.0	69.1	ш	58.4	ш				::NBTL ar					. 0	
1	EBF	*	270	270	pm+pt	7	4	7		2.0	9.0	27.0	19.3%	3.0	1.0	-1.0	3.0	Lead	Yes	None	52.9	0.38	0.65	29.6	0.0	29.6	O						phase 2		dinated		7.	ion 96.8%	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	SOT	Approach Delay	Approach LOS	Intersection Summary	Cycle Lenath: 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 Capacity Utilization 96.8%	Analysis Period (min) 15

↑ Ø5 • • PØ6 (R)

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03

Splits and Phases: 1: Regional Rd 25 & Louis St Laurent Ave

→ Ø2 (R)

Synchro 11 Report Page 1 Britannia & RR25 BA Group - NHY

Queues 1: Regional Rd 25 & Louis St Laurent Ave

2037 Future Background AM 01-12-2024

SBL SBT 65 1350 0.50 0.93 36.3 56.8 0.0 0.0 36.3 56.8 11.0 161.0 20.8 #200.1 113.5 1450 80.0 131 0 0 0.50 1405 0.89 48.5 0.0 48.5 162.0 #200.1 481.0 1584 NBL 105 0.65 44.1 0.0 44.1 18.2 #38.0 65.0 164 WBT 655 0.57 40.4 40.4 79.1 105.6 EBL EBT WBL 270 725 485 0.05 0.92 0.93 0.0 0.0 0.0 2.96 69.1 63.1 43.2 105.5 116.5 62.5 #144.0 #179.3 126.1 35.0 548 90.0 479 792 0 0 0 0 0 0 0.56 0.92 Control Delay

Queue Delay

Total Delay

Queue Enright 50th (m)

Queue Length 95th (m)

Internal Link Dist (m)

Turn Bay Length (m)

Base Capacity (nph)

Sanvation Cap Reduch

Spillback Cap Reduch

Sorage Cap Reduch

Sorage Cap Reduch

Reduced v/c Ratio Lane Group Lane Group Flow (vph)

95th percentile volume exceeds capacity, queue may be longer Queue shown is maximum after two cycles.

Synchro 11 Report Page 2 Britannia & RR25 BA Group - NHY

HCM Signalized Intersection Capacity Analysis 2037 Future Background AM 1: Regional Rd 25 & Louis St Laurent Ave

Movement EB1										NBR	a		0
1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,	Movement	EBL	EBT	EBR	WBL	MBI	WBR	NBL	NBI		ODL	SBI	SBR
270 535 190 486 560 95 105 1100 305 65 1255 1900	Lane Configurations	_	₩.		<u>, </u>	₩		F	444		<u>,-</u>	441	
270 555 190 496 560 95 100 300 1900 <td>raffic Volume (vph)</td> <td>270</td> <td>535</td> <td>130</td> <td>485</td> <td>260</td> <td>92</td> <td>105</td> <td>1100</td> <td>302</td> <td>65</td> <td>1255</td> <td>95</td>	raffic Volume (vph)	270	535	130	485	260	92	105	1100	302	65	1255	95
1900 1900	uture Volume (vph)	270	232	190	482	290	8	105	1100	302	92	1255	95
3.0 6.0 2.0 6.0 3.0 6.2 3.0 6.2 1.00 1	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
1,00 0.55	Total Lost time (s)	3.0	0.9		2.0	0.9		3.0	6.2		3.0	6.2	
1,00	Lane Util. Factor	9:	0.95		1.00	0.95		1.00	*0.80		1.00	*0.80	
1,00 1,00	Frpb, ped/bikes	1:00	1:00		1.00	1.00		9:	1.00		1.00	1.00	
1,00 0.96	Flpb, ped/bikes	1:00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
1.00 0.95 1.00 1.00 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.39 1.00 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.03 0.03 0.03 0.03 0.04 0.05 0.00 0.08 0.05 0.00 0.08 0.00 0.08 0.00 0.08 0.00 0.08 0.00 0.05 0.00	Ŧ	1:00	96.0		1.00	0.98		1.00	0.97		1.00	0.99	
1767 3409 1863 3427 1773 4157 1719 4231 1703 3409 1204 3427 1708 4157 1719 4231 1703 3409 1.00	Fit Protected	0.95	1.00		1.00	1.00		0.95	1.00		0.95	1.00	
0.39 1.00 0.12 1.00 0.08 1.00 0.08 1.00 1.00 1.00 1.00	Satd. Flow (prot)	1767	3409		1863	3427		1703	4157		1719	4231	
723 3409 224 3427 141 4157 151 4231 1.00 </td <td>Fit Permitted</td> <td>0.39</td> <td>1.00</td> <td></td> <td>0.12</td> <td>1.00</td> <td></td> <td>0.08</td> <td>1.00</td> <td></td> <td>0.08</td> <td>1.00</td> <td></td>	Fit Permitted	0.39	1.00		0.12	1.00		0.08	1.00		0.08	1.00	
1.00	Satd. Flow (perm)	723	3409		224	3427		141	4157		151	4231	
270 535 190 485 560 95 106 107 305 65 1255 0 26 0 0 0 27 0 0 5 5 20 0 485 646 0 105 1378 0 0 5 2% 2% 1% 2% 2% 7% 6% 7% 3% 5% 7% 5 pm-pt NA pm-pt NA pm-pt NA pm-pt NA 5% 7% 7% 5% 7% 8	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
10 26 0 0 0 0 0 0 0 0 0	Adi. Flow (vph)	270	535	190	485	260	55	105	1100	305	92	1255	95
270 699 0 485 646 0 105 1378 0 65 1345 2% 2% 1% 2% 7% 6% 7% 3% 5% 7% pm+pt NA pm+pt NA pm+pt NA pm+pt NA 7% 4 3 8 5 5 4 6 8 7% 7% 40 30.2 67.1 46.3 58 50.7 50.8 46.8 66.8 66.8 46.8 66.8 66.8 46.8 66.8 7% 7% 7% 7% 7% 7% 7% 7% 7% 7% 7% 46.8 66.8 66.8 66.8 66.8 66.8 66.8 66.8 66.8 66.8 7% 7% 72 46.8 66.8 66.8 66.8 66.8 66.8 66.8 66.8 66.8 66.8 66.8 66.8 66.8 66.8 66.	RTOR Reduction (vph)	C	92	C	C	6	C	C	27	C	0	5	0
5 5 7% 7% 3% 5% 7% 2% 2% 1% 2% 7% 6% 7% 3% 5% 7% pm+pt NA pm+pt NA pm+pt NA pm+pt NA 4 3 2 6 6 8 5 6 6 8 7% 40 3 2 6 6 8 6 6 7 8 6 6 8 7% 7% 7% 7% 7% 7% 7% 7% 7% 7% 7% 7% 7% 7% 7% 7% 7% 4% 8 8 6 6 8 8 6 6 8 8 6 6 8 7% 7% 7% 7% 8 8 3 3 3 3 3 3 3 3 3 3 3 3 3 3	Lane Group Flow (vph)	270	669	0	485	646	0	105	1378	0	92	1345	0
2% 2% 1% 2% 7% 6% 7% 3% 5% 7% pm+pt NA pm+pt NA pm+pt NA pm+pt NA 1 4 8 2 2 6 6 4 8 2 6 6 6 7 6 6 7 6 6 6 7 6 6 6 7 6 6 6 7 6 6 6 7 6 6 6 6 7 6 6 6 6 7 7 6 6 6 6 6 7 6 6 6 6 7 6 6 6 6 6 7 6 6 6 6 7 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 <t< td=""><td>Confl Peds (#/hr)</td><td>1</td><td></td><td></td><td></td><td></td><td>ı.</td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	Confl Peds (#/hr)	1					ı.						
pm+pt NA pm+pt NA pm+pt NA pm+pt NA 7 4 3 8 5 2 6 6 1 6 1 6 1 6 1 6 1 6 1 6 1 6 6 4 8 2 6 6 8 6 6 7 6 6 6 8 1 6 8 4 8 8 5 6 6 8 6	Heavy Vehicles (%)	2%	2%	1%	%	%	2%	%9	%/	3%	2%	%/	2%
The control of the	Linn Tyne	um-mu	ΔN		tu-mu	ΔN		tu+mu	ΔN		tu+ma	ΔN	
4 8 2 2 6 6 6 6 6 6 6 6	Protected Phases	7	4		۲ ۲	α		נ	0				
48.0 30.2 67.1 45.3 58.6 50.7 50.8 50.0 31.2 68.1 46.3 59.7 51.7 52.8 60.3 0.22 0.49 0.33 0.4 0.37 0.38 4.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Dormittod Dhases		-		ο α	>		0 0	1		- u	>	
148	remmed Filases	1 0	0		0 7	į		7 0	1		0 0	9	
600 31.2 68.1 46.3 597 51.7 52.8 6.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5	Actuated Green, G (s)	48.0	30.2		1.79	45.3		28.6	20.7		20.8	46.8	
0.36 0.22 0.49 0.33 0.43 0.37 0.38 4.0 7.0 3.0 7.0 4.0 7.2 4.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 0.09 0.21 0.02 0.19 0.04 0.33 0.02 0.08 0.92 0.94 0.57 0.66 0.90 0.28 3.4.2 53.2 41.2 38.6 31.0 41.7 32.6 1.00 1.00 1.00 1.00 1.00 1.00 1.00 2 4.8 0.7 9.8 8.7 7.4 9 8 8.7 40.9 5.3 40.9 5.0 40.0 V	Effective Green, g (s)	20.0	31.2		68.1	46.3		29.7	21.7		27.8	47.8	
4.0 7.0 3.0 7.0 4.0 7.2 4.0 3.9 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.89 7.8 5.1 113 159 159 130 130 0.09 60.21 60.23 0.19 6.04 60.35 0.02 0.15 0.22 0.24 0.5 0.24 0.02 0.02 0.15 0.22 0.19 0.04 0.03 0.20 0.20 0.10 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 2.46 16.5 2.48 0.7 9.8 8.7 7.4 2.5 E D D D D D D 3.5 F 1.00 1.00 1.00 1.00 1.00 1.00 4.6 16.5 2.48 0.7	Actuated g/C Ratio	0.36	0.22		0.49	0.33		0.43	0.37		0.38	0.34	
3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.89	Clearance Time (s)	4.0	0.7		3.0	7.0		4.0	7.2		4.0	7.2	
398 759 517 1133 159 1535 112 0.05 0.021 0.023 0.19 0.004 0.033 0.02 0.08 0.92 0.94 0.57 0.66 0.90 0.58 0.08 0.92 0.94 0.57 0.66 0.90 0.58 0.08 0.92 0.94 0.57 0.66 0.90 0.58 0.08 0.92 0.94 0.57 0.66 0.90 0.58 0.09 0.100 1.00 1.00 1.00 1.00 1.00 1.0	Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
0.09 c0.21 c0.23 0.19 c0.04 c0.33 0.02 0.68 0.61 0.22 0.24 0.22 0.68 0.69 0.62 0.44 0.22 0.24 3.4.2 53.2 41.2 38.6 31.0 41.7 32.6 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Lane Grp Cap (vph)	398	759		517	1133		159	1535		112	1444	
0.15 0.22 0.24 0.20	//s Ratio Prot	0.09	c0.21		c0.23	0.19		c0.04	c0.33		0.02	0.32	
0.68 0.92 0.94 0.57 0.66 0.90 0.58 3.42 5.32 4.12 88.6 3.10 41.7 20.6 4.0 4.0 4.0 4.12 88.6 31.0 41.7 20.6 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0	//s Ratio Perm	0.15			0.22			0.24			0.20		
34.2 53.2 41.2 38.6 31.0 41.7 32.6 (1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	//c Ratio	0.68	0.92		0.94	0.57		99.0	0.90		0.58	0.93	
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Uniform Delay, d1	34.2	53.2		41.2	38.6		31.0	41.7		32.6	44.5	
d2 4.6 16.5 24.8 0.7 9.8 8.7 7.4 38.7 69.7 66.0 39.3 40.9 50.3 40.0 D	Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
38.7 69.7 66.0 39.3 40.9 50.3 40.0 D E E D D D D D D D D D D D D D D D D	ncremental Delay, d2	4.6	16.5		24.8	0.7		8.6	8.7		7.4	12.1	
Delay 53.9 HCM 2000 Level of Service D D D D D D D D D D D D D D D D D D D	Delay (s)	38.7	69.7		0.99	39.3		40.9	50.3		40.0	9.99	
any Belay Copacity ratio 96.8% For Delay Delay 140.0 Sum of lost time (s) 160.8% 170.1 180.2 180.2 180.2 180.2 180.2 180.2 180.2 180.2 180.2 180.2 180.3 180	evel of Service	۵	ш		ш	۵			۵			ш	
any Belay Capacity ratio To Capacity ratio To Whilization To Whilization To Capacity ratio D D D D D D D D D D D D D	Approach Delay (s)		61.3			20.7			49.7			55.9	
Month Mont	Approach LOS		ш			۵			۵			ш	
53.9 HCM 2000 Level of Service pacity ratio 0.92 (Market of Service 140.0 Sum of lost time (s) 2ation 6.8% (CU Level of Service 15.0%)	Intersection Summary												
23.3 PLOM 2000 LEVER of Service pacity ratio 0.92 Sum of lost time (s) 2ation 96.8% ICU Level of Service 15.5 Total Country of Service 15.5 Total Country of Service 15.5 Total Country of Service	Inches Control Control of the Contro			2	-	0000	3-1			0			
U-322	HCIM 2000 Control Delay			5.50	Ĭ.	JM 2000	Level or 3	eLVICe		_			
h (s) 140,0 Sum of lost time (s) Utilization 96.8% ICU Level of Service 15	HCM 2000 Volume to Capa	cuty ratio		0.92	•		;			9			
Utilization 96.8% ICU Level of Service 15	Actuated Cycle Length (s)			140.0		m of lost	time (s)			18.2			
Analysis Period (min) 15	Intersection Capacity Utiliza	ation		%8.96	ಠ	U Level o	f Service			ш			
	Analysis Period (min)			15									

Critical Lane Group

Britannia & RR25 BA Group - NHY

Synchro 11 Report Page 3

Timings 2: Regional Rd 25 & Whitlock Ave

2037 Future Background AM

→	SBT	ተ ቶኑ	2080	2080	NA	9		9		20.0	35.5	81.0	62.3%	4.2	2.3	-1.0	5.5	Lag	Yes	C-Max	9.68	69.0	0.73	16.2	0:0	16.2	В	16.0	В										
۶	SBL	*	20	20	pm+pt	_	9	-		7.0	11.0	11.0	8.5%	3.0	1:0	-1.0	3.0	Lead	Yes	None	98.7	0.76	0.17	5.5	0.0	5.5	∢												
←	NBT	4413	1295	1295	≨	2		7		20.0	35.5	81.0	62.3%	4.2	2.3	-1.0	5.5	Lag	Yes	C-Max	89.7	69.0	0.44	6.1	0.0	6.1	∢	6.7	∢									D	
•	NBL	*	45	45	pm+pt	2	2	2		7.0	11.0	11.0	8.5%									9.70			0.0	24.8	ပ										LOS: B	CU Level of Service D	
4	WBR	¥C	92	92	Perm		∞	∞		10.0	37.5	38.0	29.5%	3.3	3.2	-1.0	5.5			None	20.4	0.16	0.31	10.9	0.0	10.9	Ф						of Green				Intersection LOS: B	U Level o	
ţ	WBT	*	32	32	ΑĀ	∞		∞		10.0	37.5	38.0	29.5%	3.3	3.2	-1.0	5.5			None	20.4	0.16	0.13	45.3	0.0	45.3	_	29.5	ပ				L, Start o				Ξ	೨	
>	WBL	*	20	20	Perm		∞	∞		10.0	37.5	38.0	29.5%	3.3	3.2	-1.0	5.5			None	20.4	0.16	0.33	52.5	0.0	52.5	۵						Ind 6:SB1						
†	EBT	æ	20	20	¥	4		4		10.0	37.5	38.0	29.5%	3.3	3.2	-1.0	5.5			None	20.4	0.16	0.49	30.2	0.0	30.2	ပ	49.2	_				2:NBTL a						
1	EBL	*	145	145	Perm		4	4					29.5%				5.5			None	20.4	0.16	0.69	68.1	0.0	68.1	ш						ed to phase		ordinated		5.8	ation 75.9%	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	ros	Approach Delay	Approach LOS	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 Capacity Utilization 75.9%	Analysis Period (min) 15

Splits and Phases: 2: Regional Rd 25 & Whitlock Ave



Britannia & RR25 BA Group - NHY

Queues 2037 Future Background AM 2: Regional Rd 25 & Whitlock Ave 01-12-2024

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	•	†	•	ţ	4	•	←	۶	→	
Lane Group	BE	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	
Lane Group Flow (vph)	145	145	20	35	92	45	1305	20	2180	
v/c Ratio	69:0	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	5.6	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)		65.9		68.1			6.969		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										

HCM Signalized Intersection Capacity Analysis 2: Regional Rd 25 & Whitlock Ave

nn Capacity Analysis 2037 Future Background AM ock Ave

Control Education	FBL EBT EBR WBL WBT WBT WBL WBT WBT WBL WBT WBT WBL WBT WBL WBT WBT WBL WBT WBT WBL WBT	WBL WBT WBR 5 35 95 50 35 95 1900 1900 1900 15 5.5 5.5 100 100 100 100 100 100 100 100 100 100 100 100 105 100 100 965 1759 1455 100 100 100 965 1759 1455 100 100 100 965 1759 1455 100 100 100 96 10 10 90 9 8 8 8 8 8 9 9 6.5 6.5 6.5 8 5 3.0 10.1 0.16 0.16 0.15 0.16 0.16 110 1.00 1.00	<u>5</u> 6.		
1	145	\$ 55 55 55 55 55 55 55 55 55 55 55 55 55	10 10 10 10 10 10 10 10 10 10 10 10 10 1		
145 50 95 50 35 95 45 1295 10 50 2000 140 50 95 50 35 95 45 1295 10 50 2000 140 1900 1900 1900 1900 1900 1900 1900 1900 140 140 140 140 140 140 140 140 140 140 140 140 140 140 140 140 140 140 140 140 140 140 140 140 140 140 140 140 140 140 140 140 140 140 140 140 140 140 140 140 140 140 140 140 140 140 140 140 140 141 141 141 141 141 141 141 141 141 142 144 144 141 141 141 141 141 141 141 141 140 140 140 140 140 140 140 140 140 140 141	145 50 95 50 35 145 50 145 50 95 145 50 95 145 145 50 95 145 145 145 145 145 145 145 145 145 14	50 35 95 55 190 190 1900 1900 1900 1900 1900	6		
145 50 95 50 35 95 45 1295 10 50 2000 1500 1900 1900 1900 1900 1900 1900 1900 1900 1500 1500 1900 1900 1900 1900 1900 1900 1900 1500 1000 1000 1000 1000 1000 1000 1000 1500 1000 1000 1000 1000 1000 1000 1000 1500 1500 1000 1000 1000 1000 1000 1000 1500 1500 1000 1000 1000 1000 1000 1000 1500 1500 1000 1000 1000 1000 1000 1500 1000 1000 1000 1000 1000 1000 1500 1500 1000 1000 1000 1000 1000 1500 1500 1000 1000 1000 1000 1000 1500 1500 1000 1000 1000 1000 1000 1500 1500 1000 1000 1000 1000 1000 1500 1500 1000 1000 1000 1000 1000 1500 1500 1000 1000 1000 1000 1000 1500 1500 1000 1000 1000 1000 1000 1500 1500 1000 1000 1000 1000 1000 1500 1500 1000 1000 1000 1000 1000 1500 1500 1000 1000 1000 1000 1000 1500 1000 1000 1000 1000 1000 1500 1000 1000 1000 1000 1000 1500 1000 1000 1000 1000 1000 1500 1000 1000 1000 1000 1000 1500 1000 1000	145 50 95 50 35 100 1900 1900 1900 1900 1900 1900 1900	100 35 95 100 100 100 5.5 5.5 5.5 1.00 1.00 1.00 1.00 1.00 0.38 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	6		
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1725 1516 1727 1759 1455 1671 4291 1805 4309 1333 1516 965 1759 1455 1671 4291 1805 4309 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 145 86 0 50 35 95 45 1295 10 50 2080 145 86 0 50 35 95 45 1295 10 50 2080 146 86 0 50 35 15 45 1305 0 50 2177 147 86 0 50 35 15 45 1305 0 50 2177 148 86 0 50 35 15 45 1305 0 50 2177 148 88 98 88 88 88 88 88	1725 1516 1727 1759 1733 1516 965 1759 170 1.00 1.00 1.00 1.00 173 1516 965 1759 170 1.00 1.00 1.00 1.00 173 1516 965 1759 175 17	1727 1759 1455 1455 1455 1455 1455 1400 1000 300 35 95 95 95 95 95 95 95 95 95 95 95 95 95		<u>a</u>	
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145 50 95 50 35 95 45 1295 10 50 2080 145 86 90 90 80 90 90 0 0 0 0 0 148 86 90 50 35 15 45 1305 90 2177 2	145 50 95 50 35 146 86 0 50 35 4 8 8 0 50 35 4 4 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	50 35 95 95 95 95 95 95 95 95 95 95 95 95 95	35	ā.	
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4% 32% 1% 8% 6% 25% 0% 5% Perm NA Perm NA Perm NA Pm+pt NA 5% 4 4 4 8 8 5 7 1 6	4% 32% 1% 4% 8% Perm NA NA <td< td=""><td>4% 8% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9%</td><td></td><td>₫.</td><td></td></td<>	4% 8% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9% 9%		₫.	
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4 8 8 5 2 1 4 194 194 194 194 936 879 936 194 194 194 194 194 936 879 936 204 20.4 20.4 20.4 20.4 956 889 956 0.16 0.16 0.16 0.16 0.74 0.68 0.74 0.16 0.16 0.16 0.16 0.17 0.68 0.74 0.20 237 151 276 228 140 2934 277 0.20 237 151 276 228 140 2934 277 0.20 0.36 0.33 0.13 0.07 0.02 0.30 0.10 0.00 0.01 0.01 0.02 0.30 0.01 0.10 0.00 0.01 0.01 0.02 0.30 0.01 0.10 0.00 1.00 1.00 1.00 260 0.55 0.12 0.10 0.00 0.00 0.00 0.00 0.10 0.00 0.00 0.00 0.00 0.10 0.00 0.00 0.00 0.11 0.00 0.00 0.00 0.12 0.00 0.00 0.00 0.13 0.00 0.00 0.00 0.14 0.00 0.00 0.00 0.15 0.00 0.00 0.00 0.00 0.15 0.00 0.00 0.00 0.00 0.15 0.00 0.00 0.00 0.00 0.15 0.00 0.00 0.00 0.00 0.15 0.00 0.00 0.00 0.00 0.15 0.00 0.00 0.00 0.00 0.15 0.00 0.00 0.00 0.00 0.00 0.15 0.00 0.00 0.00 0.00 0.00 0.00 0.15 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	4 4 8 8 8 8 8 9 9 9 9 9 9 9 9 9 9 9 9 9	8 8 8 19.4 19.4 19.4 20.4 20.4 20.4 20.4 20.4 20.4 20.4 20	2 87.9 88.9 0.68	93.6	87.9
4 8 8 2 6 4 19.4 19.4 19.4 93.6 87.9 65 20.4 20.4 20.4 20.4 20.4 95.6 88.9 93.6 0.16 0.16 0.16 0.16 0.16 0.16 0.17 0.68 0.74 6.5 6.5 6.5 6.5 6.5 6.5 4.0 6.5 4.0 209 237 151 276 228 140 2834 277 0.06 0.36 0.02 0.02 0.02 0.30 0.01 0.07 0.36 0.35 0.13 0.07 0.30 0.01 0.08 0.36 0.33 0.13 0.07 0.30 0.01 0.09 0.36 0.33 0.13 0.07 0.32 0.44 0.18 0.10 1.00 1.00 1.00 1.00 1.00 0.12 0.18 1.00 1.	4 19.4 19.4 19.4 19.4 19.4 20.4 20.4 20.4 20.4 20.4 20.4 20.4 20	19.4 19.4 19.4 20.4 20.4 20.4 20.4 20.6 0.16 0.16 0.16 0.02 276 228 0.02 0.013 0.07 47.1 46.7 47.3 46.8	87.9 88.9 0.68	93.6	87.9
194 194 194 194 194 936 879 936 879 204 204 204 204 204 204 956 8879 956 616 616 616 016 016 017 017 016 017 016 017 016 017 016 017 016 017 016 017 017 017 017 017 017 017 017 017 017	204 204 194 194 194 204 204 204 204 204 204 204 204 204 20	19.4 19.4 19.4 19.4 19.4 19.4 19.4 19.4	87.9 88.9 0.68	93.6	87.9
204 204 204 204 204 956 889 956 6.16 0.16 0.16 0.16 0.16 0.174 0.68 0.174 6.5 6.5 6.5 6.5 6.5 4.0 6.5 4.0 209 237 151 276 228 140 2894 277 209 237 151 276 228 140 2894 277 201 0.05 0.01 0.02 0.03 0.01 6.1 49.0 48.7 47.1 46.7 12.3 9.3 5.4 1.00 1.00 1.00 1.00 1.00 2.60 0.55 6.1 4 49.9 50.0 47.3 46.8 33.3 5.6 5.7 E D D D D C A A 1.3 0.2 0.1 1.3 0.5 6.1 4 49.9 50.0 47.3 46.8 33.3 5.6 6.2 7 47.8 6.5 1.3 0.01 1.3 0.01 1.3 0.01 1.3 0.01 1.3 0.01 1.3 0.02 1.3 0.02 1.3 0.03 1.3 0	204 20,4 20,4 20,4 20,4 20,4 20,4 20,4 2	204 204 204 204 204 204 204 2005 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.	88.9 0.68		?
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6.5 6.5 6.5 6.5 6.5 6.5 4.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6	s) 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5	6.5 6.5 3.0 3.0 276 228 0.02 0.01 0.13 0.07 47.1 46.7 1.00 1.00 0.2 0.1 47.3 46.8		0.74	89.0
30 30 30 30 30 30 30 30	s) 30 30 30 30 006 237 151 276 007 006 005 069 036 033 0.13 (100 1.00 1.00 1.00 d2 96 0.9 1.3 0.2 E D D D	3.0 3.0 276 228 0.02 0.01 0.13 0.07 47.1 46.7 1.00 1.00 0.2 0.1 47.3 46.8	6.5	4.0	6.5
209 237 151 276 228 140 2934 277 c0.11 0.05 0.05 0.01 0.02 0.30 0.01 c0.11 0.05 0.33 0.13 0.07 0.32 0.44 0.18 518 49.0 48.7 47.1 46.7 12.3 9.3 5.4 1.00 1.00 1.00 1.00 1.00 2.60 0.55 1.00 9.6 0.9 1.3 0.2 0.1 1.3 0.5 0.1 E D D D D C A A A A A A A A A A A S S.7 47.8 6.5 55.7 47.8 6.5 A A A A A A A A A A A A A A A A A A A	209 237 151 276 0.06 0.06 0.02 0.07 0.08 0.36 0.33 0.13 0.13 0.09 0.36 0.33 0.13 0.13 0.09 0.30 0.10 0.10 0.10 0.00 0.90 0.90 0.30 0.13 0.2 0.00 0.90 0.90 0.90 0.90 0.00 0.90 0.90	276 228 0.02 0.02 0.01 0.13 0.07 47.1 46.7 1.00 1.00 0.2 0.1 47.3 46.8	3.0	3.0	3.0
0.01 0.06 0.02 0.00 0.00 0.01 0.01 0.00 0.01 0	0.06 0.02 0.02 0.02 0.03 0.04 0.05 0.06 0.05 0.03 0.13 0.13 0.13 0.13 0.14 0.10 0.10 0.10 0.10 0.10 0.10 0.10	0.02 0.01 0.13 0.07 47.1 46.7 1.00 1.00 0.2 0.1 47.3 46.8	2934	277	2946
0.011 0.05 0.01 0.22 0.4 0.12 0.05 0.36 0.36 0.36 0.30 0.7 0.32 0.44 0.18 0.18 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.3	0.01 0.09 0.08 0.08 0.08 0.08 0.08 0.08 0.08 0.09	0.13 0.07 47.1 46.7 1.00 1.00 0.2 0.1 47.3 46.8	0:30	0.01	00.51
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518 49.0 48.7 47.1 46.7 12.3 9.3 5.4 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	518 49.0 48.7 47.1 100 1.00 1.00 1.00 d2 9.6 0.9 1.3 0.2 61.4 49.9 50.0 47.3 E D D D D E E E T	47.1 46.7 1.00 1.00 0.2 0.1 47.3 46.8	0.44	0.18	0.74
100 100 1.00 1.00 1.00 1.00 2.00 0.55 1.00 0.50 0.9 0.3 0.2 0.1 1.3 0.5 0.3 0.3 0.5 0.3 0.3 0.5 0.3 0.3 0.5 0.3 0.3 0.5 0.3 0.3 0.5 0.0 0.3 0.3 0.5 0.0 0.3 0.3 0.5 0.0 0.3 0.3 0.5 0.0 0.3 0.3 0.5 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3	d2 96 0.9 1.3 0.2 61.4 49.9 50.0 47.3 E. D D D D E. E. 7 7.7 8	1.00 1.00 0.2 0.1 47.3 46.8	9.3	5.4	13.1
96 0.9 1.3 0.2 0.1 1.3 0.5 0.3 (6.1.4 49.9 50.0 47.3 46.8 33.3 5.6 5.7 (7.1.4 5.7 47.8 5.7 47.8 5.7 (7.1.4 5.7 47.8 5.7 47.8 6.5 4 A A A A A A A A A A A A A A A A A A	d2 96 0.9 1.3 0.2 61.4 49.9 50.0 47.3	0.2 0.1 47.3 46.8	0.55	1.00	1.00
61.4 49.9 50.0 47.3 46.8 33.3 5.6 5.7 E D D D D C A A A A A 5.5 5.7 47.8 6.5 6.5 55.7 47.8 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5	61.4 49.9 50.0 47.3 . E D D D D E E 7 47.8	47.3 46.8	0.5	0.3	1.7
E D D D C A A A A A A S	E D D		5.6	5.7	14.8
55.7 47.8 6.5 E D A 16.4 HCM 2000 Level of Service B 130.0 Sum of lost time (s) 14.0 15.9% ICU Level of Service D 15.15	5E 7		∢	V	В
16.4 HCM 2000 Level of Service 16.4 HCM 2000 Level of Service 130.0 Sum of lost time (s) 130.0 Sum of lost time (s) 15.9% ICU Level of Service 15.9% ICU Level of Service	20.7	47.8	6.5		14.6
16.4 HCM 2000 Level of Service 0.71 130.0 Sum of lost time (s) zation 75.9% ICU Level of Service 15.9% ICU Level of Service	Approach LOS E D	O	∢		В
16.4 HCM 2000 Level of Service 0.71 Sum of lost time (s) 2ation 75.9% ICU Level of Service 15.9% ICU Level of Service	Intersection Summary				
necity ratio 0.71 130.0 Sum of lost time (s) zation 75.9% 15 ICU Level of Service 15 15	16.4			В	
130.0 Sum of lost time (s) zation 75.9% ICU Level of Service 15	acity ratio	0.71			
Utilization 75.9% ICU Level of Service	130.0		14	0.	
Analysis Period (min) 15	Utilization 75.9%			۵	
	Analysis Period (min) 15	15			

Britannia & RR25 BA Group - NHY

& KKZ5 - NHY

Timings 2037 Future Background AM 5: Regional Rd 25 & Etheridge Ave/Collector Road 01-12-2024

→	SBT	4413	2140	2140	¥	9		9		20.0	38.4		53.8%				5.4			Ó	89.8	0.69	0.73	7.0	0.0	7.0	⋖	6.9	∢										
۶	SBL	*	8	೫	Perm		9	9		20.0	38.4	70.0	53.8%	4.2	2.2	-1.0	5.4	Гag	Yes	C-Max	868.8	0.69	0.12	3.2	0.0	3.2	∢											ш	
←	NBT	4413	1195	1195	ΑΝ	2		7		20.0	38.4	81.0	62.3%	4.2	2.2	-1.0	5.4			C-Max	96.4	0.74	0.38	2.0	0.0	2.0	∢	2.4	∢								LOS: A	ICU Level of Service B	
•	NBL	*	3	8	pm+pt	2	2	2		7.0	11.0	11.0	8.5%	3.0	1:0	-1.0	3.0	Lead	Yes	None	8.86	0.76	0.18	17.9	0.0	17.9	Ф						reen				Intersection LOS: A	U Level o	
ļ	WBT	£,	0	0				∞		10.0	36.2	37.0	28.5%	3.3	5.9	-1.0	5.2	Lag	Yes	None	13.4	0.10	0.20	1.6	0.0	1.6	∢	36.1	۵				Start of G				ij	⊇	
>	WBL	r	65	92	Perm		∞	œ		10.0	36.2	37.0	28.5%	3.3	5.9	-1.0	5.2	Lag	Yes	None	13.4	0.10	0.47	65.3	0.0	65.3	ш						6:SBTL,						
†	EBT	2	0	0	¥	4		4		10.0	36.2											0.18	0.17	5.0	0.0	2.0	∢	29.4	ပ				BTL and						
•	EBL	*	100	100	pm+pt	7	4	7		7.0	11.0	12.0	9.7%	3.0	1.0	-1.0	3.0	Lead	Yes	None	25.2	0.19	0.38	47.2	0.0	47.2	٥						phase 2:N		inated			99.E9 u	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	ROS	Approach Delay	Approach LOS	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 Capacity Utilization 63.6%	Analysis Period (min) 15

Splits and Phases: 5: Regional Rd 25 & Etheridge Ave/Collector Road

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Queues 5: Regional Rd 25 & Etheridge Ave/Collector Road 01-12-2024

	\	t	-	,		_	•	+	
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	
Lane Group Flow (vph)	100	9	9	22	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	5.0	65.3	1.6	17.9	5.0	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	8.99	
Internal Link Dist (m)		53.9		63.1		292.1		6.969	
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 unstream signal	si en en e eli	metered	hvinstr	nois mee	<u></u>				
			, LL		i				

Britannia & RR25 BA Group - NHY

2037 Future Background AM 01-12-2024 HCM Signalized Intersection Capacity Analysis 5: Regional Rd 25 & Etheridge Ave/Collector Road

Movement	田田	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	2		*	æ,		F	4413		r	4413	
Traffic Volume (vph)	100	0	92	65	0	22	93	1195	20	30	2140	55
Future Volume (vph)	100	0	92	92	0	22	93	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	
Ŧ	1.00	0.85		1.00	0.85		1.00	1.00		1.00	1.00	
Fit 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	
Fit Permitted	0.57	1.00		0.71	1.00		0.04	1.00		0.18	1.00	
Satd. Flow (perm)	1074	1615		1358	1615		85	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	93	92	0	52	8	1195	20	30	2140	22
RTOR Reduction (vph)	0	23	0	0	20	0	0	~	0	0	_	0
Lane Group Flow (vph)	100	12	0	92	2	0	ၕ	1214	0	30	2194	0
Heavy Vehicles (%)	1%	%0	%0	%0	%0	%0	3%	%9	%0	%0	2%	%9
Turn Type	pm+pt	A		Perm	AN		pm+pt	Α		Perm	¥	
Protected Phases	7	4			œ		2	2			9	
Permitted Phases	4			∞			7			9		
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		0.0	0.0		0.73	0.73		29.0	29.0	
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	60.03	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	0.0		0.55	0.03		0.24	0.39		0.13	92.0	
Uniform Delay, d1	45.6	43.4		26.8	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		2.0	0.1		9.0	0.2		8.0	1.3	
Delay (s)	46.7	43.4		61.9	54.4		44.1	1.9		5.6	6.9	
Level of Service	۵	۵		ш	۵		۵	⋖		⋖	⋖	
Approach Delay (s)		45.4			58.4			3.0			6.9	
Approach LOS		Ω			ш			⋖			¥	
Intersection Summary												
HCM 2000 Control Delay			8.9	ĭ	HCM 2000 Level of Service	evel of S	service		⋖			
HCM 2000 Volume to Capacity ratio	city ratio		69.0									
Actuated Cycle Length (s)			130.0	S	Sum of lost time (s)	ime (s)			16.6			
Intersection Capacity Utilization	tion		63.6%	⊇	ICU Level of Service	Service			ш			
Analysis Period (min)			15									
c Critical Lane Group												

Synchro 11 Report Page 9 Britannia & RR25 BA Group - NHY

Timings 7: Regional Rd 25 & Britannia Rd

2037 Future Background AM 01-12-2024

20.0 49.7 551.0 39.2% 4.2 3.5 -1.0 6.7 Lag Yes C-Max 57.3 0.44 1.02 66.2 66.2 66.2 7.0 11.0 3.0 3.0 1.0 -1.0 3.0 1.0 Yes None 119.7 0.15 56.9 SBL 325 325 Prot 1055 1055 1055 NA 7.0 11.0 11.0 3.0 3.0 1.0 -1.0 3.0 None 8.8 0.07 0.07 0.07 NBL 555 Prot 10.0 45.5 46.0 35.4% 4.2 3.3 -1.0 6.5 Lag Yes None 39.8 0.31 0.31 0.37 7.0 11.0 22.0 22.0 3.0 1.0 -1.0 3.0 1.0 None 19.0 0.15 76.0 **MBL** 465 465 Prot 10.0 45.5 46.0 35.4% 3.3 -1.0 6.5 Lag Yes None 27.8 0.0 45.9 0.0 45.9 D 455 455 NA 7.0 11.0 22.0 22.0 3.0 1.0 -1.0 3.0 1.0 -1.0 9.2 0.0 0.0 60.0 Switch Phase
Minimum Initial (s)
Minimum Initial (s)
Minimum Spit (s)
Total Spit (s)
Total Spit (%)
Yellow Time (s)
Lost Time (s)
Lead.Lag Optimize?
Recall Mode
Actuated g/C Ratio
We Ratio Lane Configurations Traffic Volume (vph) Future Volume (vph) Protected Phases Permitted Phases Detector Phase Approach Delay Approach LOS Control Delay Queue Delay Total Delay LOS

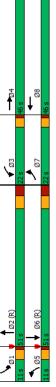
Oycle Length: 130
Actuated Cycle Length: 130
Offset. 104 (80%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.02

Intersection LOS: E ICU Level of Service E

Intersection Signal Delay; 55.8 Intersection Capacity Utilization 90.2% ICU 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



Synchro 11 Report Page 10 Britannia & RR25 BA Group - NHY

2037 Future Background AM 01-12-2024 Queues 7: Regional Rd 25 & Britannia Rd

	1	†	•	ţ	•	+	۶	→	
Lane Group	표	EBT	WBL	WBT	B	NBT	SBL	SBT	
Lane Group Flow (vph)	65	770	465	505	22	1300	325	1945	
v/c Ratio	0.28	0.87dr	0.92	0.37	0.24	0.89	0.61	1.02	
Control Delay	0.09	45.9	0.97	30.3	29.7	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	0.09	45.9	0.97	30.3	29.7	48.0	56.9	66.2	
Queue Length 50th (m)	8.7	70.3	97.6	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)	0.09		120.0		0.06		90.0		
Base Capacity (vph)	482	1368	203	1400	229	1464	230	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 Summany									

Volume exceeds capacity, que ue 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.

Synchro 11 Report Page 11 Britannia & RR25 BA Group - NHY

HCM Signalized Intersection Capacity Analysis 7: Regional Rd 25 & Britannia Rd

2037 Future Background AM 01-12-2024

	4	†	<i>></i>	>	ţ	4	•	•	•	۶	→	•
Movement	田田	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	F	4413		F	4413		ķ.	4413		F	4413	
Traffic Volume (vph)	92	455	315	465	380	125	22	1055	245	325	1930	15
Future Volume (vph)	92	455	315	465	380	125	22	1055	245	325	1930	5
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	
Ŧ	1.00	0.94		1.00	96.0		1.00	0.97		1.0	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)	92	422	315	465	380	125	22	1055	245	325	1930	15
RTOR Reduction (vph)	0	06	0	0	40	0	0	23	0	0	-	0
Lane Group Flow (vph)	92	089	0	465	465	0	22	1277	0	325	1944	0
Heavy Vehides (%)	%9	1%	%	%/	1%	7%	4%	2%	4%	%0	2%	27%
Turn Type	Prot	ΑN		Prot	¥		Prot	≨		Prot	Α	
Protected Phases	7	4		က	∞		2	2		-	9	
Permitted Phases												
Actuated Green, G (s)	8.9	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	90.0	0.22		0.15	0.31		90:0	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	00.16		c0.13	0.11		0.02	0.30		60.00	00.45	
v/s Ratio Perm												
v/c Ratio	0.33	0.87dr		0.92	0.35		0.29	0.00		0.61	1.05	
Uniform Delay, d1	9.89	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	5.9		22.5	0.2		8.0	9.7		1.5	31.2	
Delay (s)	9.69	20.0		73.4	33.5		9.69	6.03		53.4	78.0	
Level of Service	ш	□		ш	ပ		ш	□		□	ш	
Approach Delay (s)		20.7			52.6			51.3			74.5	
Approach LOS		۵			۵			۵			ш	
Intersection Summary												
HCM 2000 Control Delay			61.1	ĭ	HCM 2000 Level of Service	evel of S	Service		ш			
HCM 2000 Volume to Capacity ratio	ratio		0.92									
Actuated Cycle Length (s)			130.0	Sn	Sum of lost time (s)	time (s)			19.2			
Intersection Capacity Utilization	ر		90.2%	೦	ICU Level of Service	f Service			ш			
Analysis Period (min)			15									
dr Defacto Right Lane. Recode with 1 though lane as a right lane.	de with	1 though I	ane as a	right lane								

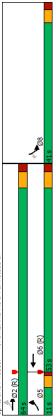
Synchro 11 Report Page 12 Britannia & RR25 BA Group - NHY

c Critical Lane Group

Timings 2037 Future Background AM 10: Britannia Rd & Farmstead Dr 01-12-2024

•	SBR	W	20	20	Perm		œ	80		10.0	15.3	41.0	39.0%	3.3	2.0	-1.0	4.3			None	12.8	0.12	0.10	17.3	0:0	17.3	В						een			Intersection LOS: A	ICU Level of Service A	
٠	SBL	×	6	6	Prot	∞		∞		10.0	15.3				2.0	-1.0	4.3			None	12.8	0.12	0.43	49.0	0.0	49.0	٥	43.2	Ω				Start of Gr			Inte	ರ	
ţ	WBT	4413	425	425	¥	9		9		20.0	29.4	53.0	20.5%	4.2	2.2	-1.0	5.4	Lag	Yes	C-Max	82.3	0.78	0.14	4.4	0.0	4.4	∢	4.4	∢				1 6:WBT, 8					
†	EBT	**	745	745	¥	2		2		20.0	29.4	64.0	61.0%	4.2	2.2	-1.0	5.4			C-Max	86.7	0.83	0.20	2.8	0.0	2.8	∢	2.8	∢				EBTL and					
^	BB	*	20	20	pm+pt	2	2	2		7.0	11.0	11.0	10.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	88.0	0.84	0.03	2.4	0.0	2.4	∢					105	ed to phase 2:	Coordinated	3	y: 6.7	ilization 33.1%	0
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	SOT	Approach Delay	Approach LOS	Intersection Summary	Cycle Length: 105	Actuated Cycle Length: 105	Offset 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green Natural Code: 60	Control Type: Actuated-Coordinated	Maximum v/c Ratio: 0.43	Intersection Signal Delay: 6.7	Intersection Capacity Utilization 33.1%	Analysis Period (min) 15

Splits and Phases: 10: Britannia Rd & Farmstead Dr



Britannia & RR25
Synchro 11 Report
BA Group - NHY
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Queues 10: Britannia Rd & Farmstead Dr 01-12-2024

	1	†	ţ	۶	`	
Lane Group	EBL	EBT	WBT	SBL	SBR	
Lane Group Flow (vph)	8	745	450	06	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)	9.0	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)	202	3653	3297	292	220	
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	
Infersection Summary						

HCM Signalized Intersection Capacity Analysis 10: Britannia Rd & Farmstead Dr

2037 Future Background AM 01-12-2024

																																						¥		12.7	¥		
•	SBR	8 L	50	20	1900	4.3	1.00	0.85	1.00	1538	1.00	1538	1.00	20	9	2	2%	Perm		80	8.6	10.8	0.10	5.3	3.0	158		0.00	0.01	42.3	1.00	0.0	42.3	۵				HCM 2000 Level of Service		me (s)	Service		
٠	SS		6		_	4.3	1.00	1.00	0.95	1703	0.95	·					%9	Prot	∞		8.6	10.8	0.10	5.3	3.0	175	c0.05		0.51	44.6	1.00	2.5	47.2	۵	46.3	۵		HCM 2000 Le		Sum of lost time (s)	ICU Level of Service		
✓	WBR		22	22	1900								1.00	52	0	0	%0																					Ī					
ţ	WBT	₩₩	425	425	1900	5.4	*0.80	0.99	1.00	4204	1.00	4204	1.00	425	က	447	8%	NA	9		76.7	77.7	0.74	6.4	3.0	3110	0.11		0.14	4.0	1.00	0.1	4.1	∢	4.1	∢		6.7	0.25	105.0	33.1%	15	
†	EBH	₩	745	745	1900	5.4	*0.80	1.00	1.00	4427	1.00	4427	1.00	745	0	745	3%	Ν	2		83.5	84.5	0.80	6.4	3.0	3562	c0.17		0.21	2.4	1.00	0.1	2.5	⋖	2.5	∢							
1	EBL	<u></u>	8	20	1900	3.0	1.00	1.00	0.95	1656	0.4	761	1.00	20	0	20	%6	pm+pt	2	2	83.5	84.5	0.80	4.0	3.0	644	0.00	0.02	0.03	2.1	1.00	0.0	2.1	∢					city ratio		tion		
	Movement	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Ideal Flow (vphpl)	Total Lost time (s)	Lane Util. Factor	Ē	Fit Protected	Satd. Flow (prot)	Flt Permitted	Satd. Flow (perm)	Peak-hour factor, PHF	Adj. Flow (vph)	RTOR Reduction (vph)	Lane Group Flow (vph)	Heavy Vehicles (%)	Turn Type	Protected Phases	Permitted Phases	Actuated Green, G (s)	Effective Green, g (s)	Actuated g/C Ratio	Clearance Time (s)	Vehicle Extension (s)	Lane Grp Cap (vph)	v/s Ratio Prot	v/s Ratio Perm	v/c Ratio	Uniform Delay, d1	Progression Factor	Incremental Delay, d2	Delay (s)	Level of Service	Approach Delay (s)	Approach LOS	Intersection Summary	HCM 2000 Control Delay	HCM 2000 Volume to Capacity ratio	Actuated Cycle Length (s)	Intersection Capacity Utilization	Analysis Period (min)	c Critical Lane Group

Britannia & RR25
BA Group - NHY
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Timings 2037 Future Background AM 11: Britannia Rd & Rose Way 01-12-2024

•	SBR	¥C.	75	75	Perm		4	4		10.0	43.0	50.0	38.5%	3.0	3.0	-1.0	5.0			None	11.8	0.09	0.35	16.3	0.0	16.3	В						en				Intersection LOS: A	ICU Level of Service A	
٠	SBL	r	22	22	Prot	4		4		10.0	43.0			3.0	3.0	-1.0	2.0			None	11.8	60.0	0.34	61.1	0.0	61.1	ш	35.2	۵				start of Gre				Inte	2	
Ļ	WBT	4413	895	892	Ϋ́	9		9		20.0	29.0			4.0	3.0	-1.0	0.9	Lag	Yes	C-Max	100.6	0.77	0.26	4.8	0.0	4.8	∢	4.8	∢				6:WBT, S						
†	EBT	444	1000	1000	ΑN	2		2		20:0	29.0	80.0	61.5%	4.0	3.0	-1.0	0.9			C-Max	107.2	0.82	0.27	0.9	0.0	0.9	∢	5.9	∢				EBTL and						
1	EBF	*	52	22	pm+pt	2	2	2		7.0	11.0	15.0	11.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	110.2	0.85	0.05	4.0	0:0	4.0	⋖						to phase 2:		rdinated		.3	tion 38.3%	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	ros	Approach Delay	Approach LOS	Intersection Summary	Cycle Lenath: 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 Capacity Utilization 38.3%	Analysis Period (min) 15

Splits and Phases: 11: Britannia Rd & Rose Way



2037 Future Background AM 01-12-2024 Queues 11: Britannia Rd & Rose Way

			I			
	1	†	ţ	٠	•	
Lane Group	EB	EBT	WBT	SBL	SBR	
Lane Group Flow (vph)	22	1000	902	55	75	
v/c Ratio	0.05	0.27	0.26	0.34	0.35	
Control Delay	4.0	0.9	4.8	61.1	16.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	4.0	0.9	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	0.97		
Turn Bay Length (m)	20.0			20.0		
Base Capacity (vph)	528	3761	3523	624	809	
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	0.27	0.26	0.09	0.12	
Intersection Summary						
, , , , , , , , , , , , , , , , , , , ,						

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis 11: Britannia Rd & Rose Way

2037 Future Background AM

																																						A		14.0	V		
•	SBR	R.	75	75	1900	5.0	1.00	0.85	1.00	1615	1.00	1615	1.00	75	89	7	%0	Perm		4	10.8	11.8	60:0	0.9	3.0	146		0.00	0.05	54.0	1.00	0.1	54.1	O				HCM 2000 Level of Service		time (s)	f Service		
≯ √	WBR SBL				1900 1900	2.0	1.00	1.00	0.95	1805	0.95	1805	1.00 1.00		0 0	0 55	%0 %0	Prot	4		10.8	11.8	0.09	0.9	3.0	163	c0.03		0.34	55.4	1.00	1.2	299	ш	55.2	ш		HCM 2000 L		Sum of lost time (s)	ICU Level of Service		
ţ	WBT	+		892	1900		*		1.00		1.00			895		902	%0	NA	9							.,	0.20		_		•		4		4.8	⋖		8.5	0.28	130.0	38.3%	15	
† *	EBL EBT	444			_		*		0.95 1.00	7	0.25 1.00	7	1.00 1.00	25 1000		25 1000	%0 %0	pm+pt NA	5 2		106.2 106.2	_					0.00 c0.22		0.06 0.27		2.28 2.24	0.0	4.9 5.9	۷ ۷	5.8	∢			ty ratio		uo		
	Movement	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Ideal Flow (vphpl)	Total Lost time (s)	Lane Util. Factor	Ŧ	Fit Protected	Satd. Flow (prot)	Fit Permitted	Satd. Flow (perm)	Peak-hour factor, PHF	Adj. Flow (vph)	RTOR Reduction (vph)	Lane Group Flow (vph)	Heavy Vehicles (%)	Turn Type	Protected Phases	Permitted Phases	Actuated Green, G (s)	Effective Green, g (s)	Actuated g/C Ratio	Clearance Time (s)	Vehide Extension (s)	Lane Grp Cap (vph)	v/s Ratio Prot	v/s Ratio Perm	v/c Ratio	Uniform Delay, d1	Progression Factor	Incremental Delay, d2	Delay (s)	Level of Service	Approach Delay (s)	Approach LOS	Intersection Summary	HCM 2000 Control Delay	HCM 2000 Volume to Capacity ratio	Actuated Cycle Length (s)	Intersection Capacity Utilization	Analysis Period (min)	c Critical Lane Group

Britannia & RR25 BA Group - NHY Synchro 11 Report Page 17

Britannia & RR25 BA Group - NHY

2037 Future Background PM 01-12-2024 Timings 1: Regional Rd 25 & Louis St Laurent Ave

→	SBT	4413	1060	1060	Ϋ́	9		9		20.0	32.2	26.0	40.0%	4.2	3.0	-1.0	6.2	Lag	Yes	C-Max	28.7	0.42	0.69	36.7	0.0	36.7	_	36.9	۵									
۶	SBL	F	32	92	pm+pt	Ψ-	9	Ψ.		2.0	0.6	10.0	7.1%	3.0	1:0	-1.0	3.0	Lead	Yes	None	0.07	0.50	0.59	39.4	0.0	39.4	□											
+	NBT	4413	1285	1285	Ϋ́	7		7		20.0	32.2	0.89	48.6%	4.2	3.0	-1.0	6.2	Lag	Yes	C-Max	66.4	0.47	0.85	37.0	0.0	37.0	۵	37.7	۵								LOS: D	
•	NBL	r	210	210	pm+pt	2	7	2		2.0	0.6											0.58	0.75	43.3	0.0	43.3	۵						reen				Intersection LOS: D	
ļ	WBT	₩	545	545	Ϋ́	∞		∞		10.0	30.0	40.0	28.6%	4.0	3.0	-1.0	0.9	Lag	Yes	None	30.4	0.22	0.79	28.7	0.0	28.7	ш	55.1	ш				Start of G				ī	
>	WBL	r	330	330	pm+pt	က	∞	ო		10.0	14.0	32.0	22.9%	3.0	0.0	-1.0	5.0	Lead	Yes	None	54.3	0.39	0.81	48.4	0.0	48.4	۵						6:SBTL,					
†	EBT	₩	375	375	Ϋ́			4		10.0	30.0									None					0:0	63.9	ш	58.1	ш				BTL and					
•	EB	*	205	202	pm+pt	7	4	7		2.0	9.0									None					0.0	44.4	۵						phase 2:N		linated		7	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	SOT	Approach Delay	Approach LOS	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	,

603 Splits and Phases: 1: Regional Rd 25 & Louis St Laurent Ave • * Ø6 (R) **M** Ø2 (₩ **₹**

Britannia & RR25 BA Group - NHY

Queues 1: Regional Rd 25 & Louis St Laurent Ave

2037 Future Background PM 01-12-2024

		10	6	_	0	_	"	m	10			0	0	0	0
→	SBT	1255	9.0	36.	ö	36.	125.6	158.	113.		1814		_		0.69
۶	SBL	95	0.59	39.4	0.0	39.4	12.2	#38.5		80.0	161	0	0	0	0.59
←	NBT	1715	0.85	37.0	0:0	37.0	182.7	214.5	481.0		2013	0	0	0	0.85
•	NBL	210	0.75	43.3	0:0	43.3	35.6	99.5		65.0	316	0	0	0	99.0
ţ	WBT	610	0.79	28.7	0.0	28.7	87.4	106.9	117.1		865	0	0	0	0.71
\	WBL	330	0.81	48.4	0.0	48.4	2.69	98.6		35.0	470	0	0	0	0.70
†	EBT	490	0.81	63.9	0.0	63.9	2.89	8.06	126.1		633	0	0	0	0.77
4	EBL	202	0.70	4.4	0.0	4.4	40.9	29.7		0.06	319	0	0	0	0.64
	Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Queue Delay	Total Delay	Queue Length 50th (m)	Queue Length 95th (m)	Internal Link Dist (m)	Turn Bay Length (m)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio

Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Synchro 11 Report Page 2 Britannia & RR25 BA Group - NHY

HCM Signalized Intersection Capacity Analysis 2037 Future Background PM 1: Regional Rd 25 & Louis St Laurent Ave

Control of the Cont		\	Ť	*	•		,	_	-			۰	
205 375 115 330 545 65 210 1285 430 95 545 65 210 1285 430 95 545 65 210 1285 430 95 545 65 210 1285 430 95 545 65 210 1285 430 95 545 65 210 1285 430 95 545 65 210 1285 430 95 545 65 210 1285 430 95 545 65 120 120 120 120 120 120 120 120 120 120	Movement	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
205 375 115 330 545 65 210 1285 430 95 190 1900 1900 1900 1900 1900 1900 1	Lane Configurations	*	₩		je-	₩		F	444		<u>r</u>	444	
1900 1900	Traffic Volume (vph)	202	375	115	330	545	92	210	1285	430	92	1060	195
1900 1900	Future Volume (vph)	202	375	115	330	545	92	210	1285	430	92	1060	195
3.0 6.0 2.0 6.0 3.0 6.2 3.0	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
1.00 0.95	Total Lost time (s)	3.0	0.9		2.0	0.9		3.0	6.2		3.0	6.2	
1,00 1,00 1,00 1,00 1,00 0,99 1,00	Lane Util. Factor	1.00	0.95		1:00	0.95		1.00	*0.80		1.00	*0.80	
100 100	Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	1.00	
1,00 0.96	Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
10.95 1.00 1.00 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.007 0.002 0.007 0.003 0.007	T.	1.00	96.0		1.00	0.98		1.00	96.0		1.00	96.0	
1769 3439 1899 3537 1787 4168 1805 1700 122 1.00	Fit Protected	0.95	1.00		1:00	1.00		0.95	1.00		0.95	1.00	
0.22 1.00 0.19 1.00 0.09 1.00 0.07 1.00 1.00 1.00 1.00 1.00 1.00	Satd. Flow (prot)	1769	3439		1899	3537		1787	4168		1805	4295	
100 100	Fit Permitted	0.22	1.00		0.19	1:00		0.09	1.00		0.07	1.00	
1.00	Satd. Flow (perm)	413	3439		364	3537		168	4168		130	4295	
206 375 115 330 545 65 210 1285 430 95	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
) 0 21 0 0 7 0 0 96 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Adi. Flow (vph)	205	375	115	330	545	92	210	1285	430	95	1060	195
205 469 0 330 603 0 210 1679 0 95 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	RTOR Reduction (vph)	0	7	0	0	7	0	0	36	0	0	4	0
Part	Lane Group Flow (vph)	205	469	0	330	603	0	210	1679	0	92	1241	0
2% 1% 0% 0% 0% 2% 1% 6% 1% 0% 1 4 3 8 2 2 6 6 1 <td< td=""><td>Confl Peds (#/hr)</td><td>ı.</td><td></td><td>ı.</td><td>יכי</td><td></td><td>ı.</td><td></td><td></td><td>יני</td><td>LC.</td><td></td><td>. rc</td></td<>	Confl Peds (#/hr)	ı.		ı.	יכי		ı.			יני	LC.		. rc
pm+pt NA pm pf <	Heavy Vehicles (%)	2%	1%	0%	%0	%0	%	, %	%9	, %	%	4%	%0
The color of the	Turn Tyne	nm+nt	AN		pm+nt	AN		pm+nt	AN		pm+md	Ą	
A B B C C A A B B C A A B B C A A B B C A A B B C A A B B C A A C C A A C C A A C C A A C C A A C C A A C C A A C C A A C C A A C C A A C C A A C C A A C C A A C C A A A A A A A A	Protected Phases	7	4		<u>ر</u> در	α		. 10	^			G	
388 229 493 294 765 66.4 64.7 408 239 503 304 77.5 66.4 66.7 0.29 0.17 0.36 0.22 0.55 0.47 0.48 40 7.0 30 0.22 0.55 0.47 0.48 284 587 398 768 276 1976 158 0.09 0.14 -0.14 -0.17 -0.09 0.40 0.03 0.72 0.80 0.83 0.79 0.76 0.85 0.60 1.00 1.00 1.00 1.00 1.00 1.00 0.25 0.72 36.1 51.7 30.1 32.4 26.3 0.60 1.00 1.00 1.00 1.00 1.00 1.00 1.00 8.7 5.9 5.9 5.4 5.7 22.6 9.3 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Permitted Phases	4			0	>		0	,		- vc	>	
100 2.2.9 4.9.3 2.9.4 77.5 0.0.4	Actional Cross (c)	0000	000		900	000		7 2 2	V 43		D 1	27	
State Control of the control of	Actuated Green, G (S)	20.0	677		و ا	4.62		0.0	4.00		- t	0. /C	
s) 3.0 3.0 0.22 0.37 0.47 0.48 4.0 7.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3	Effective Green, g (s)	40.0	23.9		20.3	4.00		0.7	4.00		00.7	0.00	
3	Actuated g/C Katlo	67:0). - 		0.30	0.22		0.55	0.47		0.48	0.42	
s) 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Clearance Time (s)	4.0	7.0		3.0	7.0		4.0	7.2		4.0	7.2	
284 587 388 768 276 1976 158 158 10.0 1.	Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
0.09 0.14 0.014 0.017 0.009 0.040 0.003 0.12	Lane Grp Cap (vph)	784	287		398	292		276	1976		158	1797	
0.12 0.15 0.33 0.25 0.12 0.80 0.81 0.79 0.83 0.25 0.12 0.80 0.81 0.79 0.87 0.80 0.12 0.81 0.19 0.10 1.00 1.00 0.10 1.00 1.00 1.00 1.00 1.00 1.00 0.10 1.01 1.02 1.03 1.03 1.03 0.10 1.02 1.03 1.03 1.03 0.10 1.03 1.03 1.03 0.10 1.03 1.03 1.03 0.10 1.03 1.03 1.03 0.10 1.03 1.03 1.03 0.10 1.03 1.03 1.03 0.10 1.03 0.10 1.03 1.03 0.10 1.03 1.03 0.10 1.03 0.10 1.03 1.03 0.10 1.03	v/s Ratio Prot	0.09	0.14		c0.14	c0.17		60.00	c0.40		0.03	0.29	
0.72 0.80 0.83 0.79 0.76 0.85 0.60	v/s Ratio Perm	0.12			0.15			0.33			0.25		
40.4 55.7 36.1 51.7 30.1 32.4 26.3 1 (1.00 1.00 1.00 1.00 1.00 1.00 1.00 1	v/c Ratio	0.72	0.80		0.83	0.79		0.76	0.85		0.60	0.69	
1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,00	Uniform Delay, d1	40.4	22.7		36.1	51.7		30.1	32.4		26.3	33.3	
d2 8.7 7.5 13.3 5.3 11.7 4.8 6.3 6.3 49.4 57.0 41.8 37.2 32.6 E D D C C C C C C C C C C C C C C C C C	Progression Factor	1.00	1.00		1:00	1.00		1.00	1.00		1.00	1:00	
49.1 63.3 49.4 57.0 41.8 37.2 32.6 D E D E D E D D C 59.1 54.4 37.7 F Delay 43.3 HCM 2000 Level of Service D to Capacity ratio 0.86 (CU Level of Service E D) 19.4 Vuliration 89.9% (CU Level of Service E C) 15.5 C C C C C C C C C C C C C C C C C C	Incremental Delay, d2	8.7	7.5		13.3	5.3		11.7	4.8		6.3	2.2	
D E D E D D C C S9.1 54.4 37.7 C C C C C C C C C C C C C C C C C C	Delay (s)	49.1	63.3		49.4	57.0		41.8	37.2		32.6	35.5	
59.1 54.4 37.7 E D Delay 43.3 HCM 2000 Level of Service D D OC Apacity ratio 0.86 Sum of lost time (s) 18.2 gth (s) 18.5 (CU Level of Service E D OC Apacity ratio 0.86 (CU Level of Service E D OC Apacity ratio 0.86 (CU Level of Service E D OC Apacity ratio 0.89 (CU Level of Service E D OC Apacity ratio 0.	Level of Service	۵	ш		۵	ш		□	□		ပ	۵	
43.3 HCM 2000 Level of Service 0.86 140.0 Sum of lost time (s) 89.9% (CU Level of Service 15	Approach Delay (s)		59.1			54.4			37.7			35.3	
43.3 HCM 2000 Level of Service 0.86 140.0 Sum of lost time (s) 89.9% ICU Level of Service	Approach LOS		ш						۵			٥	
43.3 HCM 2000 Level of Service 0.86 140.0 Sum of lost time (s) 89.9% ICU Level of Service 1.5	Intersection Summary												
0.86 1400 Sum of lost time (s) 89.9% ICU Level of Service 15	HCM 2000 Control Delay			43.3	\(\)	M 2000	evel of S	Service		۵			
140.0 Sum of lost time (s) 89.9% ICU Level of Service 15	HCM 2000 Volume to Cape	acity ratio		98.0									
89.9% ICU Level of Service 15	Actuated Cycle Length (s)			140.0	જ	m of lost	time (s)			18.2			
15	Intersection Capacity Utiliz.	ation		%6.68	೦	U Level o	f Service			ш			
	Analysis Period (min)			15									

c Critical Lane Group

Britannia & RR25 BA Group - NHY

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Timings 2: Regional Rd 25 & Whitlock Ave

→	SBT	ተ ቶኑ	1250	1250	Ą	9		9		20.0	35.5	81.0	62.3%	4.2	2.3	-1.0	5.5	Lag	Yes	C-Max	91.1	0.70	0.46	9.6	0.0	9.6	⋖	9.6	∢									
۶	SBL	*	09	9	pm+pt	~	9	_		7.0	11.0	11.0	8.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	102.0	0.78	0.32	10.3	0.0	10.3	Ф											
-	NBT	444	1925	1925	≨	2		2		20.0	35.5	81.0	62.3%	4.2	2.3	-1.0	5.5	Lag	Yes	C-Max	93.2	0.72	0.63	7.4	0.0	7.4	∢	7.3	∢									O
•	NBL	×	06	90	pm+pt	2	2	2		7.0	11.0	11.0	8.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	102.5	0.79	0.31	4.0	0.0	4.0	⋖										LOS: B	CU Level of Service C
4	WBR	¥C	75	75	Perm		∞	∞		10.0	37.5	38.0	29.5%	3.3	3.2	-1.0	5.5			None	16.6	0.13	0.29	13.0	0.0	13.0	Ф						of Green				Intersection LOS: B	U Level o
Ļ	WBT	*	40	40	ΑĀ	∞		∞		10.0	37.5	38.0	29.5%	3.3	3.2	-1.0	5.5			None	16.6	0.13	0.17	20.0	0.0	20.0	_	30.2	ပ				L, Start o				Ξ	೦
>	WBL	×	25	22	Perm		∞	∞		10.0	37.5	38.0	29.5%	3.3	3.2	-1.0	5.5			None	16.6	0.13	0.15	50.2	0.0	50.2	۵						nd 6:SB1					
†	EBT	¢	40	40	¥	4		4		10.0	37.5		29.5%							None	16.6	0.13	0.32	31.8	0.0	31.8	ပ	52.0	Ω				2:NBTL a					
1	EBL	*	105	105	Perm		4	4		10.0	37.5				3.2		5.5			None	16.6	0.13	09:0	67.4	0.0	67.4	ш						ed to phase		ordinated		1.2	ation 71.2%
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	ros	Approach Delay	Approach LOS	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 Capacity Utilization 71.2% Analysis Period (min) 15

Splits and Phases: 2: Regional Rd 25 & Whitlock Ave



2037 Future Background PM 01-12-2024 Queues 2: Regional Rd 25 & Whitlock Ave

→ •	SBL SBT	60 1385	0.32 0.46		0.0 0.0	10.3 9.6	2.6 60.2	10.1 88.2	481.0	100.0	187 2991	0 0	0 0	0 0	0.32 0.46	
←	L NBT	1965				7.4			6.969	0	3 3106	0 0	0	0	1 0.63	
1	WBR NBL	75 90	0.29 0.3	13.0 4.0		13.0 4.0	0.0	14.0 m3.4		65.0 100.0	441 286	0	0	0	0.17 0.31	
ţ	WBT V							20.3	68.1		475	0	0	0	0.08	
\	WBL	22	0.15	50.2	0.0	50.2	6.1	14.4		65.0	333	0	0	0	0.08	
†	EBT		0			31.8		25.0	65.9		452	0	0	0	0.18	
1	EBF	105	09.0	67.4	0.0	67.4	27.2	45.1		35.0	341	0	0	0	0.31	
	Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Queue Delay	Total Delay	Queue Length 50th (m)	Queue Length 95th (m)	Internal Link Dist (m)	Turn Bay Length (m)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio	Information Cummony

Wolume for 95th percentile queue is metered by upstream signal

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Britannia & RR25 BA Group - NHY

HCM Signalized Intersection Capacity Analysis 2: Regional Rd 25 & Whitlock Ave

2037 Future Background PM 01-12-2024

90.0 91.0 0.70 6.5 3.0 2984 0.32 0.46 8.6 1.00 0.5 9.2 6221 %9 NA 60 60 3.0 1.00 1.00 1.00 1.00 0.05 100 1.00 60 60 60 60 96.0 98.0 0.75 4.0 3.0 0.02 0.25 0.36 8.2 1.00 1.4 pm+pt 40 40 9 9 2 %0 91.4 92.4 0.71 6.5 3.0 3078 8 ₹ 0.64 10.0 0.61 0.8 6.9 A A A 1964 98.8 0.78 0.78 3.0 284 20.02 0.22 0.32 4.6 0.56 0.56 90 90 90 90 90 11.00 11.00 90 90 90 % 15.6 16.6 0.13 6.5 3.0 196 0.05 0.05 1.00 0.1 0.1 D 0.17 50.5 1.00 0.3 50.9 D % ₹ 15.6 16.6 0.13 3.0 3.0 242 0.02 0.02 0.15 50.4 1.00 0.4 50.8 40 40 40 40 40 40 699 40 40 40 40 15.6 16.6 0.13 0.13 3.0 216 0.03 0.22 50.9 1.00 0.5 51.4 D D E E % Y 15.6 16.6 0.13 6.5 3.0 53.6 1.00 5.8 59.4 174 Traffic Volume (vph)
Traffic Volume (vph)
Meal Four Volume (vph)
Meal Fow (vpha)
Total Lost time (s)
Lane Vull Factor
Fig. ped/bikes
Fig. ped Permitted Phases
Actuated Green, G (s)
Effective Green, g (s)
Actuated g/C Ratio
Clearance Time (s)
Vehicle Extension (s)
Lane Gpp Cap (vph)
ws Ratio Prot
ws Ratio Prot Heavy Vehides (%) Turn Type Protected Phases v/c Ratio

Britannia & RR25 BA Group - NHY

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9.2

14.0 C

HCM 2000 Level of Service Sum of lost time (s) ICU Level of Service

11.6 0.62 130.0 71.2%

HCM 2000 Control Delay HCM 2000 Volume to Capacity ratio ntersection Capacity Utilization Actuated Cycle Length (s)

ncremental Delay, d2

Delay (s) Level of Service

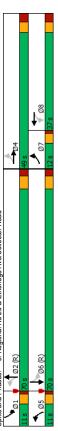
Progression Factor Jniform Delay, d1

Approach Delay (s) Approach LOS

Timings 2037 Future Background PM 5: Regional Rd 25 & Etheridge Ave/Collector Road 01-12-2024

→	SBT	441	1145	1145	Ϋ́	9		9		20.0	38.4	70.0	53.8%	4.2	2.2	-1.0	5.4	Lag	Yes	C-Max	93.5	0.72	0.40	3.6	0.0	3.6	⋖	4.7	∢										
۶	SBL	×	22	22	pm+pt	_	9	-		7.0	11.0	11.0	8.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	101.5	0.78	0.31	29.9	0.0	29.9	ပ											O	
←	NBT	4413	1940	1940	Ϋ́	2		2		20:0	38.4	70.0	23.8%	4.2	2.2	-1.0	5.4	Lag	Yes	C-Max	93.3	0.72	0.64	8.1	0.0	8.1	∢	8.0	∢				_				LOS: A	CU Level of Service C	
•	NBL	<i>y</i> -	9	09	pm+pt	2	2	2		7.0	11.0		8.5%				3.0					0.78			0.0		⋖						t of Greer				Intersection LOS: A	:U Level	
ţ	WBT	æ	0	0	¥	∞		80		10.0	36.2	37.0	28.5%	3.3	5.9	-1.0	5.2	Lag	Yes	None	11.7	0.09	0.13	6.0	0.0	0.9	∢	31.4	ပ				3TL, Star				드	2	
>	WBL	*	4	40	Perm		∞	∞		10.0	36.2	37.0	28.5%	3.3	5.9	-1.0	5.2	Lag	Yes	None	11.7	0.09	0.31	62.0	0.0	62.0	ш						and 6:SI						
†	EBT	¢\$	0	0	Ϋ́	4		4		10.0	36.2	49.0	37.7%	3.3	2.9	-1.0	5.2			None	21.3	0.16	90:0	0.3	0.0	0.3	∢	36.2	۵				e 2:NBTL						
4	EBF	*	75	75	pm+pt	7	4	7		7.0	11.0	12.0	9.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	22.5	0.17	0.33	48.2	0.0	48.2	۵						d to phas		dinated			on 67.8%	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	ros	Approach Delay	Approach LOS	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 Capacity Utilization 67.8%	Analysis Period (min) 15

Splits and Phases: 5: Regional Rd 25 & Etheridge Ave/Collector Road



Britannia & RR25
BA Group - NHY
Page 7

Queues 5: Regional Rd 25 & Etheridge Ave/Collector Road 01-12-2024

→	SBT	1260	0.40	3.6	0.0	3.6	54.9	7.5	6.969		3118	0	0	0	0.40
۶	SBL	22	0.31	29.9	0.0	29.9	2.1	14.6		70.0	177	0	0	0	0.31
←	NBT	2002	0.64	8.	0.0	8.1	64.1	m66.2	292.1		3136	0	0	0	0.64
•	NBL	09	0.19	3.0	0:0	3.0	1.8	m2.4		0.07	321	0	0	0	0.19
ţ	WBT	40	0.13	6.0	0.0	6.0	0.0	0.0	63.5		527	0	0	0	0.08
>	WBL	40	0.31	62.0	0.0	62.0	10.3	22.4		40.0	344	0	0	0	0.12
†	EBT	25	90.0	0.3	0.0	0.3	0.0	0.0	53.9		645	0	0	0	0.04
1	EBL	75	0.33	48.2	0.0	48.2	17.2	31.1		40.0	523	0	0	0	0.33
	Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Queue Delay	Total Delay	Queue Length 50th (m)	Queue Length 95th (m)	Internal Link Dist (m)	Turn Bay Length (m)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio

Intersection Summary molecular of the Northeam Signal.

2037 Future Background PM 01-12-2024 HCM Signalized Intersection Capacity Analysis 5: Regional Rd 25 & Etheridge Ave/Collector Road

Synchro 11 Report Page 9 Britannia & RR25 BA Group - NHY

Timings 7: Regional Rd 25 & Britannia Rd

2037 Future Background PM 01-12-2024

→	SBT	<u> ተ</u> ተጉ	1020	1020	≨	9		9		20.0	49.7	54.0	41.5%	4.2	3.5	-1.0	6.7	Lag	Yes	C-Max	56.9	0.44	0.56	20.1	0.0	20.1	ပ	26.5	ပ										
۶	SBL	£	135	135	Prot	-		-		7.0	11.0	12.0	9.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	11.2	0.09	0.45	29.9	0:0	8.92	ш											ı	
-	NBT	444	1680	1680	≨	2		2		20.0	49.7	58.0	44.6%	4.2	3.5	-1.0	6.7	Lag	Yes	C-Max	61.7	0.47	1.06	70.8	0.0	70.8	ш	69.7	ш								LOS: E	CU Level of Service F	
•	NBL	£	275	275	Prot	2		2		7.0	11.0	16.0	12.3%	3.0	1.0								0.64			61.1	ш						Green				ntersection LOS: E	U Level o	
Ļ	WBT	444	220	220	Ν	∞		∞		10.0	45.5	49.0	37.7%	4.2	3.3	-1.0	6.5	Lag	Yes	None	32.1	0.25	0.78	38.8	0.0	38.8	۵	62.9	ш				, Start of				<u>=</u>	೦	
>	WBL	£	325	325	Prot	က		က		7.0	11.0	14.0	10.8%	3.0	1.0	-1:0	3.0	Lead	Yes	None	11.0	0.08	1.07	139.9	0.0	139.9	ш						nd 6:SB1						
†	EBT	₩₽	320	320	Ϋ́	4		4		10.0	45.5	46.0	35.4%	4.2	3.3	-1:0	6.5	Lag	Yes	None	56.9	0.21	0.45	43.3	0.0	43.3	۵	45.1	٥				2:NBT						
4	EB	£	42	42	Prot	7		7		7.0	11.0	11.0	8.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	8.0	90.0	0.22	6.09	0.0	6.09	ш						d to phase		linated		0	on 91.3%	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	ros	Approach Delay	Approach LOS	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 Capacity Utilization 91.3%	Analysis Period (min) 15

Splits and Phases: 7: Regional Rd 25 & Britannia Rd

104 6 Ø3 ▼ Ø6 (R) **√** Ø5

Synchro 11 Report Page 10 Britannia & RR25 BA Group - NHY

2037 Future Background PM 01-12-2024 Queues 7: Regional Rd 25 & Britannia Rd

	•	†	>	ţ	•	-	۶	→	
Lane Group	EBL	EBT	WBL	WBT	R	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	6.09	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	6.09	43.3	139.9	38.8	61.1	70.8	76.8	20.1	
Queue Length 50th (m)	0.9	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)	0.09		120.0		0.06		0.06		
Base Capacity (vph)	203	1372	302	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 Reducth	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.

— Outure shown is maximum after two cycles.

— Softh percentile volume exceeds capacity, queue may be longer.

— Queue shown is maximum after two cycles.

Synchro 11 Report Page 11 Britannia & RR25 BA Group - NHY

HCM Signalized Intersection Capacity Analysis 7: Regional Rd 25 & Britannia Rd

2037 Future Background PM 01-12-2024

	•	†	<i>></i>	>	ţ	4	•	←	•	۶	→	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	K.	4413		K.	4413		K.	4413		F	4413	
Traffic Volume (vph)	42	320	45	325	220	340	275	1680	202	135	1020	22
Future Volume (vph)	42	320	45	325	220	340	275	1680	202	135	1020	32
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	
Fr	1.00	0.98		1.00	0.94		1.00	0.97		1.00	0.99	
Fit 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	9.	1.00	1.00
Adj. Flow (vph)	42	320	45	325	220	340	275	1680	202	135	1020	22
RTOR Reduction (vph)	0	12	0	0	96	0	0	30	0	0	က	0
Lane Group Flow (vph)	45	383	0	325	794	0	275	2155	0	135	1072	0
Heavy Vehicles (%)	%9	%0	%0	2%	1%	1%	%0	3%	2%	1%	4%	%0
Turn Type	Prot	AN		Prot	W		Prot	W		Prot	NA	
Protected Phases	7	4		က	∞		2	7		_	9	
Permitted Phases												
Actuated Green, G (s)	9.9	26.7		10.0	31.1		15.1	59.9		10.2	22.0	
Effective Green, g (s)	9.9	27.7		11.0	32.1		16.1	6.09		11.2	26.0	
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		60.00	c0.19		80.00	02.00		0.04	0.25	
v/s Ratio Perm												
v/c Ratio	0.27	0.40		1.07	92.0		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	99.0	
Incremental Delay, d2	6:0	0.3		68.9	3.0		3.0	43.4		1.0	1.2	
Delay (s)	60.3	44.3		147.7	45.8		57.2	6.77		73.7	19.5	
Level of Service	ш	Ω		ш	۵		ш	ш		ш	Ф	
Approach Delay (s)		45.9			6.07			9.52			25.6	
Approach LOS		Ω			ш			ш			O	
Intersection Summary												
HCM 2000 Control Delay			2.09	꿀	M 2000	HCM 2000 Level of Service	ervice		ш			
HCM 2000 Volume to Capacity ratio	y ratio		0.97									
Actuated Cycle Length (s)			130.0	S	Sum of lost time (s)	time (s)			19.2			
Intersection Capacity Utilization	Ę		91.3%	೦	ICU Level of Service	f Service			ш			
Analysis Period (min)			15									
c Critical Lane Group												

Britannia & RR25 BA Group - NHY

Timings 2037 Future Background PM 01-12-2024

*	SBR	W.	15	15	Perm		œ	8		10.0	15.3	41.0	39.0%	3.3	2.0	-1.0	4.3			None	11.4	0.11	0.08	19.9	0.0	19.9	В						een			Intersection LOS: A	ICU Level of Service A	
٠	SBL	<u>, -</u>	22	22	Prot	80		∞		10.0	15.3		39.0%			-1.0	4.3			None	11.4	0.11	0.29	47.2	0.0	47.2	Ω	41.4	Ω				Start of Gr			Inte	D D	
ţ	WBT	4413	800	800	¥	9		9		20.0	29.4							Lag	Yes	C-Max	83.6	0.80	0.25	4.2	0.0	4.2	∢	4.2	∢				1 6:WBT,					
†	EBT	**	382	382	Ϋ́	2		2		20.0	29.4	64.0	61.0%	4.2	2.2	-1.0	5.4			C-Max	88.0	0.84	0.10	2.2	0.0	2.2	⋖	2.2	∢				EBTL and					
1	BB	<i>y-</i>	15	15	pm+pt	2	2	2		7.0	11.0	11.0	10.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	89.3	0.85	0.03	1.9	0.0	1.9	∢					105	ed to phase 2:	Post din page	COUNTINATED	r. 5.5	lization 33.7%	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	SOT	Approach Delay	Approach LOS	Intersection Summary	Cycle Length: 105	Actuated Cycle Length: 105	Offset 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green	Central Time: Activited Coordinated	Maximum v/c Ratio: 0.29	Intersection Signal Delay: 5.5	Intersection Capacity Utilization 33.7%	Analysis Period (min) 15

Splits and Phases: 10: Britannia Rd & Farmstead Dr



Britannia & RR25 Synchro 11 Report BA Group - NHY Page 13

 Queues

 10: Britannia Rd & Farmstead Dr

 Lane Group
 EBL
 EBT
 WBT
 SBR
 01-12-2024

 Lane Group Flow (vph)
 16
 385
 880
 55
 15

 Lane Group Flow (vph)
 16
 386
 80
 55
 15

 We Ratio
 Control Delay
 1.9
 2.2
 4.2
 47.2
 19.9

 Control Delay
 1.9
 2.2
 4.2
 47.2
 19.9

 Coutrol Delay
 1.9
 2.2
 4.2
 47.2
 19.9

 Coutrol Delay
 1.9
 2.2
 4.2
 47.2
 19.9

 Queue Length Soth (m)
 0.0
 0.0
 0.0
 0.0

 Queue Length Soth (m)
 1.6
 9.0
 34.6
 23.1
 6.3

 Inn Bay Length (m)
 1.6
 9.0
 34.6
 23.1
 6.3

 Inn Bay Length (m)
 1.0
 37.9
 199.3
 199.3

 Spillazed Capacity (ph)
 519
 382.2
 3562
 606
 574

 Spillazed Cap Reductn
 0
 0
 0
 0
 0

HCM Signalized Intersection Capacity Analysis 2037 Future Background PM 10: Britannia Rd & Farmstead Dr 01-12-2024

	4	†	ţ	4	٠	•	
Movement	EBF	EBT	WBT	WBR	SBL	SBR	
Lane Configurations	F	₩₩	₩₽		<u>, </u>	*	
Traffic Volume (vph)	12	382	800	8	22	12	
Future Volume (vph)	12	382	800	8 6	22	15	
Ideal Flow (vpnpi)	3.0	900	0061	1900	300	0061	
I and Ilfii Factor	0.0	40.80	*0.80		5.5	5.5	
T.	100	100	0.99		100	0.85	
Fit 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	382	800	8	22	15	
RTOR Reduction (vph)	0	0	4	0	0	14	
Lane Group Flow (vph)	15	382	876	0	22	-	
Heavy Vehicles (%)	%0	%0	1%	%0	4%	%0	
Turn Type	pm+pt	Ν	N		Prot	Perm	
Protected Phases	S	2	9		∞		
Permitted Phases	2					œ	
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	0:00	
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	14	
v/s Ratio Prot	0.00	0.08	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	6 .	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	0.5		4.	0.0	
Delay (s)	1.9	2.0	4.2		46.3	43.6	
Level of Service	⋖	⋖	⋖		Δ	۵	
Approach Delay (s)		1.9	4.2		45.8		
Approach LOS		∢	∢		□		
Intersection Summary							
HCM 2000 Control Delay			5.7	H	M 2000	HCM 2000 Level of Service	ice A
HCM 2000 Volume to Capacity ratio	ity ratio		0.26				
Actuated Cycle Length (s)			105.0	Su	Sum of lost time (s)	time (s)	12.7
Intersection Capacity Utilization	on		33.7%	⊴	J Level o	ICU Level of Service	¥
Analysis Period (min)			15				
c Critical Lane Group							

Timings 2037 Future Background PM 11: Britannia Rd & Rose Way

•	SBR	¥C.	20	20	Perm		4	4		10.0	43.0	50.0	38.5%	3.0	3.0	-1.0	5.0			None	11.0	0.08	0.27	18.8	0.0	18.8	Ф					4 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	i ee ii				Intersection LOS: A		
٠	SBL	<u>, </u>	30	30	Prot	4		4		10.0	43.0			3.0	3.0	-1.0	2.0			None	11.0	80.0	0.20	28.7	0.0	28.7	ш	33.8	ပ			70	, otall of c					2	
ţ	WBT	4413	1165	1165	¥	9		ဖ		20.0	29.0		20.0%	4.0	3.0	-1.0	0.9	Lag	Yes	C-Max	103.5	0.80	0.34	5.2	0.0	5.2	∢	5.2	∢			TOWNS FOR	arid o.wb.						
†	EBT	***	910	910	¥	2		2		20.0	29.0	80.0	61.5%	4.0	3.0	-1.0	0.9			C-Max	112.4	98.0	0.23	5.6	0.0	5.6	∢	5.6	∢			F	Z.EDIL 8						
1	EBF	*	8	8	pm+pt	2	2	2		7.0	11.0	15.0	11.5%	3.0	1:0	-1.0	3.0	Lead	Yes	None	114.2	0.88	0.22	3.0	0:0	3.0	⋖					0	sed to priase	hatauhan	nallialen		5.1 ration 50.5%		
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	SOT	Approach Delay	Approach LOS	Intersection Summary	Cycle Length: 130	Actuated Cycle Length: 130	Oliset, 63 (30%), Referenced to priase z. Ebilt and 6.Wbil, Staff of Green Natural Cycle: 85	Control Type: Actuated-Coordinated	Maximim v/o Batio: 0.34	Maximum V/c Katio: 0.34	Intersection Signal Delay: 5.1 Intersection Capacity Hilization 50 5%	Analysis Period (min) 15	

Splits and Phases: 11: Britannia Rd & Rose Way



Britannia & RR25
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Queues 2037 Future Background PM 11: Britannia Rd & Rose Way 01-12-2024

	4	†	ţ	٠	*	
Lane Group	盟	EBI	WBT	SBL	SBR	
Lane Group Flow (vph)	88	910	1225	9	50	
v/c Ratio	0.22	0.23	0.34	0.20	0.27	
Control Delay	3.0	5.6	5.2	28.7	18.8	
Queue Delay	0.0	0.0	0.0	0.0	0:0	
Total Delay	3.0	5.6	5.2	28.7	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	97.6		
Turn Bay Length (m)	20.0			20.0		
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	0.02	0.08	
Intersection Summary						
m Volume for 95th percentile queue is metered by upstream signal	e queue	s metered	by upstre	eam signe		

Britannia & RR25
BA Group - NHY
Page 17

HCM Signalized Intersection Capacity Analysis 11: Britannia Rd & Rose Way

2037 Future Background PM 01-12-2024

Movement		F	F0/4		5		
	CDL	ER	WBI	WBK	NBL NBL	SBK	
Lane Configurations	*	₽	+		<u>, </u>	*-	
Traffic Volume (vph)	8	910	1165	09	30	20	
Future Volume (vph)	8	910	1165	09	30	20	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	3.0	0.9	0.9		2.0	5.0	
Lane Util. Factor	1:00	*0.80	*0.80		1.00	1.00	
Ŧ	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	
Fit 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)	8	910	1165	09	30	20	
RTOR Reduction (vph)	0	0	2	0	0	47	
Lane Group Flow (vph)	8	910	1223	0	30	က	
Heavy Vehides (%)	%0	%0	%0	%0	%0	%0	
Turn Type	pm+pt	ΑN	Ą		Prot	Perm	
Protected Phases	വ	2	9		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	0.6	
Actuated g/C Ratio	0.85	0.85	0.77		0.07	0.07	
Clearance Time (s)	4.0	7.0	7.0		0.9	0.9	
Vehide 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	V	⋖	∢		ш	ш	
Approach Delay (s)		2.5	4.9		57.2		
Approach LOS		∢	⋖		ш		
Intersection Summary							
HCM 2000 Control Delay			5.7	ľ	3M 2000	HCM 2000 Level of Service	∢
HCM 2000 Volume to Capacity ratio	icity ratio		0.34				
Actuated Cycle Length (s)			130.0	S	Sum of lost time (s)	time (s)	14.0
Intersection Capacity Utilization	ation		20.5%	೦	U Level o	ICU Level of Service	⋖
Analysis Period (min)			4				
· · · · · · · · ·			2				

2029 (South Parcel Only) Future Total Traffic Conditions

2029 Future Total AM (South Parcel) 01-12-2024 Timings 1: Regional Rd 25 & Louis St Laurent Ave

					•						
Lane Group	EB	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	*	₩.	*	₩	je-	‡	*	*	‡	*	
Traffic Volume (vph)	270	535	480	260	110	855	315	65	790	92	
Future Volume (vph)	270	535	480	260	110	855	315	65	790	92	
Turn Type	pm+pt	Ϋ́	pm+pt	Ϋ́	pm+pt	≨	Perm	pm+pt	≨	Perm	
Protected Phases	7	4	က	∞	2	2		-	9		
Permitted Phases	4		∞		2		7	9		9	
Detector Phase	7	4	က	∞	2	2	2	-	9	9	
Switch Phase											
Minimum Initial (s)	2.0	10.0	10.0	10.0	5.0	20.0	20.0	2.0	20.0	20.0	
Minimum Split (s)	0.6	30.0	14.0	30.0	0.6	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	0.9	2.0	0.9	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	С-Мах	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	99.0	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	
FOS	ပ	ш	ш	_	ပ	_	⋖	ပ	_	⋖	
Approach Delay		58.4		49.9		32.3			38.6		
Approach LOS		ш		٥		O					
Intersection Summary											
Cycle Length: 140											
Actuated Cycle Length: 140											
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	to phase 2:1	VBTL an	d 6:SBTL	Start of	Green						
Natural Cycle: 90											
Control Type: Actuated-Coordinated	rdinated										
Maximum v/c Ratio: 0.92											
Intersection Signal Delay: 44.2	4.2			드	Intersection LOS: D	LOS: D					
Intersection Capacity Utilization 92.2%	tion 92.2%			\subseteq	CU Level of Service F	of Service	L.				

4 Ø3 Splits and Phases: 1: Regional Rd 25 & Louis St Laurent Ave

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Britannia & RR25 BA Group - NHY

2029 Future Total AM (South Parcel) 01-12-2024 Queues 1: Regional Rd 25 & Louis St Laurent Ave

	1	†	>	ţ	•	←	•	۶	-	•	
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	92	
v/c Ratio	99.0	0.92	0.92	0.58	0.47	0.67	0.42	0.31	89.0	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		0.06	
Base Capacity (vph)	478	792	248	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.

Synchro 11 Report Page 2

Britannia & RR25 BA Group - NHY

HCM Signalized Intersection Capacity Analysis 1: Regional Rd 25 & Louis St Laurent Ave

2029 Future Total AM (South Parcel)

	4	†	<i>></i>	>	ţ	4	•	←	•	۶	→	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	×	₩		r	₽		r	*	*	*	‡	*
Traffic Volume (vph)	270	535	190	480	260	92	110	855	315	65	790	95
Future Volume (vph)	270	535	190	480	260	92	110	855	315	92	790	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	0.9		5.0	0.9		3.0	6.2	6.2	3.0	6.2	6.2
Lane Util. Factor	9.	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
Fr	1.00	96.0		1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Fit 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	326	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	260	92	110	822	315	92	790	92
RTOR Reduction (vph)	0	56	0	0	တ	0	0	0	129	0	0	62
Lane Group Flow (vph)	270	669	0	480	949	0	110	822	156	65	790	33
Confl. Peds. (#/hr)	2					2						
Heavy Vehicles (%)	5%	5%	%	5%	5%	%/	%9	%/	3%	2%	%/	5%
Turn Type	pm+pt	Ν		pm+pt	¥		pm+pt	¥	Perm	pm+pt	ΑN	Perm
Protected Phases	7	4		က	∞		2	2		-	9	
Permitted Phases	4			∞			7		7	9		9
Actuated Green, G (s)	48.0	30.2		6.99	45.1		58.7	20.7	20.7	51.1	46.9	46.9
Effective Green, g (s)	20.0	31.2		6.79	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
Vehide 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	6/9	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	69.0	0.27	0.35	0.68	90:0
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	[-	1.2	3.3	0.2
Delay (s)	38 38	69.7		65.4	39.5		28.7	40.4	32.1	30.7	42.9	31.1
Level of Service	_	ш		ш			ပ		ပ	ပ	_	O
Approach Delay (s)		61.4			50.4			37.3			40.9	
Approach LOS		ш			٥			_			۵	
Intersection Summary												
HCM 2000 Control Delay			47.0	Ĭ	HCM 2000 Level of Service	evel of S	ervice		۵			
HCM 2000 Volume to Capacity ratio	city ratio		0.82									
Actuated Cycle Length (s)			140.0	ઝ	um of lost	time (s)			18.2			
Intersection Capacity Utilization	tion		92.2%	2	ICU Level of Service	Service			ш			
Analysis Period (min)			15									
C Crifical I and Group			2									
200												

Britannia & RR25 BA Group - NHY

Timings 2029 Future Total AM (South Parcel) 2: Regional Rd 25 & Whitlock Ave 01-12-2024

	1	†	>	ţ	4	•	←	•	۶	-	•	
ane Group	EB	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
ane Configurations	*	£3,	F	*	¥.	F	ŧ	¥L.	*	*	*	
raffic Volume (vph)	145	20	20	32	92	45	1065	. e	20	1610	100	
uture Volume (vph)	145	20	20	32	92	45	1065	9	20	1610	100	
urn Type	Perm	ΑΝ	Perm	Ϋ́	Perm	pm+pt	¥	Perm	pm+pt	Ϋ́	Perm	
Protected Phases		4		∞		2	2		-	9		
Permitted Phases	4		∞		∞	2		2	9		9	
Detector Phase	4	4	∞	œ	∞	2	2	2	~	9	9	
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	
otal Split (s)	38.0	38.0	38.0	38.0	38.0	11.0	81.0	81.0	11.0	81.0	81.0	
otal Split (%)	29.2%	29.2%	29.5%	29.5%	29.5%	8.5%	62.3%	62.3%	8.5%	62.3%	62.3%	
(ellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.0	4.2	4.2	3.0	4.2	4.2	
NI-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	
ost 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	
otal 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	
-ead/Lag						Lead	Lag	Lag	Lead	Lag	Lag	
.ead-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	
ct 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	
//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	
otal Delay	68.1	30.2	52.5	45.3	10.9	5.2	7.7	0.1	4.9	15.3	4.1	
SO	ш	ပ	Ω	۵	Ф	∢	∢	⋖	∢	В	∢	
Approach Delay		49.2		29.2			7.5			14.3		
Approach LOS		Ω		ပ			∢			ш		
ntersection Summary												
Sycle Lenath: 130												
Actuated Cycle Length: 130												
Offset 64 (49%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	to phase	2:NBTL	and 6:SB	IL, Start o	of Green							
Sontrol Type: Actuated-Coordinated	dinated											
Maximum v/c Ratio: 0.69												
ntersection Signal Delay: 15.9	6:			⊆ 9	Intersection LOS: B	LOS: B						
ntersection Capacity Utilization 78.0%	on 78.0%			ಲ	CU Level of Service D	f Service	٥					
Analysis Period (min) 15												

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Splits and Phases: 2: Regional Rd 25 & Whitlock Ave

Britannia & RR25
BA Group - NHY
Page 4

Queues 2: Regional Rd 25 & Whitlock Ave

	1	†	>	ţ	4	•	←	•	۶	→	•	
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Group Flow (vph)	145	145	20	35	92	45	1065	10	20	1610	100	
v/c Ratio	69.0	0.49	0.33	0.13	0.31	0.20	0.45	0.01	0.12	89.0	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	6.0	68.0	0.0	5.6	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)		67.9		68.1			6.969			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 guerie is metered by unstream signal	i en en e lit	metered	hvinstr	nois mee	7							
10000	a post out	3	and a far		:							

Britannia & RR25 BA Group - NHY

2029 Future Total AM (South Parcel) 01-12-2024 HCM Signalized Intersection Capacity Analysis 2: Regional Rd 25 & Whitlock Ave

WEL WEL WEL WEL NBL NBL NBT NBT <th></th> <th>١</th> <th>Ť</th> <th>*</th> <th>•</th> <th></th> <th>,</th> <th>_</th> <th>-</th> <th></th> <th></th> <th>+</th> <th>,</th>		١	Ť	*	•		,	_	-			+	,
145	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
145 50 95 50 35 95 45 1065 10 1406 1900 1900 1900 1900 1900 1900 1900 19	Lane Configurations	*	2		*	*	*-	*	‡	*	*	‡	*
145 56 95 56 35 95 45 1065 100 1900 1900 1900 1900 1900 1900 1900	Traffic Volume (vph)	145	20	92	22	32	92	42	1065	9	20	1610	100
1900 1900 1900 1900 1900 1900 1900 1900	Future Volume (vph)	145	20	32	20	35	92	42	1065	9	20	1610	100
5.5 5.5 5.5 5.5 5.5 3.0 5.5 5.5 5.7 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	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
100 0.99 1.00 1.00 1.00 1.00 1.00 1.00 1	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
0.99 1.00 1.00 1.00 1.00 1.00 1.00 0.05 0.05	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
100 090 1100 1085 1100 1085 1100 1085 1100 1085 1100 1085 1100 1085 1100 1100	Flpb, ped/bikes	0.39	1.00		1.00	1.00	1:00	1.00	1.00	1.00	1.00	1.00	1.00
0.95 100 0.95 100 10.9 10.0 0.95 10.0 10.0 17.2 17.2 17.5 14.55 16.7 17.2 17.5 14.5 17.5 17.5 17.5 17.5 17.5 17.5 17.5 17	Ŧ.	1:00	0.90		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
1725 1516 1727 1759 1455 1671 3406 1292 10.73 1506 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.	Fit Protected	0.95	1.00		0.95	1.00	1:00	0.95	1.00	1.00	0.95	1.00	1.00
1333 1516 0.053 1.00 0.10 0.10 1.00 1.00 1.00 1.00 1.0	Satd. Flow (prot)	1725	1516		1727	1759	1455	1671	3406	1292	1805	3438	1509
1333 1516 966 1759 1456 177 3406 1292 1406 100 100 100 100 100 100 100 100 145 86 0 50 36 98 46 106 10 100 145 86 0 50 36 98 88 6% 25% 2 5 5 5 5 5 5 8 8 8 8 8 8 8 8 8 8 8 8 8	Flt Permitted	0.73	1.00		0.53	1.00	1.00	0.10	1.00	1.00	0.23	1.00	1.00
145 65 95 50 35 95 45 1055 10 100 100 100 100 105 90 0 5 9 0 0 0 0 0 0 3 9 145 86 0 0 0 0 0 0 3 9 145 86 0 0 0 0 0 0 3 9 145 86 0 0 0 0 0 0 3 9 145 86 0 0 0 0 0 0 0 3 9 145 86 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Satd. Flow (perm)	1333	1516		965	1759	1455	177	3406	1292	435	3438	1509
145 50 95 50 35 95 45 1065 10 16	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
1	Adj. Flow (vph)	145	20	32	20	32	93	42	1065	9	20	1610	100
145 86 0 50 35 15 45 1065 7 5 5 5 5 8 8 8 8 8 6 25% 1% 8 8 9 8 8 8 7 20% 1	RTOR Reduction (vph)	0	29	0	0	0	8	0	0	က	0	0	20
5 5 5 5 5 5 8% 6% 25% 4% 32% 1% 4% 8% 9% 6% 6% 25% 9mm NA Perm NA Perm pm+pt NA Perm 4 4 8 8 8 2 2 2 104 194 194 194 194 305 87:9 87:0 2 3 3 3	Lane Group Flow (vph)	145	98	0	20	32	15	42	1065	7	20	1610	80
4% 32% 1% 4% 8% 9% 8% 6% 25% Perm NA Perm NA Perm	Confl. Peds. (#/hr)	2		2	2		2						
NA Perm NA Perm pm+pt NA Perm Pm+pt NA Perm NA Perm Pm+pt NA NA Pm+pt NA Pm+pt NA NA Pm+pt NA Pm+pt NA Pm+pt NA NA NA NA NA NA NA N	Heavy Vehicles (%)	4%	32%	1%	4%	%8	%6	%8	%9	25%	%0	2%	7%
4	Turn Type	Perm	Ϋ́		Perm	Ϋ́	Perm	pm+pt	ΑN	Perm	pm+pt	≨	Perm
194 194 194 194 194 195 8 2 204 20.6 88.9 0.16 0.16 0.16 0.16 0.16 0.74 0.68 0.20 0.30 3.0 3.0 3.0 3.0 0.00 3.0 3.0 3.0 3.0 0.00 0.00 0.00 0.01 0.00 0.00 0.00 0.01 0.00 0.00 0.00 0.01 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00	Protected Phases		4			∞		2	7		-	9	
19.4 19.4 19.4 19.4 19.4 93.6 87.9 20.4 20.4 20.4 20.4 20.4 89.6 88.9 0.16 0.16 0.16 0.16 0.16 0.74 0.65 6.5 6.5 6.5 6.5 6.5 4.0 6.5 3.0 3.0 3.0 3.0 3.0 3.0 3.0 209 237 151 276 228 207 2329 0.06 0.06 0.05 0.01 0.15 0.09 0.36 0.33 0.13 0.07 0.22 0.09 0.39 0.13 0.07 0.25 0.100 1.00 1.00 1.00 1.00 0.78 0.6 0.9 0.3 0.1 0.0 0.78 0.66 0.14 49.9 50.0 47.1 46.7 9.1 9.5 0.15 1.00 1.00 0.78 0.08 0.16 0.9 0.9 0.9 0.9 0.9 0.17 0.00 0.00 0.78 0.8 0.18 0.00 0.78 0.8 0.19 0.00 0.78 0.8 0.10 0.00 0.78 0.8 0.00 0	Permitted Phases	4			∞		∞	2		2	9		9
20.4 20.4 20.4 20.4 20.4 956 889 6.16 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 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
0.16 0.16 0.16 0.16 0.16 0.16 0.74 0.68 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5	Effective Green, g (s)	20.4	20.4		20.4	20.4	20.4	92.6	88.9	88.9	92.6	88.9	88.9
6.5 6.5 6.5 6.5 6.5 4.0 6.5 3.0 3.0 3.0 3.0 3.0 3.0 3.0 2.09 2.37 151 276 228 207 2229 0.06 0.05 0.01 0.01 0.09 0.03 0.01 0.01 0.09 0.03 0.01 0.01 0.09 1.00 1.00 0.08 0.03 0.09 1.3 0.2 0.01 0.05 0.6 0.9 1.3 0.2 0.1 0.5 0.6 0.14 49.9 50.0 47.3 46.8 7.6 7.0 0.00	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
3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	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
209 237 151 276 228 207 2329 6.06 0.06 0.02 6.01 0.15 6.06 0.03 1 0.05 6.03 1 0.15 6.05 6.04 0.31 6.05 6.05 6.05 6.05 6.05 6.05 6.05 6.05	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
0.06 0.02 0.01 0.31 0.05 0.00 0.00 0.01 0.31 0.05 0.00 0.01 0.31 0.00 0.00 0.00 0.01 0.32 0.01 0.01 0.32 0.01 0.01 0.01 0.01 0.00 0.00 0.00 0.0	Lane Grp Cap (vph)	500	237		151	276	228	207	2329	883	330	2351	1031
0.69 0.36 0.33 0.13 0.07 0.25 0.46 0.5 0.69 0.38 0.33 0.13 0.07 0.22 0.46 0.5 0.30 0.13 0.07 0.22 0.46 0.5 0.6 0.9 0.30 0.10 0.10 0.08 0.10 0.10 0.08 0.10 0.10	v/s Ratio Prot		90.0			0.05		c0.01	0.31		0.01	c0.47	
0.69 0.36 0.33 0.13 0.07 0.22 0.46 0.51.8 49.0 48.7 47.1 46.7 9.1 9.5 0.5 0.6 0.9 0.30 0.13 0.07 0.22 0.46 0.5 0.6 0.9 0.9 0.100 1.00 1.00 0.78 0.68 1.00 0.78 0.68 1.00 0.79 0.00 0.79 0.68 1.00 0.79 0.68 1.00 0.79 0.69 1.00 0.79 0.69 1.00 0.79 0.69 1.00 0.79 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.1	v/s Ratio Perm	ص.11			0.02		0.01	0.15		0.01	0.09		0.05
518 490 487 47.1 467 9.1 9.5 1.00 1.00 1.00 0.78 0.68 1 9.6 0.9 1.3 0.2 0.1 0.5 0.6 61.4 49.9 50.0 47.3 46.8 7.6 7.0 E D D D D A A A 55.7 47.8 7.0 E D D A A A A A A 55.7 + ACM 2000 Level of Service Dacity ratio 0.66 Sum of lost time (s) 130.0 Sum of lost time (s) 1.00	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
1.00 1.00 1.00 1.00 1.00 0.78 0.68 1 9.6 0.9 1.3 0.2 0.1 0.5 0.6 61.4 49.9 50.0 47.3 46.8 7.6 7.0 E D D D D A A 7.0 E D D A A 7.0 F D A A 7.0 16.7 HCM 2000 Level of Service 130.0 Sum of lost time (s) 1	Uniform Delay, d1	21.8	49.0		48.7	47.1	46.7	9.1	9.5	6.5	5.4	12.2	6.9
9.6 0.9 1.3 0.2 0.1 0.5 0.6 (6.1.4 49.9 50.0 47.3 46.8 7.6 7.0 E D D A A A 5.5.7 47.8 D A A A A 5.5.7 1.0 E D D A A A A 5.5.7 1.0 E D D A A A A 5.5.7 1.0 E D D A A A B D A A B D A A B D A A B D A A B D A A B D A A B D A A B D A A B D A A B D A A B D A A B D A A B D A A B D A	Progression Factor	1.00	9.		1.00	1.00	1.00	0.78	0.68	1.00	1.00	1.00	1.00
614 499 50.0 473 46.8 76 7.0 E D D D A A A A A A A A A A A A A A A A	Incremental Delay, d2	9.6	0.0		1.3	0.2	0.1	0.5	9.0	0.0	0.1	1.6	0.1
E D D D A A A 5.0	Delay (s)	61.4	49.9		20.0	47.3	46.8	9.7	7.0	6.5	9.6	13.9	7.0
55.7 47.8 7.0 E D A A 16.7 HCM 2000 Level of Service 0.66 Sum of lost time (s)	Level of Service	ш	۵		□	۵	□	∢	⋖	∢	⋖	Ф	⋖
16.7 HCM 2000 Level of Service 0.66 Sum of lost time (s)	Approach Delay (s)		22.7			47.8			7.0			13.2	
16.7 HCM 2000 Level of Service acity ratio 0.66 Sum of lost time (s)	Approach LOS		ш			_			∢			В	
16.7 HCM 2000 Level of Service of Service 0.66 Sum of lost time (s)	Intersection Summary												
pacity ratio 0.66 Sum of lost time (s)	HCM 2000 Control Delay			16.7	Ĭ	3M 2000	level of	Service		В			
130.0 Sum of lost time (s)	HCM 2000 Volume to Capa	city ratio		99.0						1			
	Actuated Cycle Length (s)			130.0	જ	im of lost	time (s)			14.0			
cation 78.0% ICU Level of Service	Intersection Capacity Utiliza	tion		%0.8/	೦	U Level o	of Service	_		۵			
Analysis Period (min) 15	Analysis Period (min)			5									

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2029 Future Total AM (South Parcel) 01-12-2024 Timings 5: Regional Rd 25 & Etheridge Ave/Collector Road

→	SBT	₩	1665	1665	≨	9		9		20.0	38.4		53.8%				5.4	Lag	Yes	C-Max	87.4	0.67	0.75	10.9	0.0	10.9	Ω	10.8	B										
۶	SBL	*	30	30	Perm		9	9		20.0	38.4	70.0	53.8%	4.2	2.2	-1.0	5.4	Lag	Yes	C-Max	87.4	0.67	0.08	3.4	0.0	3.4	⋖											ပ	
←	NBT	₩	920	920	≨	5		7		20.0	38.4	81.0	62.3%	4.2	2.2	-1.0	5.4			C-Max	96.3	0.74	0.37	2.3	0.0	2.3	⋖	3.0	∢								LOS: B	ICU Level of Service C	
•	NBL	*	20	20	pm+pt	2	7	2		7.0	11.0	11.0	8.5%	3.0	1:0	-1.0	3.0	Lead	Yes	None	28.7	92.0	0.25	17.6	0.0	17.6	ш						Breen				Intersection LOS: B	U Level o	
ţ	WBT	\$	0	0				∞		10.0	36.2		28.5%								13.5	0.10	0.17	-	0.0	1:1	⋖	36.0	۵				Start of (크	೨	
>	WBL	<u>, </u>	65	92	Perm		∞	∞		10.0	36.2	37.0	28.5%	3.3	5.9	-1.0	5.2	Lag	Yes	None	13.5	0.10	0.47	65.4	0.0	65.4	ш						I 6:SBTL,						
†	EBT	2	0	0	¥	4		4		10.0	36.2	49.0	37.7%	3.3	2.9	-1.0	5.2			None	23.1	0.18	0.21	3.4	0.0	3.4	⋖	35.3	۵				VBTL and						
4	EBF	*	145	145	pm+pt	7	4	7		7.0	11.0	12.0	9.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	25.3	0.19	0.55	52.9	0.0	52.9	_					0	to phase 2:1		ordinated		11.0	ation 71.5%	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	SOT	Approach Delay	Approach LOS	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 Capacity Utilization 71.5%	Analysis Period (min) 15

Splits and Phases: 5: Regional Rd 25 & Etheridge Ave/Collector Road



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Queues 2029 Future Total AM (South Parcel) 5: Regional Rd 25 & Etheridge Ave/Collector Road 01-12-2024

	1	†	>	ţ	•	—	۶	→	
Lane Group	BB	EBT	WBL	WBT	NBL	NBT	SBL	SBT	
Lane Group Flow (vph)	145	8	92	22	20	940	8	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	[.	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	[:	17.6	2.3	3.4	10.9	
Queue Length 50th (m)	34.1	0.0	16.9	0.0	2.0	9.1	8.0	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		6.969	
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.

HCM Signalized Intersection Capacity Analysis 5: Regional Rd 25 & Etheridge Ave/Collector Road

S 2029 Future Total AM (South Parcel)

Note method Fig. Fig. Note		1	†	/	>	ţ	4	•	•	•	۶	→	•
figurations Included (with) Included (with	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
wine (aph) 145 0 86 65 0 55 50 20 30 1665 Iume (aph) 145 0 80 65 0 55 50 20 30 1665 Iume (aph) 145 0 80 65 5 5 20 20 30 1665 Iume (aph) 190 1900 <th< td=""><td>Lane Configurations</td><td>*</td><td>2,</td><td></td><td>r</td><td>2,</td><td></td><td>*</td><td>₩</td><td></td><td>r</td><td>₩</td><td></td></th<>	Lane Configurations	*	2,		r	2,		*	₩		r	₩	
Name	Traffic Volume (vph)	145	0	80	65	0	22	20	920	20	30	1665	9
(γρημ)	Future Volume (vph)	145	0	80	92	0	22	20	920	20	30	1665	9
time (s) 3.0 5.2 5.2 5.2 5.2 5.4 5	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Factor 1.00 1.00 1.00 1.00 0.95 1.00 0.95 red 0.95 1.00 0.85 1.00 0.85 1.00 0.99 red 0.95 1.00 0.85 1.00 0.85 1.00 0.99 v(pcd) 1.787 1615 1.805 1615 1.00 0.99 1.00 v(pem) 1.787 1615 1.00 0.70 1.00 0.95 1.00 v(pem) 1.787 1615 1.00	Total Lost time (s)	3.0	5.2		5.2	5.2		3.0	5.4		5.4	5.4	
ted 0.95 1.00 0.85 1.00 0.85 1.00 1.00 1.00 0.99 (period) 1.00 0.85 1.00 0.99 1.00 0.99 1.00 0.95 1.00 0.99 1.00 0.95 1.00 0.95 1.00 0.07 1.00 0.07 1.00 0.07 1.00 0.07 1.00 0.07 1.00 0.07 1.00 0.07 1.00 1.00	Lane Util. Factor	1:00	1.00		1.00	1.00		1.00	0.95		1:00	0.95	
led 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.97 1.00 0.07 1.00 0.07 1.00 0.07 1.00 0.07 1.00 0.07 1.00 0.07 1.00 0.07 1.00 0.09 0.09 0.09 0.09 0.09 0.09 0.09	T.	1.00	0.85		1.00	0.85		1.00	1.00		1.00	0.99	
V (prot) 1787 1615 1615 1605 1615 1615 1752 3399 1805 3419 V (pem) 057 100 100 100 100 100 100 100 V (pem) 1075 100 1	Fit Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
tend 0.57 1,00 0,07 1,00 0,03 1,00 tend 0.57 1,00 0,07 1,00 0,03 1,00 febric, PHF 1,00 1,00 1,00 1,00 1,00 1,00 1,00 (vph) 1,05 1,05 1,00	Satd. Flow (prot)	1787	1615		1805	1615		1752	3399		1805	3419	
V(perm) 1076 1615 1339 1615 1339 1615 100 <	Flt Permitted	0.57	1.00		0.70	1.00		0.07	1.00		0.30	1.00	
récher, PHF 1,00	Satd. Flow (perm)	1076	1615		1339	1615		131	3399		278	3419	
(v(h)) 145 0 65 0 55 50 20 30 165 up Flow (v(pt)) 145 0 65 0 65 0 0 37 0 17 4 ap Flow (v(pt)) 145 15 0 65 5 0 0 30 0 17 4 17 4 17 4 6	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
duction (vph) 0 65 0 50 0 0 1 duction (vph) 1% 0%	Adj. Flow (vph)	145	0	80	65	0	22	20	920	50	8	1665	9
μρ Flow (γth) 145 15 0 65 5 0 50 939 0 30 1724 hiddes (%) hiddes (%) pm+pt NA pm+pt NA pm+pt NA Pm NA Pm Pm </td <td>RTOR Reduction (vph)</td> <td>0</td> <td>65</td> <td>0</td> <td>0</td> <td>20</td> <td>0</td> <td>0</td> <td>_</td> <td>0</td> <td>0</td> <td>_</td> <td>0</td>	RTOR Reduction (vph)	0	65	0	0	20	0	0	_	0	0	_	0
hides (%) 1% 0% 0% 0% 0% 3% 6% 0% 0% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5%	Lane Group Flow (vph)	145	15	0	65	2	0	20	939	0	30	1724	0
Phases pm+pt NA Perm NA pm+pt NA Perm Phases 7 4 8 5 2 6 Green, G (s) 23.3 23.3 10.5 10.5 94.1 94.1 84.4 6 Green, G (s) 23.3 24.3 11.5 11.5 15.5 95.1 95.1 85.4 6 6 6 6 6 6 6 6 6 4 6 4 85.4<	Heavy Vehides (%)	1%	%0	%0	%0	%0	%0	3%	%9	%0	%0	2%	%9
Phases 7 4 8 8 5 2 6 Phases 5 2 6 6 2 6 2 6 2 6 1 95.1 95.1 85.4 Steen, g(s) 23.3 23.3 10.5 10.5 94.1 94.1 84.4 Steen, g(s) 24.3 24.3 11.5 11.5 95.1 95.1 95.1 85.4 Steen, g(s) 24.3 24.3 11.5 11.5 95.1 95.1 95.1 85.4 Steen, g(s) 24.3 24.3 11.5 11.5 95.1 95.1 95.1 85.4 Steen, g(s) 24.0 6.2 6 2 6.2 4.0 6.4 6.4 Steen, g(s) 3.0 3.0 3.0 3.0 3.0 3.0 Cap (vph) 254 30.1 118 142 179 2486 379 Prot color 0.01 0.05 0.05 0.01 0.28 0.08 Prot color 0.01 0.05 0.05 0.01 0.28 0.08 Prot delay, d1 46.8 43.4 65.8 54.2 13.7 6.5 8.1 Steen, g(s) 4.1 6.5 0.1 0.0 3.04 0.29 0.03 Isla Delay, d2 5.5 0.1 0.7 0.4 0.3 Isla Delay, g1 3.1 0.1 5.5 0.1 0.7 0.4 0.3 Isla Delay, g1 3.1 0.1 5.5 0.1 0.7 0.4 0.3 Isla Delay (s) 47.6 88.6 54.3 4.2 2 2.8 Isla Delay (s) 13.0 HCM 2000 Level of Service B O'viduma to Capacity Utilization 17.5% ICU Level of Service C Isla Delay (s) 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Turn Type	pm+pt	NA		Perm	¥		pm+pt	¥		Perm	NA	
Phases 4 8 8 9.2 9.4 6 Green, (§) 23.3 24.3 11.5 11.5 11.5 10.5 95.1 95.1 95.1 94.4 Green, (§) 24.3 24.3 11.5 11.5 11.5 95.1 95.1 95.1 95.1 95.1	Protected Phases	7	4			∞		2	2			9	
Green G (s) 23.3 23.3 10.5 10.5 10.5 14.1 84.4 Steen G (s) 23.3 23.3 10.5 10.5 10.5 14.1 84.4 Steen g (s) 24.3 24.3 11.5 11.5 11.5 14.5 15.1 85.4 Filme (s) 4.0 6.2 6.2 6.2 6.2 4.0 6.4 6.4 Attension (s) 3.0	Permitted Phases	4			œ			7			9		
See, g(s) 24.3 24.3 11.5 11.5 11.5 95.1 95.1 85.4 gCRatio 0.19 0.19 0.09 0.09 0.73 0.73 0.66 gCRatio 4.0 6.2 6.2 4.0 6.2 6.4 0.66 Atomsion(s) 3.0 3.0 3.0 3.0 3.0 3.0 3.0 Cap (vph) 254 30.1 118 142 179 2486 379 3.0 Port c.004 0.01 0.05 0.05 0.05 0.05 0.05 Perm c.004 0.01 0.05 0.05 0.03 0.08 3.7 0.05 Perm 0.57 0.05 0.55 0.03 0.28 0.38 0.08 Felay, d1 46.8 43.4 56.8 54.2 13.7 6.5 8.1 Included 0.10 1.00 1.00 1.00 1.00 3.04 2.2 2.8	Actuated Green, G (s)	23.3	23.3		10.5	10.5		94.1	94.1		84.4	84.4	
g/C Ratio 0.19 0.19 0.09 0.09 0.73 0.73 0.66 s Time (s) 4.0 6.2 6.2 6.2 4.0 6.4 6.7 6.2 8.7	Effective Green, g (s)	24.3	24.3		11.5	11.5		95.1	95.1		85.4	85.4	
Time (s) 4.0 6.2 6.2 6.2 4.0 6.4 6.4 Atension (s) 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 Apple (phr) 254 3.0 3.0 3.0 3.0 3.0 3.0 3.0 Port c.0.04 0.01 0.05 0.05 0.05 0.05 0.05 Perm c.0.06 0.05 0.05 0.03 0.28 0.38 0.05 Perm c.0.06 0.55 0.03 0.28 0.38 0.05 Perm c.0.06 0.55 0.03 0.28 0.38 0.05 Perm c.0.1 0.10 1.00 1.00 1.00 1.00 0.03 Perm d.0.1 4.2 4.2 4.2 2.8 8.1 1.00 Perm D. E. D. E. D. A.2 2.8 A.2 LOS D. E. D.	Actuated g/C Ratio	0.19	0.19		0.09	60.0		0.73	0.73		99.0	99.0	
Adension (s) 30 20 60	Clearance Time (s)	4.0	6.2		6.2	6.2		4.0	6.4		6.4	6.4	
Cap (vph) 254 301 118 142 179 2486 379 Prof. Co.004 0.01 0.00 0.01 0.02 0.05 Perm Co.004 0.01 0.05 0.05 0.05 0.05 Perm Co.05 0.05 0.05 0.03 0.28 0.38 0.06 Perm Co.05 0.55 0.03 0.29 0.28 0.08 Pelay, d1 46.8 43.4 56.8 54.2 13.7 6.5 8.1 Annical Delay, d2 3.1 0.10 1.00 1.00 3.04 0.29 0.31 Annical Delay, d2 3.1 4.2 2.2 2.8 8.1 A.2 A.A.A.A.A.A.A.A.A.A.A.A.A.A.A.A.A.A.A.	Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Prof. 6004 001 000 001 6028 005 Perm 6006 005 005 005 005 005 Perm 6006 005 005 005 005 005 Perm 6006 005 005 005 005 005 Per 40.8 43.4 56.8 54.2 13.7 6.5 8.1 Per 40.0 100 100 100 3.4 0.29 0.31 Per 40.1 100 100 100 3.4 0.29 0.31 Per 40.1 100 100 100 3.4 0.2 8.1 Per 40.1 100 100 100 100 100 100 Per 55 0.1 0.7 0.4 0.3 Per 40.1 100 100 100 100 100 100 Per 55 0.1 0.7 0.4 0.3 Per 40.1 100 100 100 100 100 100 100 100 100	Lane Grp Cap (vph)	254	301		118	142		179	2486		379	2246	
Perm CLOG 0.05 0.19 0.05 Felay, d1 46.8 43.4 56.8 54.2 137 65.8 8.1 Felay, d1 46.8 43.4 56.8 54.2 137 65.8 8.1 on Factor 1.00 1.00 1.00 1.00 3.04 0.29 0.31 and Delay, d2 3.1 0.1 5.5 0.1 0.7 0.4 0.3 revice D 42.9 43.4 6.2 5.4 4.2 2.2 2.8 LOS A7.6 S8.6 A.2 A.2 A.2 A.A A.A <td>v/s Ratio Prot</td> <td>c0.04</td> <td>0.01</td> <td></td> <td></td> <td>0.00</td> <td></td> <td>0.01</td> <td>c0.28</td> <td></td> <td></td> <td>09:00</td> <td></td>	v/s Ratio Prot	c0.04	0.01			0.00		0.01	c0.28			09:00	
1,000 1,00	v/s Ratio Perm	0.00			0.05			0.19			0.05		
46.8 43.4 56.8 54.2 137 6.5 8.1 1.00 1.00 1.00 3.04 0.29 0.31 3.1 0.1 0.0 3.04 0.29 0.31 49.9 43.4 62.2 54.3 42.2 2.2 2.8 D D E D D A A A A7.6 5.6 58.6 4.2 A A A A9.9 43.4 42.2 2.2 2.8 A A A9.0 A7.6 58.6 A A A A A A9.0 A7.0 F A	v/c Ratio	0.57	0.05		0.55	0.03		0.28	0.38		0.08	0.77	
1,00 1,00 1,00 1,00 3,04 0,29 0,31	Uniform Delay, d1	46.8	43.4		26.8	54.2		13.7	6.5		8.1	15.4	
3.1 0.1 5.5 0.1 0.7 0.4 0.3 49.9 43.4 62.2 54.3 42.2 2.2 2.8 D D A B E S8 D D A	Progression Factor	1:00	1.00		1.00	1.00		3.04	0.29		0.31	0.55	
49.9 43.4 62.2 54.3 42.2 2.2 2.8 7.9 6.2 54.3 42.2 2.2 2.8 7.9 6.9 6.9 6.9 6.9 6.9 6.9 6.9 6.9 6.9 6	Incremental Delay, d2	3.1	0.1		5.5	0.1		0.7	0.4		0.3	2.0	
A A A A A A A A A A A A A A A A A A A	Delay (s)	49.9	43.4		62.2	54.3		42.2	2.2		2.8	10.5	
47.6 \$8.6 4.2 7.6	Level of Service	Ω	Ω		ш	□		□	∢		∢	ш	
D E A	Approach Delay (s)		47.6			58.6			4.2			10.4	
13.0 HCM 2000 Level of Service 13.0 HCM 2000 Level of Service 0.72 130.0 Sum of lost time (s) 130.0 Sum of lost time (s) 15% ICU Level of Service 15 15%	Approach LOS		۵			ш			∢			ш	
slay 13.0 HCM 2000 Level of Service Capacity ratio 0.72 0.72 In (s) 130.0 Sum of lost time (s) Utilization 71.5% ICU Level of Service 15 15	Intersection Summary												
Capacity ratio 0.72 h (s) 130.0 Sum of lost time (s) Utilization 71.5% ICU Level of Service 15	HCM 2000 Control Delay			13.0	Ĭ	3M 2000	Level of	Service		ш			
h (s) 130.0 Sum of lost time (s) Utilization 71.5% ICU Level of Service 15	HCM 2000 Volume to Capa	city ratio		0.72									
Utilization 71.5% 15	Actuated Cycle Length (s)			130.0	જ	ım of lost	time (s)			16.6			
Œ.	Intersection Capacity Utiliza	tion		71.5%	೨	U Level o	of Service			ပ			
c Critical Lane Group	Analysis Period (min)			15									
	 c Critical Lane Group 												

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HCM Unsignalized Intersection Capacity Analysis 2029 Future Total AM (South Parcel) 6: Regional Rd 25 & Site Dwy (South)

																																								Φ	
•	SBR		20	20			9.	20																																of Service	
→	SBT	₩.	1790	1430	-Lee	%	1:00	1790						None		133											SB2	617	0	8	1700	0.36	0.0	0.0						ICU Level of Service	
←	NBT	‡	066	و 066 ا	9	%	9.	066						None		183											SB 1	1193	0	0	1700	0.70	0:0	0.0		0.0				_	
•	NBL		0	0			9.	0									0.64	1810			1129	4.1		2.2	100	338	NB 2	495	0	0	1700	0.29	0.0	0.0					0.2	%8.09	15
<i>></i>	EBR	¥C	92	92			9.	92									0.64	902			0	6.9		3.3	9	694	NB 1	495	0	0	1200	0.29	0.0	0.0		0:0					
1	EBL		0	0	Stop	%0	1.00	0									0.74	2295			818	8.9		3.5	9	234	EB 1	92	0	9	694	0.0	2.5	10.7	Ω	10.7	Ω			zation	
	Movement	Lane Configurations	Traffic Volume (veh/h)	Future Volume (Veh/h)	Sign Control	Grade	Peak Hour Factor	Hourly flow rate (vph)	Pedestrians	Lane Width (m)	Walking Speed (m/s)	Percent Blockage	Right tum flare (veh)	Median type	Median storage veh)	Upstream signal (m)	pX, platoon unblocked	vC, conflicting volume	vC1, stage 1 conf vol	vC2, stage 2 conf vol	vCu, unblocked vol	tC, single (s)	tC, 2 stage (s)	tF (s)	p0 queue free %	cM capacity (veh/h)	Direction, Lane #	Volume Total	Volume Left	Volume Right	CSH	Volume to Capacity	Queue Length 95th (m)	Control Delay (s)	Lane LOS	Approach Delay (s)	Approach LOS	Intersection Summary	Average Delay	Intersection Capacity Utilization	Analysis Period (min)

Timings 2029 Future Total AM (South Parcel) 7: Regional Rd 25 & Britannia Rd 01-12-2024

Splits and Phases: 7: Regional Rd 25 & Britannia Rd



2029 Future Total AM (South Parcel) 01-12-2024 Queues 7: Regional Rd 25 & Britannia Rd

	•	†	>	ţ	•	←	•	۶	-	•	
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Group Flow (vph)	9	099	410	450	20	805	210	330	1505	20	
v/c Ratio	0.26	92.0	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	9.69	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	9.69	40.3	5.2	50.2	51.8	0.1	
Queue Length 50th (m)	8.0	28.7	26.0	34.4	2.9	0.76	0.0	48.2	180.7	0.0	
Queue Length 95th (m)	15.3	71.6	#19.8	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)	0.09		120.0		0.06		0.06	0.06		0.06	
Base Capacity (vph)	482	1371	203	1363	225	1176	699	4	1637	099	
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	

[#] Sich percental volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

The control of the percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis 7: Regional Rd 25 & Britannia Rd

2029 Future Total AM (South Parcel) 01-12-2024

	•	†	<i>></i>	\	ţ	4	•	←	•	۶	→	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	ř.	4₩		F	4413		ř.	ŧ	*-	K.	‡	*-
Traffic Volume (vph)	09	330	270	410	325	125	20	802	210	330	1505	2
Future Volume (vph)	8	330	270	410	325	125	20	802	210	330	1505	8
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
Ŧ	1.00	0.94		1.00	96:0		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
Fit 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)	9	330	270	410	325	125	20	802	210	330	1505	8
RTOR Reduction (vph)	0	97	0	0	22	0	0	0	139	0	0	=
Lane Group Flow (vph)	09	263	0	410	395	0	20	802	71	330	1505	တ
Heavy Vehicles (%)	%9	1%	1%	%/	1%	2%	4%	2%	4%	%0	2%	27%
Turn Type	Prot	AN		Prot	¥		Prot	₹	Perm	Prot	N	Perm
Protected Phases	7	4		က	∞		2	5		_	9	
Permitted Phases									7			9
Actuated Green, G (s)	9.9	23.5		17.6	34.5		6.3	42.8	42.8	22.9	59.4	59.4
Effective Green, g (s)	9.7	24.5		18.6	35.5		7.3	43.8	43.8	23.9	60.4	60.4
Actuated g/C Ratio	90.0	0.19		0.14	0.27		90.0	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
Vehide 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	290
v/s Ratio Prot	0.02	c0.13		c0.12	0.09		0.01	0.23		60.00	9.44	
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	28.7	49.4		54.2	37.8		28.8	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	6.0	5.9		11.4	0.2		0.8	3.5	0.5	0.5	9.7	0.0
Delay (s)	29.6	52.2		61.9	34.7		59.5	40.8	30.5	47.0	55.4	18.8
Level of Service	ш	□		ш	ပ		ш	□	ပ	□	ш	Ф
Approach Delay (s)		52.8			47.7			39.6			53.5	
Approach LOS		Ω						Ω			۵	
Intersection Summary												
HCM 2000 Control Delay			49.0	¥	3M 2000	HCM 2000 Level of Service	ervice		۵			
HCM 2000 Volume to Capacity ratio	/ ratio		0.85									
Actuated Cycle Length (s)			130.0	Su	Sum of lost time (s)	time (s)			19.2			
Intersection Capacity Utilization	_		90.4%	ਠ	U Level o	f Service			ш			
Analysis Period (min)			15									
c Critical Lane Group												

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2029 Future Total AM (South Parcel) 01-12-2024 HCM Unsignalized Intersection Capacity Analysis 8: Site Dwy (South) & Etheridge Ave

Vone	•	
trate (veh'n) 165 5 25 85 me (veh'n) 170 me 170 110 80 me # EB 1 WB 1 NB 1 me # MB 1 NB 1		NBR
me (vehth) 165 5 25 85 me (veht) 165 5 25 85 me (vehth) 165 5 25 85 me (vehth) 165 5 25 85 me (vehth) 170 me 1	<u>></u>	
me (Veh/h) 165 5 25 85 Ince (Veh/h) 165 5 25 85 Inc (m) 640 Sed (m/s) 640 Sed (m/s) 640 Sed (m/s) 165 5 25 85 Inc (m) 640 Sed (m/s) 165 5 25 85 Inc (m) 640 Sed (m/s) 165 5 25 85 Inc (m) 640		09
Free Free Free Free Free Free		09
Factor 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0%		
ratio (vph) 165 5 25 86 (m) ead (mis) 6 25 86 86 (mis) 6 26 87 (mis) 6 27		
rate (vph) 165 5 25 85 (m) eed (m/s) eed (m/s) ckage are (veh) age veh) age veh) Anne age veh) Anne age veh) Anne age veh) Anne Anne Anne Anne Anne Anne Anne Ann	1.00	1.00
(whit) ed (mis) ed (mis) ckage are (veh) grad (m) unblocked unblocked toonf vol conf vol do conf vol do conf vol conf vol conf vol conf vol do conf vol do conf vol conf		09
(m) sed (m/s) ead (m/s) ead (m/s) ead (m/s) grad (m/s) grad (m/s) grad (m/s) grad (m/s) from four to control ked voi (s) se % (velvh) ead from		
ead (m/s) odage are (veh) age veh) age veh) age veh) agra (m) rowlocked rowlocke		
ckage are (veh) None age veth grafi (m) Indicked unblocked unblocked toomf vol conf vol conf vol conf vol conf vol conf vol conf vol toomf vol conf vol con conf vol		
ane (veh) gage veh) grad (m) unblocked ng volume 170 170 2 conf vol ked vol (veh/h) (s) (veh/h) 170 1420 170 1420 170 1420 170 1420 170 1420 170 1420 170 170 170 170 170 170 170 1		
None None None Seg veh		
age veh) age veh) grad (m) grad (m) 1 conf vol 2 conf vol 4.1 (s) 2 conf vol 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.	e	
gral (m) 78 unblocked unblocked unblocked unblocked 100 170 2 conf vol 2 conf vol 3 conf vol 4.1 (s) 2.2 8e% 98 (velvh) 1420 ane # EB 1 WB 1 NB 1 110 110 80 11 5 0 60 11 5 0 60 11 5 0 00 12 22 22 22 22 20 11 10 00 11 8 99 34(s) 0.10 0.10 0.10 34(s) 0.10 0.10 34(s) 0.10 0.11 34(s) 0.10 0.14 35 0.10 36 0.10 37(s) A A A A A A A A A A A A A A A A A A A		
unblocked g volume 170 2 conf vol 5 conf vol 6 (s) 9 e % 10 conf vol 170 170 170 180 180 180 180 180 180 180 180 180 18	œ	
ng volume 170 1 conf vol 2 conf vol 1 conf vol 1 conf vol 2 conf vol 1 conf		
Confivol	302	168
2 conf vol 4.1 (170 (170 (170 (170 (170 (170 (170 (17		
ked vol 170 (s) (s) 89% 80% 80% 80% (velvln) 1420 1420 1420 1420 1420 1420 1420 1420		
(s) 4.1 (s) 4.1 (s)	302	168
(s) 2.2 ane % 98 (velvh) 1420 ane # EB1 WB1 NB1 al 170 110 80 bit 5 0 60 bit 1700 1420 821 2apacity 0.10 0.02 0.10 ay(s) 0.0 1.8 9.9 elay(s) 2.7	6.4	6.2
ee% 98 (veh/h) 1420 ann # EB 1 WB 1 NB 1 1420 ann # T70 110 80 t 0 25 20 t 0 25 20 t 1700 1420 621 2apacity 0.10 0.02 0.10 ght 95th (m) 0.0 0.4 2.6 ay (s) 0.0 1.8 9.9 A A A A A A A A A A A A A A A A A A A		
(VehVh) 1420 and 170 110 80 al 170 110 80 th 5 0 60 th 170 140 821 25 20 th 170 140 821 29 821 29 821 29 93 37 89 A A A A A A A A A A A A A A A A A A A	3.5	3.3
(vehrln) 1420 and # EB1 WB1 NB1 all 170 10 80 tr 5 0 60 tr 70 10 80 170 1420 821 2-pacity 0.10 0.10 ay (s) A A A Summary A Summary 2.7	97	93
ane # EB1 WB1 NB1 al	681	882
al 170 110 80 tt 0 25 20 th 5 0 60 28pacity 0.10 0.02 0.10 ght 95th (m) 0.0 0.4 2.6 ay (s) 0.0 1.8 9.9 A A A Summary A Summary 2.7		
ti 6 25 20 tht 5 0 60 2-parcity 1700 1420 821 2-parcity 0.10 0.02 0.10 3th 95th (m) 0.0 0.4 2.6 3y (s) 0.0 1.8 9.9 A A A A A A A A A A A A A A A A A A A		
ht 1700 1420 821 2-pacity 1700 1420 821 2-pacity 0.10 0.02 0.10 2-pt (s) 0.0 1.8 9.9 3-pt (s)		
1700 1420 821 1700 1420 821 1700 10 0.02 0.10 1700 1700 0.10 1700 1700 0.10 18 9.9 1700 1700 1700 0.10 18 9.9 1700 1700 1700 0.10 1700 0.10 1700 0		
Apacity 0.10 0.02 0.10 mt 95th (m) 0.0 0.4 2.6 ay (s) 0.0 1.8 9.9 A A A A A A A A A A A A A A A A A A		
yr (s) 0.0 0.4 2.6 yr (s) 0.0 1.8 9.9 yr (s) 0.0 yr (
by (s) 0.0 1.8 9.9 A A A A A A A A A A A A A A A A A A		
A A A A A A A A A A A A A A A A A A A		
elay (s) 0.0 1.8 9.9 OS A Summary 2.7		
A 2.7		
2.7		
2.7		
Utilization 29.6%	ICU Level of Service	Service A
Analysis Period (min)		

Synchro 11 Report Page 14 Britannia & RR25 BA Group - NHY

Timings 10: Britanr

2029 Future Total AM (South Parcel)

•	SBR	R	25	25	Perm		ω	8		10.0	15.3	41.0	39.0%	3.3	2.0	-1.0	4.3			None	12.8	0.12	0.12	16.1	0.0	16.1	В					4	II AAA			Intersection LOS: A	CO Level of Service A	
٠	SBL		06		Prot	∞		∞		10.0			39.0%		2.0		4.3			_			0.43			8		4	Ω			7	, start or G			<u> </u>	2	
ţ	WBT	444	370	370	Ϋ́	9		9		20.0	29.4	53.0	20.5%	4.2	2.2	-1.0	5.4	Lag	Yes	C-Max	82.3	0.78	0.12	4.3	0.0	4.3	⋖ .	4.3	⋖			FOW!	Id o.wb.					
Ť	EBT	444	630	630	Ϋ́	2		2		20.0	29.4	64.0	61.0%		2.2		5.4			C-Max	86.7	0.83	0.17	2.7	0.0	2.7	∢	2.7	⋖			Ē	EDIL					
1	EBL	<i>y_</i>	20	20	bm+pt	5	2	5		7.0	11.0	11.0	10.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	88.0	0.84	0.03	2.4	0.0	2.4	4					105	z espud oi peo	-Coordinated	က	ly: 7.2	tilization 53. 1% 5	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	FOS	Approach Delay	Approach LOS	Intersection Summary	Cycle Length: 105	Actuated Cycle Length: 105	Onset. 0 (0%), referenced to priase z.Ebil. and o.Wbi, stant of Green Natural Cycle; 60	Control Type: Actuated-Coordinated	Maximum v/c Ratio: 0.43	Intersection Signal Delay: 7.2	Intersection Capacity Unitation 55, 1% Analysis Period (min) 15	

Splits and Phases: 10: Britannia Rd & Farmstead Dr



Synchro 11 Report Page 15 Britannia & RR25 BA Group - NHY

Queues 2029 Future Total AM (South Parcel) 10: Britannia Rd & Farmstead Dr 01-12-2024

יט. בוומוווומ וא אין מווווטנטמע בו	2	2				
	1	†	ţ	٠	*	
Lane Group	EBL	EBI	WBT	SBL	SBR	
Lane Group Flow (vph)	20	630	395	6	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)	9.0	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	262	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						

HCM Signalized Intersection Capacity Analysis 10: Britannia Rd & Farmstead Dr

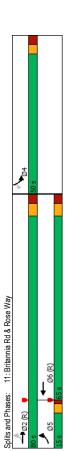
2029 Future Total AM (South Parcel) 01-12-2024

Movement Lane Configurations Traffer Volume (ph) Traffer Volume (ph) Ideal Flow (kphp) Ideal Flow (kphp) Ideal Flow (kphp) Sada Flow (php) Fit Protected Sadd. Flow (pcm) Sadd. Flow (pcm) Peak-hour factor, PHF Peak-hour factor, PHF Peak-hour factor, PHF	EBL 20 24	EBT	WBT	WBR	SBL	SBR	
Lane Configurations Traffic Volume (yph) Traffic Volume (yph) Ideal Flow (yphg) Ideal Flow (yphg) Total Lost time (s) Telar Util. Factor Fit Sadd. Flow (grod) FIt Pendeded Sadd. Flow (perm) Seaker, Pour factor, PHF	20 20						
Traffic Volume (vph) Future Volume (vph) deal Flow (vphg) Total Lost time (s) Lane Util. Factor Fit Fit Fit Protected Sald. Flow (prot) Fit Permitted Sald. Flow (prot) Feek-Pour factor, PHF Peek-Pour factor, PHF	2 2 2	#	+		r	¥.	
Future Volume (vph) Ideal Flow (vph) Indal Lost line (s) Fit Fit Fit Lost Lost for for Fort Fit Protected Sit Flow (yot) Fit Permitted Sald. Flow (yot) Fit Permitted Sald. Flow (yot) Ast. Flow (yot)	190	630	370	25	90	25	
Ideal Flow (vphp) Table Lost time (s) That Lost time (s) Fit Fit Frodected Sadd. Flow (prd) Fit Perel Fit From the fit Fro	1900	630	370	52	90	25	
Total Lost time (s) Frt Frt Filt Protected Sadt. Flow (prot) FIR Permitted Sadt. Flow (perm) Peak-hour factor, PHF Ast Frt Ast	3	1900	1900	1900	1900	1900	
Lane Util. Factor Fit Fit Fit Protected Said: Flow (prot) Fit Permitted Said. Flow (perm) Said. Flow (perm) And Flow (perm) And Flow (perm)	3.0	5.4	5.4		4.3	4.3	
Fit Throtected Satd. Flow (prot) Fit Permitted Satd. Flow (perm)	1.00	*0.80	*0.80		1.00	1.00	
Fit Protected Satd. Flow (prot) Fit Permitted Satd. Flow (perm) Satd. Flow (perm) Peak-hour factor, PHF	1.00	1.00	0.99		1.00	0.85	
Satd. Flow (prot) Fit Permitted Satd. Flow (perm) Peak-hour factor, PHF	0.95	1.00	1.00		0.95	1.00	
Fit Permitted Satd. Flow (perm) Peak-hour factor, PHF	1656	4427	4202		1703	1538	
Satd. Flow (perm) Peak-hour factor, PHF	0.46	1.00	1.00		0.95	1.00	
Peak-hour factor, PHF	811	4427	4202		1703	1538	
Agi Flore (mb)	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vpri)	20	630	370	22	90	25	
RTOR Reduction (vph)	0	0	က	0	0	22	
Lane Group Flow (vph)	20	630	392	0	90	က	
Heavy Vehicles (%)	%6	3%	%8	%0	%9	2%	
Turn Type p	pm+pt	NA	NA		Prot	Perm	
Protected Phases	2	7	9		∞		
Permitted Phases	5					œ	
Actuated Green, G (s)	83.5	83.5	7.97		8.6	8.6	
Effective Green, g (s)	84.5	84.5	77.77		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	
Vehide Extension (s)	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	683	3562	3109		175	158	
//s Ratio Prot	0.00	c0.14	0.09		c0.05		
//s Ratio Perm	0.02					0.00	
//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	∢	∢	∢		□	Ω	
Approach Delay (s)		2.4	4.0		46.1		
Approach LOS		⋖	∢		۵		
Intersection Summary							
HCM 2000 Control Delay			7.3	윈	:M 2000 I	HCM 2000 Level of Service	٨
HCM 2000 Volume to Capacity ratio	ratio		0.22				
Actuated Cycle Length (s)			105.0	Su	Sum of lost time (s)	time (s)	12.7
Intersection Capacity Utilization			33.1%	ಠ	J Level o	ICU Level of Service	∢
Analysis Period (min)			15				
c Critical Lane Group							

Britannia & RR25 BA Group - NHY

Timings 2029 Future Total AM (South Parcel) 11: Britannia Rd & Rose Way 01-12-2024

	↑ a	₩ MBT	<u></u> ₩ ₩	SBR F
	905	785	55 55 50	75 75
	8 8	N 9	Prot 4	Perm
	c	u	-	4 <
	7	>	+	r
7.0	20.0	20.0	10.0	10.0 43.0
15.0	80.0	65.0		50.0
	9	20.0%		38.5%
3.0		4.0		3.0
0. 6		3.0	3.0	3.0
0.5	0.1-	0	0.5	0.1.0
Pad Pad		2 2	5	0.0
Yes		Yes		
None	_	C-Max	None	None
110.2		100.6	11.8	11.8
0.85		0.77	0.09	0.09
0.05	0	0.23	0.34	0.35
2		5 5 6	- 6	5.5
0.0	0.0	0.0	0.0	0.0
-		⋖	ш	B
	6.9	4.6	35.2	
	∢	∢	Ω	
	Offset 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green	6:WBT,	Start of G	nee
			₹	Intersection LOS: A
	ntersection Capacity Utilization 38.3%		೦	CU Level of Service A



Queues 2029 Future Total AM (South Parcel) 11: Britannia Rd & Rose Way

	1	†	ţ	۶	•
Lane Group	留	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	22	902	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	0.44	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	0.97	
Turn Bay Length (m)	20.0			20.0	
Base Capacity (vph)	284	3761	3523	624	809
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					

2029 Future Total AM (South Parcel) 01-12-2024 HCM Signalized Intersection Capacity Analysis 11: Britannia Rd & Rose Way

																																						A		14.0	A		
`	SBR	*	75	75	006	5.0	1.00	.85	1.00	1615	1.00	615	1.00	75	89	7	%0	Perm		4	10.8	11.8	60:0	0.9	3.0	146		0.00	0.05	74.0	1.00	0.1	54.1	۵				el of Service		e (s)	ervice		
٠ •	思		. 22	32	1900							1805	1.00	RS	0		%0 ,	Prot P.	4		10.8				3.0	163			0.34				56.7	ш	55.2	ш		HCM 2000 Level of Service		Sum of lost tim	ICU Level of Service		
→	WBT WBR		785 10		1900 1900	0.9	*0.80	1.00	1.00	4551	1.00		1.00 1.00		0 0		%0 %0	ΑΑ	9		0.86	0.66	9.76	7.0	3.0	3465	0.17		0.23	4.5	1.00	0.2	4.6	⋖	4.6	¥		9.2	0.26	130.0	38.3%	15	
† →	EBL EBT	1	25 905				1.00 *0.80		0.95 1.00			553 4560	1.00			25 905	%0 %0	pm+pt NA	5 2		106.2 106.2	_	Ĭ			206 3760			0.05 0.24		•		9	A A	9.9	⋖			ıţio				
,	Movement	Lane Configurations	Traffic Volume (vph)	oh)	`	(9	e Util. Factor			rot)			or, PHF		RTOR Reduction (vph)	Lane Group Flow (vph)	Heavy Vehicles (%)		Protected Phases	Permitted Phases	_	s)	J	Clearance Time (s)	Vehicle Extension (s)	(hdh)		Perm		Uniform Delay, d1		Incremental Delay, d2	Delay (s)	Level of Service	Approach Delay (s)	Approach LOS	Intersection Summary	HCM 2000 Control Delay	HCM 2000 Volume to Capacity ratio	Actuated Cycle Length (s)	Intersection Capacity Utilization	Analysis Period (min)	c Critical Lane Group

Synchro 11 Report Page 20 Britannia & RR25 BA Group - NHY

Timings 1: Regional Rd

2029 Future Total PM (South Parcel)	01-12-2024	
	d 25 & Louis St Laurent Ave	

•	SBR	*	195	195	Perm		9	9		20.0	32.2	26.0	40.0%	4.2	3.0	-1.0	6.2	Lag	Yes	C-Max	59.3	0.42	0.25	4.7	0:0	4.7	⋖												
→	SBT	‡	842	842	≨	9		9		20.0	32.2	26.0	40.0%	4.2	3.0	-1.0	6.2	Lag	Yes	C-Max	59.3	0.42	0.57	34.3	0.0	34.3	ပ	27.8	ပ										
۶	SBL	*	92	92	pm+pt	_	9	-		2.0	9.0	10.0	7.1%	3.0	1:0	-1.0	3.0	Lead	Yes	None	70.5	0.50	0.30	17.9	0.0	17.9	ш												
•	NBR	*-	430	430	Perm		2	7		20.0	32.2	0.89	48.6%	4.2	3.0	-1.0	6.2	Lag	Yes	C-Max	62.9	0.47	0.45	2.0	0.0	2.0	⋖											ш	
←	NBT	‡	870	870	≨	2		7		20.0	32.2	0.89	48.6%	4.2	3.0	-1.0	6.2	Lag	Yes	C-Max	62.9	0.47	0.54	28.7	0.0	28.7	ပ	21.0	ပ								LOS: D	ICU Level of Service	
•	NBL	*	210	210	pm+pt	2	2	ა		2.0	9.0	22.0	15.7%	3.0	1.0	-1.0	3.0	Lead	Yes	None	80.0	0.57	0.57	21.9	0.0	21.9	ပ						Green				Intersection LOS: D	:U Level	
ţ	WBT	₩	542		Ϋ́			∞		10.0	30.0	40.0	28.6%	4.0	3.0	-1.0	0.9	Lag	Yes	None	31.0	0.22	0.77	57.4	0.0	57.4	ш	22.0	ш				Start of				⊆ :	_	
>	WBL	-	345	345	pm+pt	က	∞	ო		10.0	14.0	32.0	22.9%	3.0	0.0	-1.0	2.0	Lead	Yes	None	54.9	0.39	0.83	50.9	0.0	50.9	_						4 6:SBTL						
†	EBT	₩.	375	375	ΑN	4		4		10.0	30.0	30.0	21.4%	4.0	3.0	-1.0	0.9	Lag	Yes	None	23.7	0.17	0.82	65.1	0.0	65.1	ш	58.5	ш				NBTL and						
4	EBL	*	202	202	pm+pt	7	4	7		5.0	9.0	22.0	15.7%	3.0	1.0	-1.0	3.0	Lead	Yes	None	43.5	0.31	69.0	42.7	0.0	42.7	_						phase 2:		linated		5	%0.98 uc	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	ros	Approach Delay	Approach LOS	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 Capacity Utilization 86.0%	Analysis Period (min) 15

Splits and Phases: 1: Regional Rd 25 & Louis St Laurent Ave



Britannia & RR25 BA Group - NHY

2029 Future Total PM (South Parcel) 01-12-2024 Queues 1: Regional Rd 25 & Louis St Laurent Ave

	4	†	\	Ļ	•	←	•	۶	→	•	
ane Group	EBL	EBT	WBL	WBT	퓜	NBT	NBR	SBL	SBT	SBR	
ane Group Flow (vph)	205	495	345	610	210	870	430	92	842	195	
/c Ratio	69.0	0.82	0.83	0.77	0.57	0.54	0.45	0:30	0.57	0.25	
Sontrol Delay	42.7	65.1	20.9	57.4	21.9	28.7	2.0	17.9	34.3	4.7	
lueue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Fotal Delay	42.7	65.1	6.03	57.4	21.9	28.7	2.0	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	
ntemal Link Dist (m)		126.1		117.1		481.0			113.5		
urn Bay Length (m)	90.0		35.0		65.0		65.0	80.0		0.06	
sase Capacity (vph)	324	979	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	
educed 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.

Synchro 11 Report Page 2

Britannia & RR25 BA Group - NHY

HCM Signalized Intersection Capacity Analysis 1: Regional Rd 25 & Louis St Laurent Ave

2029 Future Total PM (South Parcel)

	4	†	<i>></i>	>	ţ	4	•	•	•	۶	→	•
Movement	盟	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	₽ ₽		*	₽ ₽		r	‡	*	*	‡	*
Traffic Volume (vph)	202	375	120	345	542	92	210	870	430	95	845	195
Future Volume (vph)	202	375	120	345	542	65	210	870	430	92	845	195
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	0.9		2.0	0.9		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
Ĕ	1.00	96.0		1.00	0.98		1.00	1.00	0.85	1.00	0.1	0.85
Fit 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
Fit Permitted	0.24	1.00		0.18	1.00		0.21	1.00	1.00	0.26	0.1	1.00
sard. Flow (perm)	442	3435		9 5 5 7	323/		394	3400	/gc	489	- \$	7901
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.1	0.1	1.00
Adj. Flow (vpn)	cn7	3/3	07	<u>.</u>	£ 1	ဂ္ဂ င	017	0/0	430	ဂ္ဂ	040	8 5
RIOR Reduction (vpn)	ם איני	77 624	>	245	- 03	> <	200	0 020	202	O 14	0.45	2 8
Confl Dods (#/hr)	202	5	ט ע	<u> </u>	200	ט ע	017	0.00	7	n u	2	3 4
Logo Vobidos (%)	200	10%	0%	000	700	20%	, 6	80%	70,7	0%	70/	0%
True Tree	0.7	0 V	0,0	0/0	0.0 0.0	0/.7	0/-	0.0	0/ L	0,0	0,4	0,0
Turn Type	pm+pr	¥ ×		piii+pi	≨°		id+iid	<u>₹</u> °	E	prii+pr	¥	E E
Protected Phases		4		n 0	ю		ი ი	7	c	- 0	٥	C
Permitted Phases	4 .			Σ (7		7	٥		9
Actuated Green, G (s)	38.5	22.7		49.9			75.9	64.9	64.9	65.3	58.3	58.3
Effective Green, g (s)	40.5	23.7		20.9	31.1		76.9	62.9	62.9	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	0.45	0.45
Clearance Time (s)	4.0	7.0		3.0	2.0		4.0	7.2	7.2	4.0	7.2	7.2
Vehide 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	281		405	785		361	1603	737	310	1470	670
v/s Ratio Prot	0.09	0.14		c0.15	c0.17		0.09	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	26.0		36.1	21.1		19.0	26.3	22.8	50.6	30.7	24.5
Progression Factor	9:	1:00		1.00	1:00		1.00	1.00	1:00	1.00	9.1	9.
Incremental Delay, d2	8.2	9.8		15.7	4.5		2.4	د .	1:0	9.0	1.6	0.4
Delay (s)	48.7	97.0		21.8	9229		21.4	27.7	23.9	21.1	32.4	24.9
Level of Service	_	ш		۵	ш		ပ	ပ	ပ	ပ	ပ	O
Approach Delay (s)		0.09			54.2			25.7			30.2	
Approach LOS		ш			٥			ပ			ပ	
Intersection Summary												
HCM 2000 Control Delay			38.8	Ĭ	HCM 2000 Level of Service	Level of S	Service		۵			
HCM 2000 Volume to Capacity ratio	icity ratio		0.70									
Actuated Cycle Length (s)			140.0	જ	Sum of lost time (s)	time (s)			18.2			
Intersection Capacity Utilization	ation		%0.98	೦	U Level o	f Service			ш			
Analysis Period (min)			15									
c Critical Lane Group												
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Britannia & RR25 BA Group - NHY

Timings 2029 Future Total PM (South Parcel) 2: Regional Rd 25 & Whitlock Ave 01-12-2024

•	SBR	¥	135	135	Perm		9	9		20.0	35.5	81.0	62.3%	4.2	2.3	-1.0	5.5	Lag	Yes	C-Max	91.1	0.70	0.12	4.1	0.0	4.1	⋖												
→	SBT	₩	1055	1055	ΑN	9		9		20.0	35.5	81.0	62.3%	4.2	2.3	-1.0	5.5	Lag	Yes	C-Max	91.1	0.70	0.44	9.7	0.0	9.7	⋖	89 89	∢										
۶	SBL	F	09	09	pm+pt	-	9	-		7.0	11.0	11.0	8.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	101.7	0.78	0.21	4.8	0.0	4.8	∢												
•	NBR	¥.	4	40	Perm		7	5		20.0	35.5	81.0	62.3%	4.2	2.3	-1.0	5.5	Lag	Yes	C-Max	93.5	0.72	0.03	ر .	0.0	 6.	⋖												
←	NBT	44	1510	1510	A	2		7		20.0	35.5		62.3%								93.5	0.72	0.61	7.0	0.0	7.0	⋖	9.9	∢									۵	
•	NBL	je.	6	6	pm+pt	2	2	2		7.0	11.0						3.0	Lead	Yes		102.8	0.79	0.21	<u>6</u>	0.0	6	∢										LOS: B	Service	
4	WBR	ĸ.	75	75	Perm		∞	∞		10.0	37.5	38.0	29.5%	3.3	3.2	-1.0	5.5			None	16.6	0.13	0.29	13.0	0.0	13.0	ш						f Green				Intersection LOS: B	ICU Level of Service D	
ļ	WBT	+	4	40	Ν	∞		∞		10.0	37.5						5.5			None	16.6	0.13	0.17	20.0	0.0	20.0	_	30.2	O				L, Start o				ī	ಠ	
\	WBL	-	22	22	Perm		∞	∞		10.0	37.5						5.5			None	16.6	0.13	0.15	50.2	0.0	50.2	_						nd 6:SBT						
†	EBT	4	9	4	A	4		4		10.0	37.5				3.2		5.5			None	16.6	0.13	0.32	31.8	0.0	31.8	ပ	52.0	۵				2:NBTL a						
•	EBL	*	105	105	Perm		4	4		10.0	37.5	38.0	29.2%	3.3	3.2	-1.0	5.5			None	16.6	0.13	09.0	67.4	0.0	67.4	ш						to phase		inated			n 74.8%	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	NOS	Approach Delay	Approach LOS	Intersection Summary	Cycle Lenath: 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 Capacity Utilization 74.8%	Analysis Period (min) 15

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Splits and Phases: 2: Regional Rd 25 & Whitlock Ave

Britannia & RR25
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Queues 2029 Future Total PM (South Parcel) 2: Regional Rd 25 & Whitlock Ave

EBL EBT WBL VBL (15) (16) (16) (16) (16) (17) (17) (17) (17) (17) (17) (17) (17	15 WBR 75 0.29 0 13.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	NBL 90 90 1.8 1.8 1.4	NBT 1510 0.61 7.0 0.0 7.0	NBR 40 0.03 1.3 0.0	SBL 60 0.21	SBT	SBR
105 80 25 060 032 0.15 67.4 31.8 50.2 67.4 31.8 50.2 27.2 10.6 6.1 45.1 25.0 14.4 35.0 65.0 34.1 452 333 0 0 0		90 1.8 0.0 1.8	1510 0.61 7.0 0.0 7.0	40 0.03 1.3 0.0	60		
060 032 0.15 07.4 31.8 50.2 0.0 0.0 0.0 67.4 31.8 50.2 27.2 10.6 6.1 45.1 25.0 14.4 35.0 65.0 34.1 452 333 0 0 0		0.21 0.0 1.8 1.4	0.61 7.0 0.0 7.0	0.03	0.21	1055	135
67.4 31.8 50.2 0.0 0.0 0.0 67.4 31.8 50.2 27.2 10.6 6.1 45.1 25.0 14.4 62.9 65.0 35.0 65.0 34.4 452 333 0.0 0		1.8	0.0	0.0		0.44	0.12
0.0 0.0 0.0 67.4 31.8 60.2 27.2 10.6 6.1 45.1 25.0 14.4 62.9 66.0 35.0 66.0 941 452 333 0 0 0		0.0 1.8 1.4	0.0	0.0	4.8	9.7	4.1
67.4 31.8 50.2 27.2 10.6 6.1 45.1 25.0 14.4 62.9 65.0 35.0 65.0 0 0 0		8: 4:	7.0	<u>(,</u>	0:0	0.0	0:0
272 106 61 45.1 25.0 14.4 62.9 65.0 35.0 65.0 341 482 333 0 0 0		1.4			4.8	9.7	4.1
45.1 25.0 14.4 62.9 35.0 65.0 34.1 452 333 0 0 0			53.6	0.3	5.6	27.7	5.2
62.9 35.0 65.0 341 452 333 0 0 0		m3.1	112.5	m1.7	6.9	87.3	14.4
35.0 65.0 341 452 333 0 0 0 0 0	_		6.969			481.0	
341 452 333 0 0 0 0 0 0	65.0	100.0		25.0	100.0		25.0
0 0 0		431	2473	1143	284	2386	1151
0 0 0	0 0	0	0	0	0	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 0.31 0.18 0.08 0.08	8 0.17	0.21	0.61	0.03	0.21	0.44	0.12

Intersection Summary Molume for 95th percentile queue is metered by upstream signal.

2029 Future Total PM (South Parcel) 01-12-2024 HCM Signalized Intersection Capacity Analysis 2: Regional Rd 25 & Whitlock Ave

Movement Lane Configurations Traffic Volume (vph) 105 Ideal Flow (vphp) 105 Ideal Flow (vphp) 106 Ideal Flow (vphp) 107 Ideal Lost time (s) 107 Ideal Row (pon) 107 Ideal Flow (vph) 107 Ideal Reduction (vph) 107 Ideal Roduction (vph) 107 Ide		<u>Б</u>	EBR 40	MBL :	WBT 40	WBR	NBL	NBT	NBR.	SBL	SBT	SBR
	2 4040424	6	40	<u>.</u> -	← 4	*-	æ	*	×	¥	**	¥
	2 7070727	6	9		9			E	-	-	Ė	
± ++0+0+0+0++	£ 40404£4	6		22		75	6	1510	40	09	1055	135
± ++0+0+0+++	£ 4040454		8	22	4	75	6	1510	40	09	1055	135
	-0404-4	200000000000000000000000000000000000000	006	1900	1900	1900	1900	1900	1900	1900	1900	1900
		0 0 0 0 0		5.5	5.5	5.5	3.0	5.5	5.5	3.0	5.5	5.5
		0 0 E 0 0		1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
0,40,70,7		0 2 0 0		1.00	1.00	0.98	9.	1.00	0.97	1.00	1:00	1.00
		g Q g		0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
		0 0		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
		6		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
				1795	1900	1539	1787	3438	1565	1769	3406	1615
		0		0.70	1.00	1.00	0.23	1.00	1.00	0.13	1.00	1.00
		6		1332	1900	1539	436	3438	1565	241	3406	1615
	1.00 1.0	1.00 1.0	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
vph) vph)	105 4		8	52	9	75	6	1510	40	09	1055	135
(hdv		32	0	0	0	92	0	0	=	0	0	20
Onell Dade (#/he)	105 4	φ	0	22	9	9	6	1510	59	09	1055	115
			2	2		2			2	2		
Heavy Vehicles (%)	1% 5'	5% 0	%0	%0	%0	3%	1%	2%	%0	5%	%9	%0
Turn Type Perm		NA		Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	¥	Perm
Protected Phases		4			00		2	2		-	9	
				00		∞	2		7	9		9
		9.		15.6	15.6	15.6	99.1	91.7	91.7	95.7	0.06	90.0
s)		9		16.6	16.6	16.6	101.1	92.7	92.7	7.76	91.0	91.0
		က		0.13	0.13	0.13	0.78	0.71	0.71	0.75	0.70	0.70
		6.5		6.5	6.5	6.5	4.0	6.5	6.5	4.0	6.5	6.5
9)		3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
(vdh)	174 216	9		170	242	196	426	2451	1115	259	2384	1130
	0.03	က			0.02		c0.01	c0.44		c0.01	0.31	
Perm				0.02		0.01	0.15		0.02	0.16		0.07
		r2		0.15	0.17	0.05	0.21	0.62	0.03	0.23	0.44	0.10
Uniform Delay, d1 53		6		50.4	50.5	49.8	4.2	9.2	5.5	6.5	8.5	6.3
		0		1:00	9.0	1.00	0.30	0.59	1.56	1.00	1:00	1.00
Incremental Delay, d2 5	5.8 0.5	ιĊ		0.4	0.3	0.1	0.2	6.0	0.0	0.5	9.0	0.2
		4		9.03	50.9	49.9	7.5	6.5	9.8	7.0	9.1	6.5
Level of Service	ш	۵		۵	□	۵	∢	⋖	⋖	⋖	∢	⋖
Approach Delay (s)	55.9	6			50.3			6.3			8.7	
Approach LOS		ш			٥			∢			∢	
Intersection Summary												
HCM 2000 Control Delay		12	12.0	오	M 2000 L	HCM 2000 Level of Service	Service		а			
HCM 2000 Volume to Capacity ratio	.0	0	0.59									
Actuated Cycle Length (s)		130.0	0.0	Sun	Sum of lost time (s)	time (s)			14.0			
Intersection Capacity Utilization		74.8%	%	D)	Level o	ICU Level of Service			Ω			
Analysis Period (min)			15									
c Critical Lane Group												

Britannia & RR25 BA Group - NHY

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2029 Future Total PM (South Parcel) 01-12-2024 Timings 5: Regional Rd 25 & Etheridge Ave/Collector Road

→	SBT	₽ ₽	935	935	₹	9		9		20.0	38.4	0.0	53.8%	4.2	2.2	-1.0	5.4	Lag	Yes	C-Max	35.9	99.0	7.47	5.3	0:0	5.3	¥	5.3	A										
٠	SBL	<u>, </u>	22	22	pm+pt	_	9	-									3.0			O					0:0	6.1	⋖											0	
←	NBT	₩.	1500	1500	₹	2		2		20.0	38.4	70.0	23.8%	4.2	2.2	-1.0	5.4	Lag	Yes	C-Max	88.9	0.68	99.0	7.8	0.0	7.8	∢	7.5	∢				_				LOS: A	CU Level of Service D	
•	NBL	*	130	130	pm+pt	2	7	2		7.0	11.0						3.0								0.0		∢						rt of Green				Intersection LOS: A	CU Level	
ţ	WBT	2	0	0	¥	80		∞		10.0	36.2										11.8	0.09	0.13	0.9	0.0	0.9	∢	31.4	O				BTL, Sta				-	_	
-	WBL	*	40	40	Perm		∞	∞		10.0	36.2						5.2	Lag				0.09			0.0	62.0	ш						L and 6:S						
†	EBT	2	0	0	Ϋ́	4		4		10.0	36.2	49.0	37.7%	3.3	2.9	-1.0	5.2			None	21.4	0.16	0.08	0.4	0.0	0.4	⋖	37.3	٥				se 2:NBT						
1	EBF	*	100	19	pm+pt	7	4	7		7.0	11.0	12.0	9.5%	3.0	1:0	-1.0	3.0	Lead	Yes	None	23.6	0.18	0.41	50.2	0.0	50.2	Ω						sed to phas		ordinated		.7	ition 73.7%	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	ros	Approach Delay	Approach LOS	Intersection Summary	Ovcle 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 Capacity Utilization 73.7%	Analysis Period (min) 15

Splits and Phases: 5: Regional Rd 25 & Etheridge Ave/Collector Road



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Queues 2029 Future Total PM (South Parcel) 5: Regional Rd 25 & Etheridge Ave/Collector Road 01-12-2024

	1	†	>	ţ	•	←	۶	→	
ane Group	EBF	EBT	WBL	WBT	NBL	NBT	SBL	SBT	
ane Group Flow (vph)	100	32	40	4	130	1565	22	1065	
/c Ratio	0.41	0.08	0.32	0.13	0.32	99.0	0.22	0.47	
Control Delay	50.2	0.4	62.0	6.0	3.7	7.8	6.1	5.3	
tueue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
otal Delay	50.2	0.4	62.0	6.0	3.7	7.8	6.1	5.3	
Queue Length 50th (m)	23.3	0.0	10.4	0.0	3.5	299	0.7	75.9	
lueue Length 95th (m)	39.5	0.0	22.4	0.0	m7.4	78.4	5.4	37.1	
nternal Link Dist (m)		53.9		63.5		106.2		6.969	
urn Bay Length (m)	40.0		40.0		0.07		0.07		
iase Capacity (vph)	241	699	341	278	408	2366	252	2263	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	
pillback Cap Reductn	0	0	0	0	0	0	0	0	
torage Cap Reductn	0	0	0	0	0	0	0	0	
educed v/c Ratio	0.41	0.02	0.12	0.08	0.32	99.0	0.22	0.47	
tersection Summary									
(

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis 5: Regional Rd 25 & Etheridge Ave/Collector Road

sis 2029 Future Total PM (South Parcel)

	1	†	<i>></i>	>	ţ	4	•	•	•	۶	-	•
Movement	EBE	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	×	£,		F	2		*	₩		r	₩	
Traffic Volume (vph)	9	0	35	40	0	40	130	1500	65	22	932	130
Future Volume (vph)	100	0	32	40	0	40	130	1500	92	22	932	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	
Ŧ	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	32	40	0	40	130	1500	92	22	932	130
RTOR Reduction (vph)	0	53	0	0	37	0	0	7	0	0	9	0
Lane Group Flow (vph)	9	9	0	40	က	0	130	1563	0	22	1059	0
Heavy Vehicles (%)	3%	%0	%0	%0	%0	%0	%0	4%	%0	%0	4%	2%
Turn Type	pm+pt	A		Perm	¥		pm+pt	¥		pm+pt	A	
Protected Phases		4			∞		2	2		-	9	
Permitted Phases	4			œ			2			9		
Actuated Green, G (s)	21.6	21.6		8.8	8.8		94.0	85.9		9.68	83.7	
Effective Green, g (s)	22.6	22.6		8.6	8.6		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	
Vehide 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		388	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	22.7		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	[.		0.5	0.7	
Delay (s)	48.4	44.6		59.5	22.8		3.7	7.7		10.2	5.3	
Level of Service	Ω	Ω		ш	ш		∢	∢		ш	V	
Approach Delay (s)		47.4			97.2			7.4			5.5	
Approach LOS					ш			∢			∢	
Intersection Summary												
HCM 2000 Control Delay			8.6	ĭ	3M 2000	HCM 2000 Level of Service	Service		∢			
HCM 2000 Volume to Capacity ratio	city ratio		0.63									
Actuated Cycle Length (s)			130.0	S	Sum of lost time (s)	time (s)			16.6			
Intersection Capacity Utilization	tion		73.7%	೦	U Level o	ICU Level of Service			_			
Analysis Period (min)			15									
c Critical Lane Group												

Britannia & RR25 BA Group - NHY

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Britannia & RR25 BA Group - NHY

HCM Unsignalized Intersection Capacity Analysis 2029 Future Total PM (South Parcel) 6: Regional Rd 25 & Site Dwy (South)

																																								•
•	SBR		20	20			1:00	20																			SB 3	242	0	20	1700	0.14	0.0	0.0						متابيتي إدارا
→	NBT SBT	_	1695 960		_			1695 960						None None		186 130											SB1 SB2	384 384	0 0		•		0.0 0.0			0.0				-
√	EBR NBL	¥c_	40 0				1.00 1.00	40 0										345 1010			345 1010	6.9 4.1				657 694	NB 1 NB 2	œ	0 0		1700 1700		0.0 0.0	0.0 0.0		0.0			0.2	/00 01
•	田田		0	0	Stop	%0	1.00	0									0.68	1832			1281	8.9		3.5	100	109	EB 1	40	0	40	657	90:0	1.6	10.8	В	10.8	മ			-
	Movement	Lane Configurations	Traffic Volume (veh/h)	Future Volume (Veh/h)	Sign Control	Grade	Peak Hour Factor	Hourly flow rate (vph)	Pedestrians	Lane Width (m)	Walking Speed (m/s)	Percent Blockage	Right turn flare (veh)	Median type	Median storage veh)	Upstream signal (m)	pX, platoon unblocked	vC, conflicting volume	vC1, stage 1 conf vol	vC2, stage 2 conf vol	vCu, unblocked vol	tC, single (s)	tC, 2 stage (s)	tF (s)	p0 queue free %	cM capacity (veh/h)	Direction, Lane #	Volume Total	Volume Left	Volume Right	SSH	Volume to Capacity	Queue Length 95th (m)	Control Delay (s)	Lane LOS	Approach Delay (s)	Approach LOS	Intersection Summary	Average Delay	and and an arrangement of

Timings 2029 Future Total PM (South Parcel) 7: Regional Rd 25 & Britannia Rd

•	SBR	¥	20	20	Perm		9	ဖ		20.0	49.7	54.0	41.5%	4.2	3.5	-1.0	6.7	Lag	Yes	C-Max	6.09	0.47	90:0	0.1	0.0	0.1	∢												
→	SBT	#	800	800	Ϋ́	9		ဖ		20.0	49.7	54.0	41.5%	4.2	3.5	-1.0	6.7	Lag	Yes	C-Max	6.09	0.47	0.49	18.0	0.0	18.0	В	25.1	O										
•	SBL	F	150	120	Prot	-		~		7.0	11.0	12.0	9.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	11.9	0.09	0.47	71.8	0.0	71.8	ш												
•	NBR	¥C	445	445	Perm		2	2		20.0	49.7	58.0	44.6%	4.2	3.5	-1.0	6.7	Lag	Yes	C-Max	63.9	0.49	0.46	8.9	0.0	9.9	∢											П	
←	NBT	‡	1320	1320	₹	2		7		20.0	49.7	58.0	44.6%	4.2	3.5	-1.0	6.7	Lag	Yes	C-Max	63.9	0.49	0.77	32.3	0.0	32.3	ပ	29.9	ပ								ntersection LOS: D	CU Level of Service E	
•	NBL	F	235	235	Prot	2		വ		7.0	11.0	16.0	12.3%	3.0	1.0	-1.0	3.0	Lead	Yes	None	14.9	0.11	0.58	60.3	0.0	60.3	ш						Green				tersection	:U Level	
ţ	WBT	444	470	470	ž	∞		∞		10.0	45.5	49.0	37.7%	4.2	3.3	-1.0	6.5	Lag	Yes	None	29.5	0.22	0.75	38.3	0.0	38.3	_	28.0	ш				T, Start o				드	⊇	
>	WBL	F	285	282	Prot	က		ო		7.0	11.0	14.0	10.8%	3.0	1.0	-1.0	3.0	Lead	Yes	None	11.0	0.08	0.93	113.3	0.0	113.3	ш						and 6:SB						
†	EBT	444	302	302	Ϋ́	4		4		10.0	45.5	46.0	35.4%	4.2	3.3	-1.0	6.5	Lag	Yes	None	24.0	0.18	0.41	45.1	0.0	45.1	۵	46.9	Ω				e 2:NBT						
4	EBL	ř.	45	42	Prot	7		7		7.0	11.0	11.0	8.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	8.0	90:0	0.22	6.09	0.0	6.09	ш						d to phase		inated		_	n 82.3%	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	ros	Approach Delay	Approach LOS	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 Capacity Utilization 82.3%	Analysis Period (min) 15

2029 Future Total PM (South Parcel) 01-12-2024 Queues 7: Regional Rd 25 & Britannia Rd

cph 45 345 285 800 235 1320 445 oph 45 345 286 800 235 1320 445 oph 0.2 0.41 0.93 0.75 0.88 0.77 0.46 oph 0.0 <th></th> <th>•</th> <th>†</th> <th>></th> <th>ţ</th> <th>•</th> <th>←</th> <th>•</th> <th>٠</th> <th>→</th> <th>•</th> <th></th>		•	†	>	ţ	•	←	•	٠	→	•	
45 345 286 800 235 1320 445 60.2 0.44 0.93 0.77 0.48 0.77 0.48 0.77 0.48 0.77 0.48 0.77 0.48 0.77 0.48 0.77 0.48 0.77 0.48 0.00 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Lane Group	EBL	EBT	WBL	WBT	R	NBT	NBR	SBL	SBT	SBR	
0.22 0.41 0.93 0.75 0.58 0.77 0.46 0.09 45.1 113.3 83.3 0.53 22.3 6.8 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Lane Group Flow (vph)	45	345	285	800	235	1320	445	150	800	50	
60.9 45.1 113.3 38.3 60.3 32.3 6.8 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 60.9 45.1 413.3 88.3 60.3 32.3 6.8 60.9 32.6 42.2 44.2 31.4 151.8 12.4 12.7 41.6 #69.8 47.3 44.1 #223.7 43.3 377.9 190.1 190.1 165.3 60.0 0.0	v/c Ratio	0.22	0.41	0.93	0.75	0.58	0.77	0.46	0.47	0.49	90.0	
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Control Delay	6.09	45.1	113.3	38.3	60.3	32.3	6.8	71.8	18.0	0.1	
60.9 45.1 113.3 88.3 60.3 32.3 6.8 60.0 32.6 42.2 44.2 31.4 151.8 12.4 12.7 41.6 #69.8 47.3 44.1 #23.7 43.3 60.0 1200 90.0 90.0 203 1372 305 1481 412 1723 960 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
6.0 326 42.2 44.2 31.4 151.8 12.4 12.7 41.6 #69.8 47.3 44.1 #223.7 43.3 377.9 120.0 90.0 203 1372 305 1481 412 1723 960 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Total Delay	6.09	45.1	113.3	38.3	60.3	32.3	8.9	71.8	18.0	0.1	
12.7 41.6 #69.8 47.3 44.1 #223.7 43.3 60.0 377.9 190.1 165.3 60.0 190.1 167.3 90.0 203 1372 305 1481 412 1723 960 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Queue Length 50th (m)	0.9	32.6	42.2	44.2	31.4	151.8	12.4	21.3	41.4	0.0	
6.0 120 190.1 166.3 90.0 90.0 90.0 90.0 90.0 90.0 90.0 90	Queue Length 95th (m)	12.7	41.6	8.69#	47.3	4.	#223.7	43.3	33.6	49.3	0.0	
60.0 120.0 90.0 90.0 90.0 0.0 0.0 0.0 0.0 0.0 0	Internal Link Dist (m)		377.9		190.1		165.3			161.9		
203 1372 305 1481 412 1723 960 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Turn Bay Length (m)	0.09		120.0		0.06		0.06	90.0		0.06	
	Base Capacity (vph)	203	1372	305	1481	412	1723	096	319	1626	812	
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	
ctn 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	
0.22 0.25 0.63 0.54 0.57 0.46	Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	
04:0 10:0 40:0 00:0 53:0 33:0	Reduced v/c Ratio	0.22	0.25	0.93	0.54	0.57	0.77	0.46	0.47	0.49	90.0	

Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

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HCM Signalized Intersection Capacity Analysis 7: Regional Rd 25 & Britannia Rd

2029 Future Total PM (South Parcel)

	1	†	<i>></i>	>	Ļ	4	•	←	•	۶	→	•
Movement	EB	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	K.	4413		K.	4413		K.	‡	*	K.	*	*
Traffic Volume (vph)	45	302	40	285	470	330	235	1320	445	150	800	22
Future Volume (vph)	45	302	40	285	470	330	235	1320	445	150	800	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
Ft	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	302	40	285	470	330	235	1320	445	120	800	20
RTOR Reduction (vph)	0	12	0	0	112	0	0	0	185	0	0	27
Lane Group Flow (vph)	42	333	0	285	889	0	235	1320	260	150	800	23
Heavy Vehicles (%)	%9	%0	%0	2%	1%	1%	%0	3%	2%	1%	4%	%0
Turn Type	Prot	Ν		Prot	¥		Prot	¥	Perm	Prot	A	Perm
Protected Phases	7	4		က	œ		2	2		_	9	
Permitted Phases									2			9
Actuated Green, G (s)	9.6	23.8		10.0	28.2		13.9	62.1	62.1	10.9	59.1	59.1
Effective Green, g (s)	9.9	24.8		11.0	29.5		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		80.00	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	99.0	1.00
Incremental Delay, d2	6.0	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		26.8	31.2	21.8	8.89	17.1	19.1
Level of Service	ш	□		ш	□		ш	ပ	ပ	ш	ш	В
Approach Delay (s)		47.9			61.8			32.1			25.0	
Approach LOS		۵			ш			ပ			ပ	
Intersection Summary												
HCM 2000 Control Delay			39.1	Ĭ	HCM 2000 Level of Service	Level of S	service		۵			
HCM 2000 Volume to Capacity ratio	ity ratio		0.78									
Actuated Cycle Length (s)			130.0	જ	Sum of lost time (s)	time (s)			19.2			
Intersection Capacity Utilization	ion		82.3%	೨	ICU Level of Service	f Service			ш			
Analysis Period (min)			15									
c Critical Lane Group												

Britannia & RR25 BA Group - NHY

HCM Unsignalized Intersection Capacity Analysis 2029 Future Total PM (South Parcel) 8: Site Dwy (South) & Etheridge Ave

																																								A	
•	NBR		32	35			1.00	32										105			105	6.2		3.3	96	922														ICU Level of Service	
•	NBL	>	15	15	Stop	%0	9:	15									0.98	420			429	6.4		3.5	97	542														CU Level	
ţ	WBT	₩	175	175	Free	%0	1.0	175						None		78																								_	
>	WBL		82	88			9.	82										110			110	4.1		2.2	宻	1493	NB 1	20	15	32	778	90:0	1.6	6.6	⋖	6.6	4		2.9	30.6%	12
<u>/</u>	EBR		9	9			1.0	9																			WB1	260	82	0	1493	90:0	4.	2.8	⋖	2.8					
†	EBT	æ	100	9	Free	%0	9.	100						None													EB 1	110	0	9	1700	90.0	0.0	0.0		0.0				ation	
	Movement	Lane Configurations	Traffic Volume (veh/h)	Future Volume (Veh/h)	Sign Control	Grade	Peak Hour Factor	Hourly flow rate (vph)	Pedestrians	Lane Width (m)	Walking Speed (m/s)	Percent Blockage	Right tum flare (veh)	Median type	Median storage veh)	Upstream signal (m)	pX, platoon unblocked	vC, conflicting volume	vC1, stage 1 conf vol	vC2, stage 2 conf vol	vCu, unblocked vol	tC, single (s)	tC, 2 stage (s)	tF (s)	p0 queue free %	cM capacity (veh/h)	Direction, Lane #	Volume Total	Volume Left	Volume Right	SH	Volume to Capacity	Queue Length 95th (m)	Control Delay (s)	Lane LOS	Approach Delay (s)	Approach LOS	Intersection Summary	Average Delay	Intersection Capacity Utilization	Analysis Period (min)

Timings 10: Britannia Rd & Farmstead Dr

2029 Future Total PM (South Parcel) 1012-2024

*	SBR	8 C.	20	20	Perm		∞	80		10.0	15.3	41.0	39.0%	3.3	2.0	-1.0	4.3			None	11.4	0.11	0.10	18.6	0:0	18.6	В						een			ntersection LOS: A	CU Level of Service A	
٠	SBL	<u>, -</u>	22	22	Prot	∞		80		10.0	15.3			3.3	2.0	-1.0	4.3			None	11.4	0.11	0.29	47.2	0.0	47.2	۵	39.6	۵				Start of Gr			Inte	⊴	
ļ	WBT	444	675	675	Ϋ́	9		9		20.0	29.4	53.0	20.5%	4.2	2.2	-1:0	5.4	Lag	Yes	C-Max	83.6	0.80	0.21	4.0	0.0	4.0	∢	4.0	⋖				16:WBI,					
†	EBT	444	335	335	Ϋ́	2		2		20.0	29.4	64.0	61.0%	4.2	2.2	-1.0	5.4			C-Max	88.0	0.84	0.09	2.1	0.0	5.1	∢	5.1	∢			į	EBIL and					
١	EBL	y -	20	20	bm+pt	2	2	2		7.0	11.0	11.0	10.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	89.3	0.85	0.03	1.9	0.0	1.9	A					05	ed to phase 2:	Coordinated		: 5.7	ization 33.1%	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	SOT	Approach Delay	Approach LOS	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 Capacity Utilization 33.1%	Analysis Period (min) 15

Splits and Phases: 10: Britannia Rd & Farmstead Dr



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Queues 2029 Future Total PM (South Parcel) 10: Britannia Rd & Farmstead Dr 01-12-2024

	1	†	ţ	٠	*	
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	6:	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)	9.0	4.9	12.0	1.1	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)	282	3822	3545	909	277	
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						

HCM Signalized Intersection Capacity Analysis 10: Britannia Rd & Farmstead Dr

2029 Future Total PM (South Parcel)

	^	†	ţ	4	•	•	
Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations	#	444	444		*	R.	
Traffic Volume (vph)	20	335	675	80	22	20	
Future Volume (vph)	20	335	675	80	22	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	
Ŧ	1.00	1.00	0.98		1.00	0.85	
Fit 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)	281	4560	4448		1736	1615	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	20	332	675	80	22	20	
RTOR Reduction (vph)	0	0	2	0	0	18	
Lane Group Flow (vph)	20	332	750	0	22	2	
Heavy Vehides (%)	%0	%0	%	%0	4%	%0	
Turn Type	pm+pt	A	A		Prot	Perm	
Protected Phases	വ	2	9		∞		
Permitted Phases	2					œ	
Actuated Green, G (s)	84.9	84.9	78.1		8.4	8.4	
Effective Green, g (s)	82.9	82.9	79.1		9.4	9.4	
Actuated g/C Ratio	0.82	0.82	0.75		0.09	60:0	
Clearance Time (s)	4.0	6.4	6.4		5.3	5.3	
/ehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	
-ane Grp Cap (vph)	519	3730	3350		155	144	
//s Ratio Prot	0.00	c0.07	c0.17		c0.03		
//s Ratio Perm	0.03					0.00	
//c Ratio	0.04	0.09	0.22		0.35	0.01	
Jniform Delay, d1	8	<u>ر</u> 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		4.	0.0	
Jelay (s)	1.8	1.9	4.0		46.3	43.6	
Level of Service	⋖	⋖	⋖		□	O	
Approach Delay (s)		1.9	4.0		45.6		
Approach LOS		⋖	⋖		Ω		
Intersection Summary							
HCM 2000 Control Delay			0.9	Ĭ	3M 2000	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	city ratio		0.23				
Actuated Cycle Length (s)			105.0	જ	Sum of lost time (s)	time (s)	12.7
Intersection Capacity Utilization	ıtion		33.1%	೦	U Level o	ICU Level of Service	∢
Analysis Period (min)			15				
c Critical Lane Group							

Britannia & RR25 BA Group - NHY

Timings 2029 Future Total PM (South Parcel) 11: Britannia Rd & Rose Way 01-12-2024

	≺ i	†	↓	,	*	
ane Group	EBL	EBI	WBT	SBL	SBR	
ane Configurations	y -	444	4413	je-	¥c.	
raffic Volume (vph)	8	820	1035	ළ	20	
-uture Volume (vph)	8	820	1035	8	50	
urn Type	pm+pt	Ϋ́	ΑN	Prot	Perm	
Protected Phases	2	2	9	4		
permitted Phases	2				4	
Detector Phase	2	2	9	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	
otal Split (s)	15.0	80.0	65.0		50.0	
otal Split (%)	11.5%	61.5%	%0.09		38.5%	
'ellow Time (s)	3.0	4.0	4.0		3.0	
All-Red Time (s)	1.0	3.0	3.0		3.0	
ost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	
otal Lost Time (s)	3.0	0.9	0.9	2.0	5.0	
-ead/Lag	Lead		Lag			
.ead-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	
	0.19	0.21	0:30	0.20	0.27	
Control Delay	2.1	د .	4.9	28.7	18.8	
∆ueue Delay	0.0	0.0	0.0	0.0	0.0	
otal Delay	2.1	1.3	4.9	28.7	18.8	
	⋖	⋖	∢	ш	ш	
Approach Delay		1.4	4.9	33.8		
Approach LOS		∢	∢	ပ		
ntersection Summary						
Sycle Length: 130						
Actuated Cycle Length: 130						
Offset 65 (50%), Referenced to phase 2:EBTL and 6:WBT, Start of Green	I to phase	2:EBTL a	nd 6:WB	r, Start of	green	
Natural Cycle: 85						
Control Type: Actuated-Coordinated	dinated					
Maximum v/c Ratio: 0.30						
ntersection Signal Delay: 4.5				프	Intersection LOS: A	
ntersection Capacity Utilization 48.0%	on 48.0%			ੂ	ICU Level of Service A	
Analysis Period (min) 15						

Splits and Phases: 11: Britannia Rd & Rose Way

10: 20: R)

10: Specific Rose Way

Britannia & RR25
Synchro 11 Report
BA Group - NHY
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Queues 11: Britannia Rd & Rose Way

	^	†	ţ	۶	•	
Lane Group	EBL	EBT	WBT	SBL	SBR	
Lane Group Flow (vph)	8	820	1095	30	20	
v/c Ratio	0.19	0.21	0:30	0.20	0.27	
Control Delay	2.1	<u>6.</u>	4.9	28.7	18.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	2.1	1.3	4.9	28.7	18.8	
Queue Length 50th (m)	1.2	8.9	35.7	7.7	0.0	
Queue Length 95th (m)	3.4	14.3	45.9	18.0	13.0	
Internal Link Dist (m)		190.1	148.0	97.6		
Turn Bay Length (m)	20.0			20.0		
Base Capacity (vph)	461	3941	3604	624	291	
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	
Interception Summary						
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HCM Signalized Intersection Capacity Analysis 2029 Future Total PM (South Parcel) 01-12-2024

† 🖺
444
820
3.0 6.0
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820 1035
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1.8 1.2 4.
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1.3 4.7
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5.2
0.30
130.0
48.0%

Britannia & RR25
BA Group - NHY
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2032 (Full Build) Future Total Traffic Conditions

2032 Future Total AM 01-12-2024 Timings 1: Regional Rd 25 & Louis St Laurent Ave

-	SBT	4	용	용	Ν	9		9		20.0	32.2	52.0	37.1%	4.2	3.0	-1.0	6.2	Lag	Yes	C-Max	47.5	0.34	0.72	43.8	0.0	43.8	_	43.4	_									
۶	SB	F	65	92	pm+pt	Ψ	9	Ψ		2.0	9.0	9.0	6.4%	3.0	1.0	-1.0	3.0	Lead	Yes	None	56.9	0.41	0.50	36.6	0.0	36.6	٥											
•	NBT	4413	920	920	¥	5		5		20.0	32.2	22.0	39.3%	4.2	3.0	-1.0	6.2	Lag	Yes	C-Max	52.2	0.37	0.81	43.1	0.0	43.1	٥	45.8	۵								Intersection LOS: D	
•	图	K	115	115	pm+pt	2	2	2		2.0	0.6														0.0	39.1	٥						reen				ersection	
ļ	WBT	₩	260		Ϋ́			∞		10.0	30.0	49.0	35.0%	4.0	3.0	-1.0	0.9	Lag	Yes	None	46.6	0.33	0.57	40.1	0.0	40.1	۵	9.09	٥				Start of G				Ť	
\	WBL	r	495	495	pm+pt	က	∞	က		10.0	14.0	39.0	27.9%	3.0	0.0	-1.0	5.0	Lead	Yes	None	72.4	0.52	0.93	4.4	0.0	64.4	ш						6:SBTL,					
†	EBT	₩	535	535	Ϋ́			4		10.0	30.0									None					0.0	6.07	ш	29.7	ш				BTL and					
4	EBL	r	270	270	pm+pt	7	4	7		2.0	9.0														0.0	29.5	ပ						phase 2:N		linated		2	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	SOT	Approach Delay	Approach LOS	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	

4 603 Splits and Phases: 1: Regional Rd 25 & Louis St Laurent Ave ↑ ø5 🕴 🕶 Ø6 (R) Ø1 → Ø2 (R)

Synchro 11 Report Page 1 Britannia & RR25 BA Group - NHY

Queues 1: Regional Rd 25 & Louis St Laurent Ave

2032 Future Total AM 01-12-2024

-	SBT	1035	0.72	43.8	0.0	43.8	110.7	131.3	113.5		1439	0	0	0	0.72
۶	SBL	65	0.50	36.6	0.0	36.6	11.0	20.8		80.0	130	0	0	0	0.50
←	NBT	1280	0.81	43.1	0.0	43.1	138.4	162.4	481.0		1582	0	0	0	0.81
•	NBL	115	0.62	39.1	0.0	39.1	20.0	#33.7		65.0	185	0	0	0	0.62
ţ	WBT	655	0.57	40.1	0.0	40.1	79.1	105.6	117.1		1150	0	0	0	0.57
>	WBL	495	0.93	64.4	0.0	64.4	120.2	#185.9		35.0	248	0	0	0	0.30
†	EBT	730	0.94	6.07	0.0	6.07	106.4	#145.4	126.1		98/	0	0	0	0.93
1	EBL		0.65							0.06	481	0	0	0	0.56
	Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Queue Delay	Total Delay	Queue Length 50th (m)	Queue Length 95th (m)	Internal Link Dist (m)	Turn Bay Length (m)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio

Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Synchro 11 Report Page 2 Britannia & RR25 BA Group - NHY

HCM Signalized Intersection Capacity Analysis 1: Regional Rd 25 & Louis St Laurent Ave

2032 Future Total AM 01-12-2024

	•	†	<i>></i>	\	ţ	4	•	←	•	۶	→	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	<u>, </u>	₩		<u>, -</u>	₹		"	441		۳	441	
Traffic Volume (vph)	270	535	195	495	260	92	115	920	330	92	940	92
Future Volume (vph)	270	535	195	495	260	8	115	920	330	65	940	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	0.9		2.0	0.9		3.0	6.2		3.0	6.2	
Lane Util. Factor	1.00	0.95		1.00	0.95		9.	*0.80		1.00	*0.80	
Frpb, ped/bikes	1.00	9.		1.00	9:		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	96.0		1.00	0.98		1.00	96.0		1.00	0.99	
Fit 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		526	3427		98	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
Adi. Flow (vph)	270	535	195	495	260	92	115	920	330	92	940	95
RTOR Reduction (vph)	0	56	0	0	o	0	0	4	0	0	7	0
Lane Group Flow (vph)	270	78	0	495	949	0	115	1239	0	92	1028	0
Confl. Peds. (#/hr)	2					2						
Heavy Vehicles (%)	7%	2%	%	5%	5%	%/	%9	%/	3%	2%	%/	2%
Turn Type	pm+pt	ΑN		pm+pt	ΑN		pm+pt	ΑN		pm+pt	≨	
Protected Phases	7	4		ო	∞		വ	7		. ~	9	
Permitted Phases	4			∞			2			9		
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	9.0		7.2	2.0		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	Ω	ш		ш	Ω		۵	□		۵	۵	
Approach Delay (s)		67.9			51.2			44.2			43.3	
Approach LOS		ш			۵			□			Ω	
Intersection Summary												
HCM 2000 Control Delay			49.7	E	M 2000	HCM 2000 Level of Service	ervice		_			
HCM 2000 Volume to Capacity ratio	ity ratio		0.89	2		5			1			
Actuated Cycle Length (s)			140.0	Ŝ	Sum of lost time (s)	time (s)			18.2			
Intersection Capacity Utilization	uo.		95.2%	□) level o	CU Level of Service			ш			
Analysis Period (min)			15	2					-			
Critical Land Critical			2									

c Critical Lane Group

Britannia & RR25 BA Group - NHY

Timings 2: Regional Rd 25 & Whitlock Ave

2032 Future Total AM 01-12-2024

→	SBT	4413	1780	1780	ΑĀ	9		9		20.0	35.5	81.0	62.3%	4.2	2.3	-1.0	5.5	Lag	Yes	C-Max	9.68	69.0	0.63	13.7	0.0	13.7	В	13.5	В										
۶	SBL	<i>y</i> -	20	20	pm+pt	_	9	-		7.0	11.0	11.0	8.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	98.7	9.70	0.15	5.3	0.0	5.3	⋖												
•	NBT	4413	1180	1180	≨	2		2		20.0	35.5	81.0	62.3%	4.2	2.3	-1.0	5.5	Lag	Yes	C-Max	89.7	69.0	0.40	6.4	0.0	6.4	⋖	9.9	∢									۵	
•	NBL	<i>y</i> -	45	45	pm+pt	2	2	2		7.0	11.0	11.0	8.5%	3.0	1:0	-1.0	3.0	Lead	Yes	None	98.7	92.0	0.26	13.6	0.0	13.6	Ф										LOS: B	CU Level of Service D	
4	WBR	*	92	92	Perm		∞	∞		10.0	37.5	38.0	29.2%	3.3	3.2	-1.0	5.5			None	20.4	0.16	0.31	10.9	0.0	10.9	Ф						of Green				Intersection LOS: B	:U Level	
ţ	WBT	*	35	35	ΑN	80		∞		10.0	37.5	38.0	29.2%	3.3	3.2	-1.0	5.5			None	20.4	0.16	0.13	45.3	0.0	45.3	Ω	29.5	O				TL, Start				드	2	
/	WBL	*	20	20	Perm		∞	∞		10.0	37.5	38.0	29.2%	3.3	3.2	-1.0	5.5			None	20.4	0.16	0.33	52.5	0.0	52.5	Ω						and 6:SB						
†	EBT	æ	20	20	ΑN	4		4		10.0	37.5	38.0	29.2%	3.3	3.2	-1.0	5.5			None	20.4	0.16	0.49	30.2	0.0	30.2	ပ	49.2	Ω				2:NBTL						
1	盟	*	145	145	Perm		4	4		10.0	37.5	38.0	29.5%	3.3	3.2	-1.0	5.5			None	20.4	0.16	0.69	68.1	0.0	68.1	ш						ed to phase		ordinated		14.8	ation 75.1%	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	ros	Approach Delay	Approach LOS	Intersection Summary	Cycle Length: 130	Actuated Cycle Length: 130	Offset: 64 (49%), Reference	Natural Cycle: 95	Control Type: Actuated-Coordinated	Maximum v/c Ratio: 0.69	Intersection Signal Delay: 14.8	Intersection Capacity Utilization 75.1%	Analysis Period (min) 15

Splits and Phases: 2: Regional Rd 25 & Whitlock Ave



Britannia & RR25 BA Group - NHY

> Synchro 11 Report Page 3

Queues 2: Regional Rd 25 & Whitlock Ave

2032 Future Total AM 01-12-2024

→ •	SBL SBT	50 1880		5.3 13.7	0.0 0.0	5.3 13.7	2.6 111.9	7.2 159.0	481.0	0.001	334 2970	0 0	0 0	0 0	0.15 0.63	
←	NBT	1190	0.40	6.4	0.0	6.4	20.2	114.5	497.5	=	2959	0	0	0	0.40	
•	NBL	45	0.26	13.6	0.0	13.6	7.	m6.0		100.0	174	0	0	0	0.26	
4	WBR	32	0.31	10.9	0.0	10.9	0.0	14.7		65.0	435	0	0	0	0.22	
ţ	WBT	32	0.13	45.3	0.0	45.3	8.2	17.1	68.1		439	0	0	0	0.08	
>	WBL	20	0.33	52.5	0.0	52.5	12.1	23.8		65.0	241	0	0	0	0.21	
†	EBT	145	0.49	30.2	0.0	30.2	18.2	37.4	67.9		431	0	0	0	0.34	
1	EBF	145	69.0	68.1	0.0	68.1	37.5	57.3		35.0	333	0	0	0	0.44	
	Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Queue Delay	Total Delay	Queue Length 50th (m)	Queue Length 95th (m)	Internal Link Dist (m)	Turn Bay Length (m)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio	The most of the control of

m Volume for 95th percentile queue is metered by upstream signal.

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Britannia & RR25 BA Group - NHY

HCM Signalized Intersection Capacity Analysis 2: Regional Rd 25 & Whitlock Ave

2032 Future Total AM 01-12-2024

	4	†	>	>	ţ	4	•	←	•	۶	→	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	×	£,		r	*	*	r	4413		*	4413	
Traffic Volume (vph)	145	20	92	20	35	92	45	1180	10	20	1780	100
Future Volume (vph)	145	20	92	20	32	92	45	1180	10	20	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	2.5	2.5	3.0	2.5		3.0	2.5	
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	0.39	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
FA	1:00	0.90		1.00	1.00	0.85	1.00	1.00		1.00	0.99	
Fit 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	90.0	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	20	92	20	32	92	42	1180	10	20	1780	100
RTOR Reduction (vph)	0	29	0	0	0	80	0	0	0	0	က	0
Lane Group Flow (vph)	145	98	0	20	35	15	45	1190	0	20	1877	0
Confl. Peds. (#/hr)	2		2	2		2						
Heavy Vehides (%)	4%	35%	1%	4%	%8	%6	8%	%9	25%	%0	2%	7%
Turn Type	Perm	Ν		Perm	¥	Perm	pm+pt	¥		pm+pt	A	
Protected Phases		4			∞		2	2		-	9	
Permitted Phases	4			∞		∞	7			9		
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	92.6	88.9		92.6	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	
Vehide Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	508	237		151	276	228	155	2933		311	2943	
v/s Ratio Prot		90.0			0.02		c0.01	0.28		0.01	9.4	
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	21.8	49.0		48.7	47.1	46.7	8.5	9.0		2.1	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		د .	0.2	0.1	1:0	0.4		0.2	- -	
Delay (s)	61.4	49.9		20.0	47.3	46.8	20.2	5.9		5.4	12.6	
Level of Service	ш	۵		۵		Ω	ပ	∢ ;		∢	m	
Approach Delay (s)		22.7			47.8			6.4			12.4	
Approach LOS		ш			۵			∢			Ф	
Intersection Summary												
HCM 2000 Control Delay			15.6	王	3M 2000	HCM 2000 Level of Service	Service		В			
HCM 2000 Volume to Capacity ratio	city ratio		0.63									
Actuated Cycle Length (s)			130.0	S	Sum of lost time (s)	time (s)			14.0			
Intersection Capacity Utilization	tion		75.1%	೦	U Level o	ICU Level of Service	_		Ω			
Analysis Period (min)			15									
c Critical Lane Group												
-												

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HCM Unsignalized Intersection Capacity Analysis 2032 Future Total AM 3: Regional Rd 25 & Site Dwy (North)

Movement EBI EBR NBI NBT SBT SBR Later Configurations (vehich) 0 50 0 1236 1915 10 Tentre Volume (Vehich) 0 50 0 1236 1915 10 Tentre Volume (Vehich) 0 50 0 1236 1915 10 Sign Coartor 0 0 0 0 1236 1915 10 Hourly flow are (vph) 0 50 0 1235 1915 10 Hourly flow are (vph) 0 50 0 1235 1915 10 Hourly flow are (vph) 0 50 0 1235 1915 10 Hourly flow are (vph) 0 50 0 1235 1915 10 Anderian storage are (ms) 0 0 0 1 0 100 Median storage are (ms) 0 0 0 1 0 100 Median storage are (ms) 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		*	>	€	-	→	•		
1	Movement	盟	EBR	NBL	NBT	SBT	SBR		
h) 0 50 0 1235 1915 10 None 1.00 1.00 1.00 1.00 1.00 None None None 1.00 1.00 Stop 0 1235 1915 10 None None 1.00 1.00 None None 1.00 1.00 None None 1.00 A21 1925 EB 63 1925 EB 1 NB 1 NB 2 SB 3 SO 0 0 0 0 0 0 A21 1700 1700 1700 1700 A21 1700 1700 1700 1700 A21 170 0 0 0 0 0 0 B B 14.7 0.0 0 0 0 0 0 0 B B 14.7 0.0 0 0 0 0 0 0 B B 14.7 0.0 0 0 0 0 0 0 0 B B 14.7 0.0 0 0 0 0 0 0 0 B B 14.7 0.0 0 0 0 0 0 0 0 0 B B 14.7 0.0 0 0 0 0 0 0 0 0 0 B B 14.7 0.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	e Configurations		¥.		444	4413			
Stop	Traffic Volume (veh/h)	0	20	0	1235	1915	9		
Stop Free Fr	Future Volume (Veh/h)	0	20	0	1235	1915	9		
0 % 0 % 0 % 0 % 0 % 0 % 0 % 0 % 0 % 0 %	Sign Control	Stop			Free	Free			
1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,00	Grade	%0			%0	%0			
0 50 0 1235 1915 10	Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00		
None None 199 199 2203 643 1925 6.8 6.9 4.1 2203 643 1925 6.8 6.9 4.1 3.5 33 2.2 100 88 100 37 421 311 EB1 NB1 NB2 SB1 SB2 SB3 0 0 0 0 0 0 0 0 421 1700 1700 1700 1700 1700 421 1700 1700 1700 1700 14.7 0.0 0.0 0.0 0.0 0.0 B 14.7 0.0 0.0 0.0 0.0 0.0 B 20 0 0 0 0 0 0 0.0 14.7 0.0 0.0 0.0 0.0 0.0 B 14.7 0.0 0.0 0.0 0.0 0.0 B 20 0 0.0 0.0 0.0 0.0 14.7 0.0 0.0 0.0 0.0 0.0 14.7 0.0 0.0 0.0 0.0 0.0 14.7 0.0 0.0 0.0 0.0 0.0 14.7 0.0 0.0 0.0 0.0 0.0 14.7 0.0 0.0 0.0 0.0 0.0 14.7 0.0 0.0 0.0 0.0 0.0 14.7 0.0 0.0 0.0 0.0 0.0 14.7 0.0 0.0 0.0 0.0 0.0 14.7 0.0 0.0 0.0 0.0 0.0 14.7 0.0 0.0 0.0 0.0 0.0 15.0 0.0 0.0 0.0 0.0 16.0 0.0 0.0 0.0 0.0 17.0 0.0 0.0 0.0 0.0 18.0 0.0 0.0 0.0 0.0 19.0 0.0 0.0 0.0 0.0 19.0 0.0 0.0 0.0 0.0 19.0 0.0 0.0 0.0 19.0 0.0 0.0 0.0 19.0 0.0 0.0 0.0 19.0 0.0 0.0 0.0 19.0 0.0 0.0 0.0 19.0 0.0 0.0 0.0 19.0 0.0 0.0 0.0 19.0 0.0 0.0 0.0 19.0 0.0 0.0 0.0 19.0 0.0 0.0 0.0 0.0 19.0 0.0 0.0 0.0 0.0 19.0 0.0 0.0 0.0 0.0 19.0 0.0 0.0 0.0 0.0 19.0 0.0 0.0 0.0 0.0 19.0 0.0 0.0 0.0 0.0 19.0 0.0 0.0 0.0 0.0 19.0 0.0 0.0 0.0 0.0 19.0 0.0 0.0 0.0 0.0 19.0 0.0 0.0 0.0 0.0 19.0 0.0 0.0 0.0 0.0 19.0 0.0 0.0 0.0 0.0 19.0 0.0 0.0 0.0 0.0 19.0 0.0 0.0 0.0 0.0 19.0 0.0 0.0 0.0 0.0 19.0 0.0 0.0 0.0 0.0 19.0 0.0 0.0 0.0 0.0 19.0 0.0 0.0 0.0 0.0 19.0 0.0 0.0 0.0 0.0 0.0 19.0 0.0 0.0 0.0 0.0 0.0 19.0 0.0 0.0 0.0 0.0 0.0 0.0 19.0 0.0 0.0 0.0 0.0 0.0 0.0 19.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 19.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 19.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Hourly flow rate (vph)	0	20	0	1235	1915	9		
None	Pedestrians								
None None Say 1999 e 2332 643 1925 e 2332 643 1925 6.8 6.9 4.1 2203 643 1925 6.8 6.9 4.1 100 88 100 37 421 311 EB1 NB1 NB2 NB3 SB1 SB2 SB3 50 412 412 742 766 766 393 0 0 0 0 0 0 0 0 421 1700 1700 1700 1700 1700 421 170 0.4 0.24 0.24 0.45 0.45 0.45 m) 3.2 0.0 0.0 0.0 0.0 0.0 0.0 B 14.7 0.0 0.0 0.0 0.0 0.0 0.0 B 20 0.0 0.0 0.0 0.0 0.0 0.0 B 32 0.0 0.0 0.0 0.0 0.0 0.0 B 34 0.0 0.0 0.0 0.0 0.0 0.0 B 35 0.0 0.0 0.0 0.0 0.0 0.0 B 14.7 0.0 0.0 0.0 0.0 0.0 0.0 B 20 0.0 0.0 0.0 0.0 0.0 0.0 B 31 0.0 0.0 0.0 0.0 0.0 0.0 B 32 0.0 0.0 0.0 0.0 0.0 0.0 0.0 B 34 0.0 0.0 0.0 0.0 0.0 0.0 0.0 B 35 0.0 0.0 0.0 0.0 0.0 0.0 0.0 B 36 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 B 37 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 B 38 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Lane Width (m)								
Hone None 1994 2203 643 1925 6 8 6.9 4.1 2203 643 1925 6 8 6.9 4.1 3.5 33 2.2 100 88 100 3.7 421 311 EB1 NB1 NB2 NB3 SB1 SB2 SB3 50 40 0 0 0 0 0 10 50 0 0 0 0 0 0 10 421 1700 1700 1700 1700 1700 0.12 0.24 0.24 0.24 0.45 0.45 M) 3.2 0.0 0.0 0.0 0.0 0.0 14.7 0.0 0.0 0.0 0.0 0.0 0.0 B 14.7 0.0 0.0 0.0 0.0 0.0 1 8 0.0 0.0 0.0 0.0 0.0 1 9 0.0 0.0 0.0 0.0 0.0 1 14.7 0.0 0.0 0.0 0.0 0.0 1 14.7 0.0 0.0 0.0 0.0 0.0 0.0 1 14.7 0.0 1.2 0.0 0.0 0.0 0.0 0.0 1 14.7 0.0 1.2 0.0 0.0 0.0 0.0 0.0 1 14.7 0.0 1.2 0.0 0.0 0.0 0.0 0.0 1 14.7 0.0 1.2 0.0 0.0 0.0 0.0 0.0 0.0 1 14.7 0.0 1.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1 14.7 0.0 1.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Walking Speed (m/s)								
None None 199 199 2203 643 1925 6.8 6.9 4.1 2203 644 1925 6.8 6.9 4.1 3.5 3.3 2.2 100 88 100 37 421 311 EB1 NB1 NB2 SB1 SB2 SB3 0 0 0 0 0 0 0 0 0 421 1700 1700 1700 1700 1700 421 1700 1700 1700 1700 14.7 0.0 0.0 0.0 0.0 0.0 B 14.7 0.0 0.0 0.0 0.0 0.0 B 20 0 0 0 0 0 0.0 14.7 0.0 0.0 0.0 0.0 0.0 B 14.7 0.0 0.0 0.0 0.0 0.0 B 20 0 0.0 0.0 0.0 0.0 14.7 0.0 0.0 0.0 0.0 0.0 14.7 0.0 0.0 0.0 0.0 0.0 14.7 0.0 0.0 0.0 0.0 0.0 14.7 0.0 0.0 0.0 0.0 0.0 14.7 0.0 0.0 0.0 0.0 0.0 15.0 0.0 0.0 0.0 0.0 16.0 0.0 0.0 0.0 0.0 17.0 0.0 0.0 0.0 0.0 0.0 18.0 0.0 0.0 0.0 0.0 19.0 0.0 0.0 0.0 0.0 19.0 0.0 0.0 0.0 0.0 19.0 0.0 0.0 0.0 0.0 19.0 0.0 0.0 0.0 0.0 19.0 0.0 0.0 0.0 0.0 19.0 0.0 0.0 0.0 0.0 19.0 0.0 0.0 0.0 0.0 19.0 0.0 0.0 0.0 0.0 19.0 0.0 0.0 0.0 0.0 19.0 0.0 0.0 0.0 0.0 19.0 0.0 0.0 0.0 0.0 19.0 0.0 0.0 0.0 0.0 19.0 0.0 0.0 0.0 0.0 19.0 0.0 0.0 0.0 0.0 19.0 0.0 0.0 0.0 0.0 19.0 0.0 0.0 0.0 0.0 19.0 0.0 0.0 0.0 0.0 0.0 19.0 0.0 0.0 0.0 0.0 0.0 19.0 0.0 0.0 0.0 0.0 0.0 19.0 0.0 0.0 0.0 0.0 0.0 0.0 19.0 0.0 0.0 0.0 0.0 0.0 0.0 19.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 19.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Percent Blockage								
None None 199 e 2332 643 1925 e 2332 643 1925 6.8 6.9 4.1 2203 643 1925 6.8 6.9 4.1 100 88 100 37 421 311 EB1 NB1 NB2 NB3 SB1 SB2 SB3 0 0 0 0 0 0 0 421 1700 1700 1700 1700 421 1700 1700 1700 1700 0.12 0.04 0.04 0.04 0.00 0.0 B 14.7 0.0 0.0 0.0 0.0 0.0 B 14.7 0.0 0.0 0.0 0.0 0.0 B 20 0.0 0.0 0.0 0.0 0.0 B 32 0.0 0.0 0.0 0.0 0.0 B 14.7 0.0 0.0 0.0 0.0 0.0 B 20 0.0 0.0 0.0 0.0 0.0 B 32 0.0 0.0 0.0 0.0 0.0 0.0 B 34 0.0 0.0 0.0 0.0 0.0 0.0 B 35 0.0 0.0 0.0 0.0 0.0 0.0 B 36 0.0 0.0 0.0 0.0 0.0 0.0 B 37 0.0 0.0 0.0 0.0 0.0 0.0 B 38 0.0 0.0 0.0 0.0 0.0 0.0 B 38 0.0 0.0 0.0 0.0 0.0 0.0 0.0 B 30 0.0 0.0 0.0 0.0 0.0 0.0 0.0 B 30 0.0 0.0 0.0 0.0 0.0 0.0 0.0 B 30 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 B 30 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Right tum flare (veh)								
e 2332 643 1925 e 2332 643 1925 f 8 6.9 4.1 2203 643 1925 f 8 6.9 4.1 2203 643 1925 f 8 6.9 4.1 2203 644 1925 f 8 6.9 4.1 2203 642 1925 f 9 6.9 6.9 6.9 f 100 88 100 f 100 89 100 f 100 8	Median type				None	None			
199 199 199 199 199 199 199 1925 1925 1925 1925 1925 1925 1926	Median storage veh)								
e 2332 643 1925 e 2203 643 1925 6.8 6.9 4.1 6.8 6.9 4.1 100 88 100 37 421 311 EB1 NB1 NB2 SB1 SB2 SB3 0 0 0 0 0 0 0 421 1700 1700 1700 1700 0.12 0.24 0.24 0.45 0.45 0.45 0.14 0.00 0.0 0.0 0.0 B 14.7 0.0 0.0 0.0 0.0 0.0 B 14.7 0.0 0.0 0.0 0.0 0.0 B 14.7 0.0 0.0 0.0 0.0 0.0 B 20 0.0 0.0 0.0 0.0 0.0 B 30 0.0 0.0 0.0 0.0 0.0 B 41 14.7 0.0 0.0 0.0 0.0 0.0 0.0 B 50 0.0 0.0 0.0 0.0 0.0 0.0 B 60 0.0 0.0 0.0 0.0 0.0 0.0 B 70 0.0 0.0 0.0 0.0 0.0 0.0 B 71 0.0 0.0 0.0 0.0 0.0 0.0 B 72 0.0 0.0 0.0 0.0 0.0 0.0 B 73 0.0 0.0 0.0 0.0 0.0 0.0 0.0 B 74 0.0 0.0 0.0 0.0 0.0 0.0 0.0 B 75 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 B 75 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 B 75 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Upstream signal (m)				199				
e 2332 643 1925 1 2203 643 1925 6 8 6.9 4.1 1 00 88 100 3.7 421 311 EB1 NB1 NB2 NB3 SB1 SB2 SB3 5 0 412 766 766 393 0 0 0 0 0 0 0 421 1700 1700 1700 1700 1700 0.12 0.04 0.04 0.04 0.0 0.0 B M M 3.2 0.0 0.0 0.0 0.0 0.0 B M M M M M M M M M M M M M M M M M M	platoon unblocked	95.0							
2203 643 1925 6.8 6.9 4.1 8.1 8.2 8.1 8.2 8.1 9.2 8.1 9.2 8.1 9.2 8.1 9.2 8.1 9.2 8.1 9.2 8.1 9.2 9.1 9.1 9.1 9.1 9.1 9.1 9.1 9.1 9.1 9.1	conflicting volume	2332	643	1925					
2203 643 1925 6.8 6.9 4.1 3.5 33 2.2 100 8 100 37 421 311 EB1 NB1 NB2 NB3 SB1 SB2 SB3 50 412 412 756 766 393 0 0 0 0 0 0 0 10 50 0 0 0 0 0 0 10 421 700 7700 7700 7700 7700 0.12 0.24 0.24 0.24 0.45 0.45 0.23 m) 3.2 0.0 0.0 0.0 0.0 0.0 B B B CUbication 47.2% ICU Level of Service	stage 1 conf vol								
2203 643 1925 6.8 6.9 4.1 3.5 3.3 2.2 100 88 100 37 421 311 EB1 NB2 NB3 SB1 SB2 SB3 0 0 0 0 0 0 0 421 1700 1700 1700 1700 0.12 0.24 0.24 0.45 0.45 0.45 14.7 0.0 0.0 0.0 0.0 0.0 B 14.7 0.0 0.0 0.0 0.0 B 20 0 0.0 0.0 0.0 14.7 0.0 0.0 0.0 0.0 0.0 B 32 0.0 0.0 0.0 0.0 0.0 B 47.2% ICU Level of Service									
8.6 6.9 4.1 3.5 3.3 2.2 100 88 100 3.7 421 311 EB1 NB1 NB2 NB3 SB1 SB3 SB3 6.0 412 412 76 76 76 393 0.0 0.0 0.0 0.0 0.0 421 1700 1700 1700 1700 1700 0.12 0.04 0.24 0.24 0.24 0.23 m) 3.2 0.0 0.0 0.0 0.0 0.0 B 14.7 0.0 0.0 0.0 0.0 0.0 B 14.7 0.0 0.0 0.0 0.0 0.0 B 14.7 0.0 0.0 0.0 0.0 0.0 14.7 0.0 0.0 0.0 0.0 0.0 15.0 0.0 0.0 0.0 0.0 16.0 0.0 0.0 0.0 0.0 0.0 17.0 0.0 0.0 0.0 0.0 0.0 18.0 0.0 0.0 0.0 0.0 0.0 19.0 0.0 0.0 0.0 0.0 0.0 10.0 0.0 0.0 0.0 0.0 0.0 0.0 10.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0		2203	643	1925					
3.5 3.3 2.2 100 88 100 37 421 311 EB1 NB1 NB2 NB3 SB1 SB2 SB3 50 412 412 412 766 766 393 0 0 0 0 0 0 0 50 0 0 0 0 0 421 1700 1700 1700 1700 1700 0.12 0.24 0.24 0.24 0.45 0.45 0.23 m) 3.2 0.0 0.0 0.0 0.0 0.0 B B C C C C C C C C C C C C C C C C C C	ingle (s)	8.9	6.9	4.1					
35 33 22 100 88 100 8 100 8 100 8 100 8 100 8 100 8 100 8 11	stage (s)								
100 88 100 EB 1 NB 1 NB 2 SB 1 SB 2 SB 3 50 412 412 766 766 383 0 0 0 0 0 0 0 0 421 1700 1700 1700 1700 1700 0.12 0.04 0.04 0.04 0.0 0.0 14.7 0.0 0.0 0.0 0.0 0.0 B 14.7 0.0 472% ICU Level of Service		3.5	3.3	2.2					
## ST 421 311 ## ST 421 311 ## ST 421 311 ## ST 412 NB 3 SB 1 SB 2 SB 3 ## ST 412 NB 412 766 766 383 ## ST 412 412 769 766 383 ## ST 412 412 412 769 769 769 ## ST 72 00 0.0 0.0 0.0 0.0 0.0 ## ST 72 00 0.0 0.0 0.0 0.0 0.0 0.0 ## ST 72 00 0.0 0.0 0.0 0.0 0.0 0.0 0.0 ## ST 72 00 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	nene free %	100	88	100					
EB1 NB1 NB2 SB1 SB2 SB3 50 412 412 412 766 766 383 0 0 0 0 0 0 0 0 50 0 0 0 0 0 0 421 1700 1700 1700 1700 1700 1700 132 0.0 0.0 0.0 0.0 0.0 B B B C C C C C C C C C C C C C C C C	apacity (veh/h)	37	421	311					
50 412 412 7766 766 393 50 0 0 0 0 0 0 50 0 0 0 0 0 0 421 1700 1700 1700 1700 1700 1700 0.12 0.24 0.24 0.24 0.45 0.45 0.23 m) 3.2 0.0 0.0 0.0 0.0 0.0 0.0 B B 0 0.0 0.0 0.0 0.0 0.0 B 0 0 0 0 0 0.0 0.0 Cubication 47.2% ICU Level of Service	ction, Lane #	EB 1	NB 1	NB 2	NB3	SB 1	SB 2	SB 3	
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ime Total	22	412	412	412	992	997	393	
50 0 0 0 0 0 0 0 10 421 1700 1700 1700 1700 1700 1700 0.12 0.24 0.24 0.24 0.24 0.25 0.23 m) 3.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0 14.7 0.0 0.0 0.0 0.0 0.0 0.0 B 14.7 0.0 0.0 0.0 0.0 0.0 14.7 0.0 100 0.0 0.0 0.0 0.0 14.7 0.0 100 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Volume Left	0	0	0	0	0	0	0	
421 1700 1700 1700 1700 1700 1700 1700 17	ıme Right	20	0	0	0	0	0	10	
m) 32 024 024 024 045 045 023 32 00 00 00 00 00 00 00 B B 00 00 00 00 00 00 00 00 14.7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 B 0.0 0.0 0.0 0.0 0.0 0.0 0.0 14.7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 B 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	cSH	421	1700	1700	1700	1700	1700	1700	
m) 32 0.0 0.0 0.0 0.0 0.0 0.0 14.7 1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Volume to Capacity	0.12	0.24	0.24	0.24	0.45	0.45	0.23	
14.7 0.0 0.0 0.0 0.0 0.0 0.0 14.7 0.0 0.0 9 14.7 0.0 0.0 14.7 0.0 0.0 15.0 0.0 16.0 0.0 0.0 17.0 0.0 15.0 0.0 0.0 15.0 0.0 0.0 15.0 0.0 0.0 0.0 15.0 0.0 0.0 0.0 15.0 0.0 0.0 0.0 15.0 0.0 0.0 0.0 0.0 15.0 0.0 0.0 0.0 0.0 15.0 0.0 0.0 0.0 0.0 0.0 15.0 0.0 0.0 0.0 0.0 0.0 15.0 0.0 0.0 0.0 0.0 0.0 0.0 16.0 0.0 0.0 0.0 0.0 0.0 0.0 17.0 0.0 0.0 0.0 0.0 0.0 0.0 18.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 18.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 18.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 18.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Queue Length 95th (m)	3.2	0.0	0.0	0.0	0.0	0.0	0.0	
14.7 0.0 0.0 B 0.2 V 0.2 Utilization 47.2% ICU Level of Service	trol Delay (s)	14.7	0.0	0.0	0.0	0.0	0.0	0.0	
14.7 0.0 0.0 B 0.2 Utilization 47.2% ICU Level of Service	Lane LOS	ш							
y 0.2 0.2 CU Level of Service 15 15 15 15 15 15 15 15 15 15 15 15 15	roach Delay (s)	14.7	0.0			0.0			
0.2 47.2% ICU Level of Service 15	roach LOS	മ							
0.2 47.2% ICU Level of Service 15	section Summary								
47.2% ICU Level of Service 15	rage Delay			0.2					
15	section Capacity Utilization			47.2%	0	U Level o	f Service	∢	
	ysis Period (min)			15					

Britannia & RR25
BA Group - NHY
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Timings 5: Regional Rd 25 & Etheridge Ave/Collector Road

2032 Future Total AM 01-12-2024

	3T	44	02	70	₹	9		9		20.0	38.4	0.0	%	1.2	2.2	0.	5.4	ag	Yes	ax	86.9	29	29	0.6	0.0	0.0	Α	9.0	∀										
→	SBL SB1	•	30 18	`	Perm		9	ဖ			38.4 38		ù		2.2		5.4			O	86.9					4.0	¥	O,										,	
←	NBT	444	1005	1005	₹	2		2		20.0	38.4			4.2	2.2	-1.0	5.4				96.3	0.74	0.32	2.3	0:0	2.3	∢	4.9	∢								ntersection LOS: B	an service in	
•	NBL		02		pm+pt		2								1:0								0.40			43.0	_						f Green				Intersection LOS: B	non revel	
ļ	WBT		0		A V	∞		∞			36.2				2.9										0.0	1.4	Α.	36.3					L, Start o						
•	L WBL) 65		\ Perm	-	∞	ω.							9 2.9				Yes				5 0.47			2 65.8	ш		_				and 6:SB7						
Ť	L EBT		2			, ,	₹†	, ,							0 2.9				S	_					0.0		⋖						2:NBTL				%0	0,0	
4	EBF		175	17:	pm+pt		•			7.0	11.0	12	9.2%	e,	1.0	₹	e E	Гeа	Yes	None	25.3	0.1	0.67	28	0.0	58.5	_					30	d to phase		oordinated		. 11.1 zation 71.0	7 III0II / II:8	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	ros	Approach Delay	Approach LOS	Intersection Summary	Ovcle Lenath: 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	Analysis Boring (min) 15	Arialysis Period (min) 13

Splits and Phases: 5: Regional Rd 25 & Etheridge Ave/Collector Road



Britannia & RR25
BA Group - NHY
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2032 Future Total AM 01-12-2024 Queues 5: Regional Rd 25 & Etheridge Ave/Collector Road

	4	†	>	ţ	•	←	٠	→	
ane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	
ane Group Flow (vph)	175	92	92	22	70	1025	30	1935	
/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	
lueue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
otal Delay	58.5	6.2	65.8	1.4	43.0	2.3	4.0	9.0	
Jueue Length 50th (m)	41.8	0.0	16.9	0.0	7.5	9.4	6:0	149.2	
Jueue Length 95th (m)	62.4	10.1	31.7	0.0	m14.6	14.5	m1.4	166.8	
ntemal Link Dist (m)		53.9		63.1		108.9		175.3	
urn Bay Length (m)	40.0		40.0		70.0		70.0		
Sase Capacity (vph)	263	619	322	203	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	
tersection Summary									
and comments									

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis 5: Regional Rd 25 & Etheridge Ave/Collector Road

2032 Future Total AM 01-12-2024

	١	•	<i>></i>	\	ļ	4	•	•	•	۶	→	•
Movement	EBL EI	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	<u>, </u>	ŧ\$		<u>, </u>	£,		۳	4413		*	4413	
Traffic Volume (vph)	175	0	92	65	0	22	20	1005	20	30	1870	65
Future Volume (vph)		0	92	65	0	22	20	1005	50	8	1870	92
Ideal Flow (vphpl)	1900 19	006	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.5		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	
Ŧ		0.85		1.00	0.85		1.00	1.00		1.00	0.99	
Fit Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	`	1615		1805	1615		1752	4294		1805	4320	
Flt Permitted		1.00		0.70	1.00		0.05	1.00		0.23	1.00	
Satd. Flow (perm)		1615		1321	1615		98	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
Adj. Flow (vph)	175	0	92	65	0	22	20	1005	20	8	1870	92
RTOR Reduction (vph)	0	22	0	0	20	0	0	~	0	0	2	0
Lane Group Flow (vph)	175	18	0	92	2	0	20	1024	0	30	1933	0
Heavy Vehicles (%)	1% (%0	%0	%0	%0	%0	3%	%9	%0	%0	2%	%9
Turn Type	pm+pt	AN		Perm	¥		pm+pt	₩		Perm	NA	
Protected Phases	7	4			∞		2	5			9	
Permitted Phases				œ			2			9		
Actuated Green, G (s)	23.3 23	23.3		10.5	10.5		94.1	94.1		84.0	84.0	
Effective Green, g (s)		1.3		11.5	11.5		95.1	95.1		85.0	85.0	
Actuated g/C Ratio	J	19		0.09	60:0		0.73	0.73		0.65	0.65	
Clearance Time (s)		6.2		6.2	6.2		4.0	6.4		6.4	6.4	
Vehide Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		301		116	142		153	3141		286	2824	
v/s Ratio Prot	c0.05 0.	0.01			0.00		c0.02	0.24			00.45	
v/s Ratio Perm				0.05			0.31			0.07		
v/c Ratio	0.69 0.	90.0		0.56	0.03		0.46	0.33		0.10	0.68	
Uniform Delay, d1		43.5		26.8	54.2		13.8	6.2		8.4	14.1	
Progression Factor	•	1.00		1.00	1.00		3.27	0.34		0.31	0.54	
Incremental Delay, d2		0.1		6.1	0.1		1.6	0.2		9.0	[-	
Delay (s)	55.7 43	43.5		67.9	54.3		46.7	2.3		3.2	8.7	
Level of Service	ш	۵		ш	۵		□	⋖		⋖	⋖	
Approach Delay (s)	5(51.4			58.9			5.1			9.8	
Approach LOS		Ω			ш			∢			∢	
Intersection Summary												
HCM 2000 Control Delay			12.6	오	M 2000 L	HCM 2000 Level of Service	ervice		В			1
HCM 2000 Volume to Capacity ratio	ty ratio		69.0									
Actuated Cycle Length (s)			130.0	Sui	Sum of lost time (s)	time (s)			16.6			
Intersection Capacity Utilization	L.	-	71.9%	⊴	ICU Level of Service	Service			ပ			
Analysis Period (min)			15									
c Critical Lane Group												

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HCM Unsignalized Intersection Capacity Analysis 2032 Future Total AM 6: Regional Rd 25 & Site Dwy (South)

																																								A	:
																											SB3	422	0	70	1700	0.25	0.0	0.0					l		
*	SBR		20	20			1.00	20																			SB 2	804	0	0	1700	0.47	0:0	0.0					l	Service	3
→	SBT	4413	2010	2010	Free	%0	1.00	2010						None		133											SB 1	804	0	0	1700	0.47	0:0	0:0		0.0			l	CLI Level of Service	2
←	NBT	444	1095	1095	Free	%0	1.00	1095						None		183											NB3	365	0	0	1700	0.21	0:0	0:0					l	₫	į
•	NBL		0	0			1.00	0									0.73	2030		1401	1125	4.1	d	7.7	9	460	NB2	365	0	0	1700	0.21	0.0	0:0					0.0	50 0%	15
>	EBR	¥.	92	92			1:00	92									0.73	089		c	0 6	6.0	d	3.3	35	798	NB 1	365	0	0	1700	0.21	0.0	0.0		0.0			l		
4	EBF		0	0	Stop	%0	0.1	0									0.82	2385		27	453	8.9	ı	3.5	9	44	EB 1	92	0	92	798	0.08	2.1	6.6	∢	6.6	∢			-	
	Movement	Lane Configurations	Traffic Volume (veh/h)	Future Volume (Veh/h)	Sign Control	Grade	Peak Hour Factor	Hourly flow rate (vph)	Pedestrians	Lane Width (m)	Walking Speed (m/s)	Percent Blockage	Right tum flare (veh)	Median type	Median storage veh)	Upstream signal (m)	pX, platoon unblocked	vC, conflicting volume	vC1, stage 1 conf vol	VC2, stage 2 cont vol	vCu, unblocked vol	tC, single (s)	tC, 2 stage (s)	t⊦ (s)	b0 queue free %	cM capacity (veh/h)	Direction, Lane #	Volume Total	Volume Left	Volume Right	cSH	Volume to Capacity	Queue Length 95th (m)	Control Delay (s)	Lane LOS	Approach Delay (s)	Approach LOS	Intersection Summary	Average Delay	Intersection Canacity Utilization	Analysis Period (min)

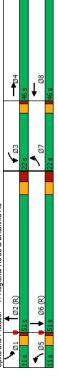
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Timings 7: Regional Rd 25 & Britannia Rd

2032 Future Total AM 01-12-2024

→	SBT	4₩₽	1665	1665	₹	9		9		20.0	49.7	51.0	39.2%	4.2	3.5	-1.0	6.7	Lag	Yes	C-Max	60.3	0.46	0.84	48.1	0.0	48.1		49.6										
۶	SBL	F	385	385	Prot	_		-		7.0	11.0	11.0	8.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	22.5	0.17	0.64	56.0	0.0	26.0	ш										ш	
-	NBT	444	892	892	≨	2		2		20.0	49.7	51.0	39.5%	4.2	3.5	-1.0	6.7	Lag	Yes	C-Max	44.3	0.34	0.77	41.0	0.0	41.0	_	41.8	_							LOS: D	CU Level of Service E	
•	NBL	£	20	20	Prot	2		2		7.0	11.0	11.0	8.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	8.7	0.07	0.22	9.6	0.0	9.6	ш					f Green				ntersection LOS: D	CU Level	
ţ	WBT	₩	345	345	Ž	∞		∞		10.0	45.5	46.0	35.4%	4.2	3.3	-1.0	6.5	Lag	Yes	None	37.2	0.29	0.38	29.3	0.0	29.3	ပ	47.8	Ω			o tety.				_ :	⊆	
>	WBL	F	430	430	Prot	က		က		7.0	11.0	22.0	16.9%	3.0	1.0	-1.0	3.0	Lead	Yes	None	18.8	0.14	0.87	9.89	0.0	9.89	ш					and 6:SB						
†	EBT	444	415	415	Ϋ́	4		4		10.0	45.5	46.0	35.4%	4.2	3.3	-1.0	6.5	Lag	Yes	None	25.2	0.19	0.76	46.4	0.0	46.4	٥	47.5	Ω			2-NBT						
4	BB	F	9	9	Prot	7		7		7.0	11.0	22.0	16.9%	3.0	1.0	-1.0	3.0	Lead	Yes	None	0.6	0.07	0.26	59.9	0.0	29.9	ш					30 need to phase		oordinated		47.1	zation 82.9%	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	SOT	Approach Delay	Approach LOS	Intersection Summary	Cycle Lenath: 130	Actuated Cycle Length: 130 Offser: 104 (80%) Referenced to phase 2: NRT and 6:SRT. Start of Green	Natural Cycle: 130	Control Type: Actuated-Coordinated	Maximum v/c Ratio: 0.87	Intersection Signal Delay: 47.1	Intersection Capacity Utilization 82.9%	Analysis Period (min) 15

Splits and Phases: 7: Regional Rd 25 & Britannia Rd



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2032 Future Total AM 01-12-2024 Queues 7: Regional Rd 25 & Britannia Rd

	•	†	•	ļ	•	+	۶	→	
Lane Group	EBL	EBT	WBL	WBT	퓜	NBT	SBL	SBT	
Lane Group Flow (vph)	9	700	430	485	20	1120	385	1690	
v/c Ratio	0.26	97.0	0.87	0.38	0.22	0.77	0.64	0.84	
Control Delay	59.9	46.4	9.89	29.3	9.69	41.0	26.0	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	9.89	29.3	9.69	41.0	26.0	48.1	
Queue Length 50th (m)	8.0	62.7	29.0	37.4	6.7	108.3	26.8	155.1	
Queue Length 95th (m)	15.3	0.97	#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)	0.09		120.0		0.06		0.06		
Base Capacity (vph)	482	1370	203	1368	225	1464	909	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.

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Britannia & RR25 BA Group - NHY

HCM Signalized Intersection Capacity Analysis 7: Regional Rd 25 & Britannia Rd

2032 Future Total AM 01-12-2024

	4	†	<i>></i>	>	↓	4	•	•	•	۶	→	•
Movement	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	K.	4413		F	4413		K.	4413		K.	4413	
Traffic Volume (vph)	8	415	285	430	342	140	20	895	225	385	1665	25
Future Volume (vph)	9	415	285	430	342	140	20	892	225	382	1665	22
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	
표	1.00	0.94		1.00	96.0		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		3202	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)	9	415	285	430	345	140	20	895	225	382	1665	22
RTOR Reduction (vph)	0	94	0	0	28	0	0	56	0	0	_	0
Lane Group Flow (vph)	9	909	0	430	427	0	20	1094	0	382	1689	0
Heavy Vehicles (%)	%9	1%	1%	%/	1%	2%	4%	2%	4%	%0	2%	27%
Turn Type	Prot	AN		Prot	¥		Prot	¥		Prot	N	
Protected Phases	7	4		က	∞		2	2		-	9	
Permitted Phases												
Actuated Green, G (s)	9.9	25.0		17.8	36.2		6.3	42.5		21.5	27.7	
Effective Green, g (s)	9.7	26.0		18.8	37.2		7.3	43.5		22.5	58.7	
Actuated g/C Ratio	90:0	0.20		0.14	0.29		90.0	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		909	1950	
v/s Ratio Prot	0.02	c0.14		c0.12	0.10		0.01	0.26		00.11	60.39	
v/s Ratio Perm												
v/c Ratio	0.31	0.71		98.0	0.35		0.26	0.77		0.64	0.87	
Uniform Delay, d1	28.7	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	6.0	5.9		14.2	0.2		0.8	4.2		1.7	4.4	
Delay (s)	9.69	51.4		64.7	34.3		59.5	43.1		52.5	49.2	
Level of Service	ш	□		ш	O		ш	□		□	□	
Approach Delay (s)		52.1			48.6			43.8			49.9	
Approach LOS		Ω						Ω			Ω	
Intersection Summary												
HCM 2000 Control Delay			48.5	ľ	HCM 2000 Level of Service	Level of S	service		۵			
HCM 2000 Volume to Capacity ratio	ity ratio		0.82									
Actuated Cycle Length (s)			130.0	S	Sum of lost time (s)	time (s)			19.2			
Intersection Capacity Utilization	ioi		82.9%	೨	ICU Level of Service	f Service			ш			
Analysis Period (min)			15									
c Critical Lane Group												

Britannia & RR25 BA Group - NHY

HCM Unsignalized Intersection Capacity Analysis 2032 Future Total AM 8: Site Dwy (South)/Site Dwy (North) & Etheridge Ave

	4	†	<i>></i>	\	Ļ	4	•	←	•	۶	→	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Volume (veh/h)	2	165	2	22	92	22	20	0	09	45	0	15
Future Volume (Veh/h)	2	165	2	52	88	52	8	0	09	45	0	15
Sign Control		Free			Free			Stop			Stop	
Grade	8	%6	8	8	% 5	6	6	% 5	9	9	%0	
Peak Hour Factor	9.1	3.6	9.1	00.1	0.1	9.1	00.1	00.1	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	2	165	2	22	88	22	8	0	9	42	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)					28							
pX, platoon unblocked												
vC, conflicting volume	110			170			340	338	168	382	328	86
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	110			170			340	338	168	382	328	86
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			8			26	100	93	91	100	86
cM capacity (veh/h)	1493			1420			298	575	882	229	282	964
Direction, Lane #	EB 1	WB1	NB1	SB 1								
Volume Total	175	135	80	09								
Volume Left	2	52	20	45								
Volume Right	2	52	9	15								
cSH	1493	1420	789	296								
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)	0.5	7:	10.1	11.7								
Lane LOS	∢	∢	В	Ф								
Approach Delay (s)	0.2	1.5	10.1	11.7								
Approach LOS			В	В								
Intersection Summary												
Average Delay			3.9		cointo of Consison	Ocivac			<			
Intersection Capacity Unization Analysis Doriod (min)			<u>\$</u> #	2	n revel of	Service			₹			
Alialysis i elice (illiii)			2									

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Timings 10: Britannia Rd & Farmstead Dr

2032 Future Total AM 01-12-2024

•	SBR	¥	30	30	Perm		8	8		10.0	15.3	41.0	39.0%	3.3	2.0	-1.0	4.3			None	12.8	0.12	0.14	15.4	0.0	15.4	В						reen				Intersection LOS: A	CU Level of Service A	
٠	SBL	j _	90	90	Prot	∞		∞		10.0	15.3	41.0	39.0%	3.3	2.0	-1.0	4.3			None	12.8	0.12	0.43	49.0	0.0	49.0	۵	40.6	۵				, Start of Gi				Ĭ	ਠ	
ţ	WBT	441	395		Ϋ́	9		9			29.4		20.5%	4.2	2.2	-1.0	5.4	Lag	Yes	C-Max	82.3	0.78	0.13		0.0			4.4	∢				nd 6:WBT						
†	EBT	444	029	670	Ν	2		2		20.0	29.4		61.0%	4.2		ľ	5.4			C-Max	86.7	0.83	0.18		0.0	2.8	∢	2.8	¥				EBTL ar					.0	
•	EBL	J	20	20	bm+pt	2	2	2		7.0	11.0	11.0	10.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	88.0	0.84	0.03	2.4	0:0	2.4	∢					105	ed to phase 2		Soordinated		0.7.7	lization 33.1%	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	SOT	Approach Delay	Approach LOS	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 Capacity Utilization 33.1%	Analysis Period (min) 15

Splits and Phases: 10: Britannia Rd & Farmstead Dr

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Britannia & RR25
Syndtro 11 Report
BA Group - NHY
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Queues 2032 Future Total AM 10: Britannia Rd & Farmstead Dr 01-12-2024

	•	†	ţ	٠	*	
Lane Group	EB	EBT	WBT	SBL	SBR	
Lane Group Flow (vph)	8	029	420	6	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	5.8	4.4	49.0	15.4	
Queue Length 50th (m)	9.0	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	292	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						

Britannia & RR25
Synchro 11 Report
BA Group - NHY

HCM Signalized Intersection Capacity Analysis 10: Britannia Rd & Farmstead Dr

2032 Future Total AM 01-12-2024

12.7 HCM 2000 Level of Service Sum of lost time (s) ICU Level of Service 8 10.8 0.10 5.3 3.0 158 9.8 10.8 0.10 5.3 3.0 175 c0.05 90 90 90 11.00 11.00 11.00 0.95 17.03 90 90 90 90 90 90 0.51 44.6 1.00 2.5 2.5 47.2 D D D D 25 0 0 0% 7.2 0.23 105.0 33.1% 395 395 395 1900 5.4 *0.80 0.99 1.00 4203 1.00 395 3 3 417 8% NA 76.7 77.7 0.74 6.4 3.0 3.110 0.10 0.13 3.9 1.00 0.1 4.0 A A A 83.5 84.5 0.80 6.4 3.0 3562 c0.15 EBT 670 670 670 1900 1.00 1.00 1.00 4427 1.00 670 670 83% NA HCM 2000 Control Delay
HCM 2000 Volume to Capacity ratio
Aduated Cycle Length (s)
Intersection Capacity Utilization
Analysis Period (min)
c Critical Lane Group 83.5 84.5 0.80 0.80 3.0 664 0.00 0.00 0.03 2.1 2.1 4.0 0.0 0.0 4.0 20 20 20 3.0 3.0 1.00 1.00 0.0.95 20 20 20 20 20 20 9% Fit Protected Salt Ibov (prof)

Salt Ibov (prof)

Fit Permitted Salt Trow (ppm)

Adj. Flow (pph)

End Group Flow (pph)

Lane Group Flow (pph) Turn Type
Prosteded Phases
Permited Phases
Actuated Green, G (s)
Effective Green, g (s)
Actuated g/C Ratio
Clearance Time (s)
Vehicle Extension (s)
Lane Grp Cap (vph)
WS Ratio Perm v/c Ratio Uniform Delay, d1 Progression Factor Incremental Delay, d2 Lane Configurations
Traffic Volume (vph)
Future Volume (vph)
Ideal Flow (vphpl)
Total Lost time (s)
Lane Util. Factor ntersection Summary Delay (s) Level of Service Approach Delay (s) Approach LOS Heavy Vehides (%)

Britannia & RR25 Synchro 11 Report
BA Group - NHY Page 18

2032 Future Total AM 01-12-2024 Timings 11: Britannia Rd & Rose Way

	l		l	l		
	4	†	ţ	٠	`	
Lane Group	盟	EB	WBT	SBL	SBR	
Lane Configurations	*	**	4413	*	×.	
Traffic Volume (vph)	22	1000	840	22	75	
Future Volume (vph)	22	1000	840	22	75	
Turn Type	pm+pt	Ϋ́	¥	Prot	Perm	
Protected Phases	2	2	9	4		
Permitted Phases	2				4	
Detector Phase	2	2	9	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	
Total Split (%)	11.5%	61.5%	%0.09		3.5%	
Yellow Time (s)	3.0	4.0	4.0		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	0.9	0.9	2.0	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	0.0	60:0	
v/c Ratio	0.02	0.27	0.24	0.34	0.35	
Control Delay	3.9	2.7	4.7	61.1	16.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	3.9	2.7	4.7	61.1	16.3	
ros	⋖	⋖	⋖	ш	മ	
Approach Delay		2.7	4.7	35.2		
Approach LOS		∢	∢	۵		
Intersection Summary						
Cycle Length: 130						
Actuated Cycle Length: 130						
Offset 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green	phase 2:	EBTL and	6:WBT,	Start of G	ue	
Natural Cycle: 85						
Control Type: Actuated-Coordinated	dinated					
Maximum v/c Ratio: 0.35						
Intersection Signal Delay: 7.2				ᆵ	Intersection LOS: A	
Intersection Capacity Utilization 38.3%	on 38.3%			⊇	ICU Level of Service A	
Analysis Period (min) 15						

Splits and Phases: 11: Britannia Rd & Rose Way Ø5 ← Ø6 (R)

Synchro 11 Report Page 19 Britannia & RR25 BA Group - NHY

2032 Future Total AM 01-12-2024 Queues 11: Britannia Rd & Rose Way

	1	†	ļ	۶	•	
Lane Group	B	EBT	WBT	SBL	SBR	
Lane Group Flow (vph)	52	1000	820	55	75	
v/c Ratio	0.05	0.27	0.24	0.34	0.35	
Control Delay	3.9	2.2	4.7	61.1	16.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	3.9	2.7	4.7	61.1	16.3	
Queue Length 50th (m)	- 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	0.97		
Turn Bay Length (m)	20.0			20.0		
Base Capacity (vph)	222	3761	3523	624	809	
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	ile queue is	metered	by upstre	am signs	JE.	

Molume for 95th percentile queue is metered by upstream signal.

Synchro 11 Report Page 20 Britannia & RR25 BA Group - NHY

HCM Signalized Intersection Capacity Analysis 11: Britannia Rd & Rose Way

2032 Future Total AM 01-12-2024

	4	†	ţ	4	٠	*	
Movement	EBF	EBT	WBT	WBR	SBL	SBR	
Lane Configurations	*	**	4413		<u>, </u>	W _	
Traffic Volume (vph)	52	1000	840	9	22	75	
Future Volume (vph)	22	1000	840	9 9	5	75	
Ideal Flow (vpnpl)	0061	0061	0081	0061	008	0061	
I ane I Hil Factor	0.0	*0.80 *0.80	*0.80		6.0	100	
- - -	100	1.00	1.00		100	0.85	
Fit 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)	52	1000	840	9	22	75	
RTOR Reduction (vph)	0	0	0	0	0	89	
Lane Group Flow (vph)	52	1000	820	0	22	7	
Heavy Vehicles (%)	%0	%0	%0	%0	%0	%0	
Turn Type	pm+pt	NA	Ν		Prot	Perm	
Protected Phases	ည	7	9		4		
Permitted Phases	7					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	60:00	
Clearance Time (s)	4.0	2.0	7.0		0.9	0.9	
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	0.02	0.27	0.25		0.34	0.05	
Uniform Delay, d1	5.1	5.6	4.5		55.4	54.0	
Progression Factor	2.26	2.14	0.1		1:00	1.00	
Incremental Delay, d2	0.0	0.1	0.2		12	0.1	
Delay (s)	4.8	5.6	4.7		26.7	54.1	
Level of Service	⋖	⋖	⋖		ш	۵	
Approach Delay (s)		9.9	4.7		55.2		
Approach LOS		⋖	∢		ш		
Intersection Summary							
HCM 2000 Control Delay			8.4	윈	:M 2000	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	y ratio		0.28				
Actuated Cycle Length (s)			130.0	Su	Sum of lost time (s)	time (s)	14.0
Intersection Capacity Utilization	r.		38.3%	ਠ	ICU Level of Service	Service	A
Analysis Period (min)			15				
 Critical Lane Group 							

Britannia & RR25 BA Group - NHY Page 21

Timings 1: Regional Rd 25 & Louis St Laurent Ave

2032 Future Total PM 01-12-2024

→	SBT	ተ ቶኩ	950	950	₹	9		9		20.0	32.2	56.0	40.0%	4.2	3.0	-1.0	6.2	Lag	Yes	C-Max	57.2	0.41	0.65	36.0	0:0	36.0	٥	35.8	۵										
۶	SBL	*	92	92	pm+pt	-	9	~		2.0	9.0	10.0	7.1%	3.0	1.0	-1.0	3.0	Lead			68.2	0.49	0.56	33.7	0.0	33.7	ပ											ш	
←	NBT	441	1000	1000	≨	2		7		20.0	32.2	0.89	48.6%	4.2	3.0	-1.0	6.2	Lag	Yes	C-Max	65.3	0.47	0.73	31.2	0.0	31.2	ပ	32.1	ပ								LOS: D	CU Level of Service E	
•	NBL	<u>, </u>	220	220	pm+pt	2	2	2		2.0	9.0	22.0	15.7%	3.0	1.0	-1.0	3.0	Lead	Yes	None	79.3	0.57	0.74	37.8	0.0	37.8	_						reen				ntersection LOS: D	J Level of	
ţ	WBT	₩	545	545	Ϋ́	œ		œ		10.0	30.0	40.0	28.6%	4.0	3.0	-1.0	0.9	Lag	Yes	None	31.9	0.23	0.75	55.8	0.0	22.8	ш	55.4	ш				Start of G				Ĭ	⊴	
>	WBL	<u>, </u>	365	365	pm+pt	က	∞	က		10.0	14.0							Lead				0.40	0.86	7.45	0.0	54.7	۵						6:SBTL,						
†	EBT	₩	375	375	Ϋ́	4		4		10.0	30.0	30.0	21.4%	4.0	3.0	-1.0	0.9	Lag	Yes	None	23.4	0.17	0.84	66.4	0.0	66.4	ш	59.1	ш				IBTL and						
1	EB	*	202	202	pm+pt	7	4	7		2.0	9.0		15.7%					Lead	Yes	None	43.2	0.31	0.68	41.4	0.0	41.4	۵						to phase 2:N		ordinated		2.2	tion 87.2%	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effet Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	ros	Approach Delay	Approach LOS	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 Capacity Utilization 87.2%	Analysis Period (min) 15

Splits and Phases. 1: Regional Rd 25 & Louis St Laurent Ave

Britannia & RR25 BA Group - NHY

2032 Future Total PM 01-12-2024 Queues 1: Regional Rd 25 & Louis St Laurent Ave

	•	†	•	ļ	•	+	۶	→	
Lane Group	EBF	EBT	WBL	WBT	NBL	NBT	SBL	SBT	
Lane Group Flow (vph)	205	200	365	610	220	1445	92	1145	
v/c Ratio	99.0	0.84	98.0	0.75	0.74	0.73	0.56	0.65	
Control Delay	41.4	66.4	54.7	22.8	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	99.0	0.73	0.56	0.65	
Informaction Cummons									

Intersection Summary
96th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Synchro 11 Report Page 2

Britannia & RR25 BA Group - NHY

HCM Signalized Intersection Capacity Analysis 1: Regional Rd 25 & Louis St Laurent Ave

2032 Future Total PM 01-12-2024

	1	†	<i>></i>	•	ţ	4	•	•	•	٠	→	•
Movement	EB	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	F	₹		۴	41		-	4413		r	444	
Traffic Volume (vph)	202	375	125	365	545	92	220	1000	445	92	920	195
Future Volume (vph)	202	375	125	365	542	92	220	1000	445	92	920	195
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	0.9		5.0	0.9		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	96.0		1.00	0.98		1.00	0.95		1.00	0.97	
Fit 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)	202	375	125	365	545	65	220	1000	445	92	920	195
RTOR Reduction (vph)	0 202	23	0 0	365	7	0 0	0 000	1391	00	95	1128	00
Confl. Peds. (#/hr)	2		ည	2		വ	2	2	2	വ	2	2
Heavy Vehicles (%)	5%	1%	%0	%0	%0	2%	1%	%9	1%	%0	4%	%0
Turn Type	pm+pt	AN		pm+pt	¥		pm+pt	¥		pm+pt	AN	
Protected Phases	7	4		က	∞		2	7		-	9	
Permitted Phases	4			∞			2			9		
Actuated Green, G (s)	38.1	22.4		9.09	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	802		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	9 ;	1.00		0 !	00.5		1.00	0 ;		9:	0.5	
Incremental Delay, d2	7.5	10.0		18.7	3.8		10.0	2.4		4.8	8.	
Delay (s)	48.2	66.4		9.99	54.2		34.1	32.4		29.0	35.1	
Level of Service	۵	ш		ш	۵		ပ	ပ		ပ	_	
Approach Delay (s)		61.1			22.1			32.6			34.6	
Approach LOS		ш			ш			ပ			ပ	
Intersection Summary												
HCM 2000 Control Delay			42.3	Ĭ	HCM 2000 Level of Service	evel of S	ervice		۵			
HCM 2000 Volume to Capacity ratio	ty ratio		0.81									
Actuated Cycle Length (s)			140.0	જ	Sum of lost time (s)	time (s)			18.2			
Intersection Capacity Utilization	ш		87.2%	೦	ICU Level of Service	Service			ш			
Analysis Period (min)			15									
c Critical Lane Group												

Britannia & RR25 BA Group - NHY

Timings 2032 Future Total PM 2: Regional Rd 25 & Whitlock Ave 01-12-2024

→ → .	T SBL SBT	*	8		A pm+pt NA	-	9	2 1 6		7.0	5 11.0 35.5	11.0	8.5% 62		1.0	-1.0		Lead	Yes	None	101.9	0.78	0.27	6.2	0.0	6.2	∢	9.2	A							
•	NBT	4413	1665	1665	Ϋ́	2		2		20.0	35.5		9			-1.0		Lag	Yes	C-Max	93.3	0.72	0.55	6.2	0.0	6.2	∢	0.9	⋖							
•	NBL	*	8	6	pm+pt	2	2	2		7.0	11.0	11.0	8.5%	3.0	1:0	-1.0	3.0	Lead	Yes	None	102.6	0.79	0.30	3.4	0.0	3.4	∢									
4	WBR	¥C.	75	75	Perm		∞	∞		10.0	37.5	38.0	29.5%	3.3	3.2	-1.0	5.5			None	16.6	0.13	0.29	13.0	0.0	13.0	В						of Green			
ţ	WBT	*	9	40	ΑΝ	∞		œ		10.0	37.5	38.0	29.5%	3.3	3.2	-1.0	5.5			None	16.6	0.13	0.17	20.0	0.0	20.0	_	30.2	ပ				rl, Start			
\	WBL	*	52	52	Perm		∞	∞		10.0	37.5	38.0	29.5%	3.3	3.2	-1.0	5.5			None	16.6	0.13	0.15	50.2	0.0	50.2	۵						Ind 6:SB			
†	EBT	2,	9	40	ΑN	4		4		10.0	37.5	38.0	29.2%	3.3	3.2	-1.0	5.5			None	16.6	0.13	0.32	31.8	0:0	31.8	ပ	52.0	_				2:NBTL a			
4	EBF	*	105	105	Perm		4	4		10.0	37.5	38.0	29.2%	3.3	3.2	-1.0	5.5			None	16.6	0.13	0.60	67.4	0.0	67.4	ш						to phase	Potodi		
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	ros	Approach Delay	Approach LOS	Intersection Summary	Cvcle Lenath: 130	Actuated Cycle Length: 130	Offset 40 (31%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	Natural Cycle: 85	Maximim v/c Ratio: 0.60	

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₽04

Splits and Phases: 2: Regional Rd 25 & Whitlock Ave

Ø1 • Ø2(R)

10 05 W D6 (R)

Queues
2: Regional Rd 25 & Whitlock Ave

Well Well Well Well Well Well Well Well NBI ABI ABI <th< th=""><th>SB</th></th<>	SB
105 80 25 40 75 90 1705 0.60 0.32 0.15 0.17 0.29 0.30 0.55 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 67.4 31.8 50.2 50.0 13.0 3.4 6.2 27.2 10.6 6.1 9.8 0.0 16 54.9 45.1 25.0 14.4 20.3 14.0 4.3 50.4 62.9 65.0 65.0 100.0 1 50.38 34.1 452 333 475 441 304 3107 0 0 0 0 0 0 0 0 0 0	
060 032 015 017 029 030 055 674 318 502 50.0 13.0 3.4 6.2 27.2 10.6 6.1 9.8 0.0 16 549 45.1 25.0 14.2 0.3 14.0 4.3 694 45.1 25.0 14.4 20.3 14.0 4.3 694 35.0 65.0 65.0 15.0 40.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	1320
67.4 31.8 50.2 50.0 13.0 34 6.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0 67.4 31.8 50.2 50.0 13.0 34 6.2 27.2 10.6 6.1 9.8 0.0 1.6 54.9 45.1 25.0 14.4 20.3 14.0 4.3 69.4 62.9 68.1 14.0 4.3 69.4 35.0 65.0 65.0 100.0 1 34.1 45.2 33.3 47.5 44.1 30.4 310.7 0 0 0 0 0 0	-
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	8
67.4 31.8 50.2 50.0 13.0 3.4 6.2 27.2 10.6 6.1 9.8 0.0 1.6 54.9 45.1 25.0 14.4 20.3 14.0 4.3 69.4 35.0 65.0 66.1 66.0 100.0 1 341 452 333 475 441 304 3107 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0
27.2 10.6 6.1 9.8 0.0 1.6 54.9 45.1 25.0 14.4 20.3 14.0 4.3 69.4 62.9 65.0 66.1 65.0 100.0 1 35.0 65.0 65.0 100.0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	8
45.1 25.0 14.4 20.3 14.0 4.3 69.4 62.9 68.1 65.0 65.0 65.0 65.0 80.1 7 67.8 67.8 67.0 67.8 </td <td></td>	
62.9 68.1 503.8 35.0 65.0 65.0 100.0 34.1 452 333 475 441 304 3107 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
35.0 65.0 65.0 100.0 1 34.1 452 333 475 441 304 3107 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0
341 452 333 475 441 304 3107 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
	2992
	0
$egin{array}{cccccccccccccccccccccccccccccccccccc$	0
	0
educed v/c Ratio 0.31 0.18 0.08 0.08 0.17 0.30 0.55 0.27	0.44

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HCM Signalized Intersection Capacity Analysis 2: Regional Rd 25 & Whitlock Ave

2032 Future Total PM 01-12-2024

Movement EBI EBI WB WB WB WB WB WB WB	EBL 105 105 105 100 100 100 100 100 100 100				NBL 99 90 1900 1,00	1665 1665 1665 1665 1900 1.00 1.00 1.00 1.00 1.00 1.00 1.00		<u>+</u>	BH SBR 88 5 135 88 7 135 80 1900 90 100 90 110 90 1
105 40	(s) 105 105 106 100 100 100 100 100 100 100 100 100		# 4444		30 1900 30 30 1000 1000 1000 1000 1000 1	1665 1900 5.5 1900 1.00 1.00 1.00 1.00 1.00 1.00 1.00			
105	(s) 105 100 100 100 100 100 100 100 100 100	= - - - - - - - - -			90 90 90 1900 1.00 1.00 1.00 1.00 1.00 1	1665 1900 5.5 1900 1.00 1.00 1.00 1.00 1.00 1.00 1.00		<u> </u>	
1005	(s) 105 100 100 100 100 100 100 100				90 100 1.00 1.00 1.00 1.00 0.95 1787 0.14 261 1.00 0.95 0.95	1900 1900 5.5 6.5 1.00 1.00 1.00 4329 1.00 1.00 1.00 1.00 1.00 1.00 1.00		1 2 3 , ,) , 4 , 4 , 1 , 1	
1900	1900				1900 1.00 1.00 1.00 1.00 1.00 0.15 1.00 0.01 1.00 0.01 1.00 0.01 1.00 0.01 1.00 0.01 1.00 0.01 1.00 0.01 1.00 0.01 1.00 0.01 0	1900 5.5 •0.80 1.00 1.00 1.00 4329 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0		<u> </u>	
100 100	5.5 1.00 1				3.0 1.00 1.00 1.00 1.00 0.95 0.14 261 1.00 90 90 90 90	5.5 1.00 1	<u> </u>	\$, , 0 , 4 , 4 , 1 , 1	
1.00	1.00 1.00 0.39 1.00 0.73 1.367 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0				1.00 1.00 1.00 1.00 1.00 1.00 90 90 90 90 1,00 1,00 1,00 1,00 1,00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	<u> </u>	4 4 4 7	
1.00	1.00 1.00				1.00 1.00 1.00 1.00 0.14 261 1.00 90 90 90 90 90 261 1.00 1.00 90 261 261 261 261 261 261 261 261 261 261	1.00 1.00 1.00 4329 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	<u> </u>	. , 9 , 4 , 4 ,	
1,000 1,00	(s) 17.6 (s) 10.09 (s) 10.09 (s) 10.09 (s) 17.6 (s) 17.6 (s) 17.6 (s) 17.6 (s) 17.6 (s) 17.4				1.00 0.95 1787 1787 1.00 90 0 90 0 90 0 90 0 90 0 90 0 0 90 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1.00 1.00 4329 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	- - - - - - - - - -	, 0, 4, 4,	
1.00 0.93 1.00 1.00 0.95 1.00	1.00 0.15 1.776 1.00				1.00 1.787 1.787 1.100 90 0 90 90 1,000 1,	1.00 4.329 1.00 1.00 1.665 1.704 1.704 NA		9,4,4,7	
1776 1699 1700 1500 1500 1500 1700	(s) 17.6 (c)		7 2 7 2 7		0.95 1787 1787 0.14 261 1.00 90 90 90 90 90 90	1.00 4329 1.00 4329 1.00 1665 1 1704 NA		, 4 , 4 ,	
1776 1699 1795 1900 1539 1787 4329 1770 4	1776 - 1776 - 1787 - 17		2 4 2 4		1787 0.14 261 1.00 90 90 90 90 90 90	4329 1.00 4329 1.00 1665 1 1704 85% NA		4 , 4 ,	
1367 1699 1322 1300 141	(s) 174 (174 (174 (174 (174 (174 (174 (174		7 2 7		0.14 261 1.00 90 0 90 1% 1% pm+pt 5	1.00 4329 1.00 1665 1 1704 NA	ā	, 4,	
1367 1569	1367 - 100 105 106 105		# (1.00 90 90 1% 1% pm+pt 5	1.00 1.00 1665 1704 1704 NA	<u> </u>	4 ,	
HF 100 100 100 100 100 100 100 100 100 10	HF 1.00 (105 ph) 105 ph) 105 ph) 105 ph) 105 ph) 105 ph) 105 ph 1				1.00 90 90 17% 17%	1.00 1665 1704 5% NA		,	
105	(s) 105 ph) 105 5 11% Perm Perm (s) 156 s) 166 s) 166 s) 174				90 0 90 1% pm+pt 5	1665 1 1704 5% NA			
ph) 105 48 0 25 40 10 90 1704 0 60 1 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	ph) 105 ph) 105 5 175 Perm 156 s) 166 s) 166 s) 167 174				90 1% pm+pt 5	1704 5% NA		_	
Phi 105 48 0 25 40 10 90 1704 0 60 1	(s) 105 176 176 (s) 156 (s) 166 (s) 166 (s) 166 (s) 166 (s) 174			Pe	1% pm+pt 5	1704 5% NA		_	
1,5	(s) 15.6 (s) 16.6 (s) 3.0 (s) 4 (s) 16.6 (s) 17.4				1% pm+pt 5	%9 NA			
1% 5% 0% 0% 0% 1% 1% 5% 0% 0% 2% 1% 5% 1% 5% 0% 0% 0% 0% 0% 1% 1% 5% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0%	(s) 15.6 (s) 15.6 (s) 0.13 (b) 3.0 (c) 3.0				pm+pt 5	NA NA			
(s) 156 156 156 156 156 156 156 156 156 156	(s) 15.6 (s) 16.6 (s) 16.6 (s) 16.7 (s) 3.0				pm+pt 5	¥ N	ā		≨ '
(s) 156 156 156 156 156 989 915 959 959 959 959 915 959 959 915 959 959	(s) 15.6 s) 16.6 s) 0.13 6.5 s) 3.0				ر م	•			
(s) 156 156 156 156 156 98.2 91.5 95.9 91.5 166 166 166 166 166 166 160.9 92.5 97.9 95.9 91.5 16.6 166 166 160.9 92.5 97.9 95.0 91.5 16.6 166 166 160.9 92.5 97.9 91.5 16.6 16.6 16.6 16.6 16.6 16.6 16.6 1	(s) 15.6 (s) 16.6 (s) 16.6 (c) 13 (e) 3.0 (c) 174		•	×	`	2			9
S	(s) 15.6 s) 16.6 0.13 6.5 s) 3.0				,				
16.6 16.6 16.6 16.6 10.09 92.5 97.9 97.9 97.5 97.9 97.5 97.9 97.5	s) 16.6 0.13 6.5 s) 3.0 174				6.86	91.5			0.0
0.13 0.13 0.13 0.13 0.18 0.71 0.75	0.13 6.5 6.5 3.0 174				100.9	92.5			0.1
6 6 6 6 6 6 6 6 7 4 0 6 5 4 0 6 5 4 0 6 5 4 0 6 5 4 0 6 5 4 0 6 5 4 0 6 5 4 0 6 5 4 0 6 5 4 0 6 5 4 0 6 5 4 0 6 5 4 0 6 5 4 0 6 5 4 0 6 5 4 0 6 5 4 0 6 5 4 0 6 6 5 4 0 6 6 5 4 0 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	s) 6.5 3.0 174			_	0.78	0.71			.70
1 216 170 242 199 301 308 30 30 30 30 30 30 30 30 30 30 30 30 30	sion (s) 3.0 (vph) 174				4.0	6.5			5.5
1 216 170 242 196 301 3080 200 2 0.03 0.02 0.02 0.01 0.02 0.03 0.02 0.03 0.02 0.15 0.17 0.05 0.30 0.55 0.30 0.22 0.15 0.17 0.05 0.30 0.55 0.30 0.100 1.00 1.00 1.00 1.00 1.00 0.42 0.58 0.5 0.9 0.04 0.3 0.1 0.5 0.6 0.8 0.5 0.04 0.3 0.1 0.5 0.6 0.8 0.5 0.04 0.3 0.1 0.5 0.6 0.8 0.5 0.04 0.3 0.1 0.5 0.6 0.8 0.5 0.04 0.3 0.1 0.5 0.6 0.8 0.5 0.04 0.3 0.1 0.5 0.6 0.8 0.5 0.04 0.3 0.1 0.5 0.6 0.8 0.5 0.04 0.3 0.1 0.5 0.6 0.8 0.5 0.05 0.05 0.05 0.05 0.05 0.05 0.05	(vph) 174				3.0	3.0			3.0
0.03 0.02 0.02 0.03 0.02 0.03 0.02 0.03 0.02 0.03 0.02 0.04 0.02 0.04 0.02 0.03 0.02 0.05 0.03 0.02 0.04 0.03 0.04 0.02 0.03 0.03 0.03 0.03 0.03 0.03 0.03	80 6				301	3080			82
8 0.02 0.02 0.03 0.05 0.30 0.55 0.30 0.55 0.30 0.55 0.30 0.55 0.30 0.55 0.30 0.55 0.30 0.55 0.30 0.55 0.30 0.55 0.30 0.55 0.30 0.55 0.30 0.55 0.30 0.55 0.30 0.55 0.30 0.55 0.30 0.55 0.30 0.30					c0.02	c0.39			31
0.022 0.15 0.17 0.05 0.30 0.55 0.30 0.55 0.30 0.55 0.30 0.55 0.30 0.55 0.30 0.55 0.30 0.55 0.30 0.55 0.30 0.30	9.30				0.21				
50.9 50.4 50.5 49.8 44 8.9 5.8 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.	09:0				0.30	0.55		_	44
1.00 1.00 1.00 1.00 0.42 0.58 1.00 1.00 0.42 0.58 1.00 1.00 0.42 0.58 1.00 0.8 0.8 0.8 0.8 0.8 0.8 0.8 0.8 0.8	53.6				4.4	8.9			3.5
1 51.4 50.8 50.9 40.9 2.3 5.8 6.7 55.9 50.9 50.9 50.9 50.3 5.8 6.7 55.9 50.9 50.3 5.8 6.7 50.9 50.3 50.3 5.8 6.7 50.9 50.3 50.3 50.3 50.3 50.3 50.3 50.3 50.3	1.00				0.45	0.58			00
55.9 50.8 50.9 49.9 2.3 5.8 6.7 55.9 5.5 5.9 5.5 5.9 5.5 5.9 5.5 5.9 5.5 5.9 5.5 5.9 5.5 5.9 5.5 5.9 5.5 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0	2.8				0.5	9.0			0.5
55.9 50.3 5.6 A A A A A A S 5.5 E 5.9 5.0 A A A A A A A A A A A A A A A A A A A	59.4				2.3	2.8			8.9
55.9 50.3 5.6 E D A 11.3 HCM 2000 Level of Service B 0.55 1300 Sum of lost time (s) 14.0 66.2% ICU Level of Service C 14.0	ш		۵	0 0	∢	∢		∢	⋖
11.3 HCM 2000 Level of Service 0.55 Sum of lost time (s) 6.2% ICU Level of Service 6.2% ICU Level of Service			വ	0.3		2.6		~	3.8
11.3 HCM 2000 Level of Service 0.55 13.0 Sum of lost time (s) 66.2% ICU Level of Service	Approach LOS			۵		∢			4
11.3 HCM 2000 Level of Service 0.55 13.0 Sum of lost time (s) 66.2% ICU Level of Service	Intersection Summary								
0.55 130.0 Sum of lost time (s) 66.2% ICU Level of Service	HCM 2000 Control Delay	11.3	HCM	2000 Level of	Service		В		
130.0 Sum of lost time (s) 66.2% ICU Level of Service	HCM 2000 Volume to Capacity ratio	0.55							
ration 66.2% ICU Level of Service	Actuated Cycle Length (s)	130.0	Sumo	f lost time (s)			14.0		
Anal. min Dailad (min)	Intersection Capacity Utilization	66.2%	ICUL	evel of Servic	m		ပ		
Analysis Period (min)	Analysis Period (min)	15							

Britannia & RR25 BA Group - NHY

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HCM Unsignalized Intersection Capacity Analysis 3: Regional Rd 25 & Site Dwy (North)

2032 Future Total PM 01-12-2024

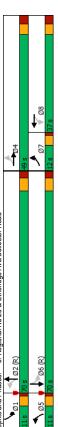
Movement								
	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations		¥.		444	444			
Traffic Volume (veh/h)	0	30	0	1795	1210	40		
Future Volume (Veh/h)	0	30	0	1795	1210	40		
Sign Control	Stop			Free	Free			
Grade	%0			% 5	%0			
Peak Hour Factor	0°.	00.1	00.1	00.1	00.1	00.1		
Hourly flow rate (vpn)	>	30	>	1/95	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)	8.9	6.9	4.1					
tC, 2 stage (s)								
1E(s)	3.5	3.3	2.2					
p0 queue free %	9	92	100					
cM capacity (veh/h)	147	282	264					
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	
Volume Total	30	298	298	298	484	484	282	
Volume Left	0	0	0	0	0	0	0	
Volume Right	೫	0	0	0	0	0	40	
cSH	282	1700	1700	1700	1700	1700	1700	
Volume to Capacity	0.02	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	മ							
Approach Delay (s)	11.5	0.0			0.0			
Approach LOS	В							
Intersection Summary								
Average Delay			0.1					
Intersection Capacity Utilization	ation		38.0%	⊇	ICU Level of Service	f Service		A
Analysis Dariod (min)								

Synchro 11 Report Page 7 Britannia & RR25 BA Group - NHY

2032 Future Total PM 01-12-2024 Timings 5: Regional Rd 25 & Etheridge Ave/Collector Road

→	SBT	4413	1045	1045	NA	9		9		20.0	38.4	70.0	53.8%	4.2	2.2	-1.0	5.4	Lag	Yes	C-Max	84.5	0.65	0.42	5.3	0.0	5.3	4	5.7	4										
٠	SBL	r	22	22	pm+pt	Ψ.	9	-			11.0							Lead	Yes		95.2	0.73	0.26	13.3	0.0	13.3	В											O	
←	NBT	4413	1635	1635	ΑN	2		7		20.0	38.4	70.0	23.8%	4.2	2.2	-1.0	5.4	Lag	Yes	C-Max	88.9	0.68	0.57	7.5	0.0	7.5	∢	8.2	∢								LOS: A	CU Level of Service C	
•	NBL	*	180	180	pm+pt	2	2	2		7.0	11.0															14.5	В						t of Green				Intersection LOS: A	U Level o	
ţ	WBT	2,	0	0	ΑN	∞		œ		10.0	36.2															6.0	⋖	31.6	O				3TL, Start				≟	으	
•	WBL	*	9	40	Perm		∞	œ		10.0	36.2	37.0	28.5%	3.3	5.9	-1.0	5.2	Lag	Yes	None	11.8	0.09	0.32	62.1	0.0	62.1	ш						and 6:SE						
†	EBT	2,	.0	0	ΑN	4		4		10.0	36.2	49.0	37.7%	3.3	5.9	-1.0	5.2			None	21.4	0.16	0.10	0.5	0.0	0.5	∢	39.9	٥				e 2:NBTL						
1	EBL	je.	120	120	pm+pt	7	4	7		7.0	11.0	12.0	9.5%	3.0	1:0	-1.0	3.0	Lead	Yes	None	23.6	0.18	0.50	53.0	0.0	53.0	٥						d to phas		linated			on 64.4%	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	SOT	Approach Delay	Approach LOS	Intersection Summary	Cycle Lenath: 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 Capacity Utilization 64.4%	

Splits and Phases: 5: Regional Rd 25 & Etheridge Ave/Collector Road



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2032 Future Total PM 01-12-2024 Queues 5: Regional Rd 25 & Etheridge Ave/Collector Road

		Ť	•	,		_	٠	+	
Lane Group	盟	EBT	WBL	WBT	NBL	NBT	SBL	SBT	
Lane Group Flow (vph)	120	40	40	40	180		55	1185	
v/c Ratio	0.50	0.10	0.32	0.14	0.51		0.26	0.42	
Control Delay	53.0	0.5	62.1	6.0	14.5		13.3	5.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0:0	
Total Delay	53.0	0.5	62.1	6.0	14.5	7.5	13.3	5.3	
Queue Length 50th (m)	28.3	0.0	10.4	0.0	7.9		2.1	65.2	
Queue Length 95th (m)	46.4	0.0	22.4	0.0	m21.4		8.4	55.2	
Internal Link Dist (m)		53.9		63.5				169.0	
Turn Bay Length (m)	40.0		40.0		70.0		70.0		
Base Capacity (vph)	241	654	339	519	352	2988	212	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	90.0	0.12	0.08	0.51	0.57	0.26	0.42	

Intersection Summary Molume for 95th percentile queue is metered by upstream signal.

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HCM Signalized Intersection Capacity Analysis 2032 Future Total PM 5: Regional Rd 25 & Etheridge Ave/Collector Road 01-12-2024

•	SBR	1	140	140	1900								1.00	140	0	0	2%	1																				1					
· →	SBT	4413	1045	1045	1900	5.4	*0.80	86:0	1.00	4317	1.00	4317	1.00	1045	œ	1177	4%	¥	9		82.2	83.2	0.64	6.4	3.0	2762	0.27		0.43	11.6	0.42	4.0	5.3	∢	0.9	A							
٠	SBL	<u>, -</u>	22	22	1900	3.0	1.00	1.00	0.95	1805	0.08	150	1.00	22	0	22	%0	pm+pt	_	9	88.1	90.1	69.0	4.0	3.0	191	0.02	0.18	0.29	8.2	2.32	0.8	19.8	ш									
•	NBR		65	92	1900								1.00	9	0	0	%0																					В		16.6	ပ		
•	NBT	444	1635	1635	1900	5.4	*0.80	0.99	1.00	4366	1.00	4366	1.00	1635	2	1698	4%	Ν	2		82.9	86.9	0.67	6.4	3.0	2918	c0.39		0.58	11.7	09:0	0.4	7.4	V	8.5	¥							
•	NB.	F	180	180	1900	3.0	1.00	1.00	0.95	1805	0.16	298	1.00	180	0	180	%0	pm+pt	2	5	95.5	8.96	0.74	4.0	3.0	344	c0.04	0.35	0.52	6.5	2.77	0.7	18.7	В				Service					
✓	WBR		40	4	1900								1.00	4	0	0	%0																					HCM 2000 Level of Service		t time (s)	ICU Level of Service		
ţ	WBT	æ	0	0	1900	5.2	1:00	0.85	1:00	1615	1:00	1615	1.00	0	37	က	%0	Ν	∞		8.8	9.8	0.08	6.2	3.0	121	0.00		0.02	22.7	1:00	0.1	22.8	ш	27.7	ш		CM 2000		um of los	CU Level		
/	WBL	je-	9	4	1900	5.2	1.00	1.00	0.95	1805	0.73	1389	1.00	4	0	4	%0	Perm		∞	8.8	8.6	0.08	6.2	3.0	4		0.03	0.38	57.2	1.00	2.4	59.6	ш				ľ		S	⊇		
/	EBR		9	40	1900								1.00	4	0	0	%0																					10.6	0.59	130.0	64.4%	15	
†	EBT	£	0	0	1900	5.2	1.00	0.85	1.00	1615	1.00	1615	1.00	0	83	7	%0	N	4		21.6	22.6	0.17	6.2	3.0	280	0.00		0.02	44.6	1.00	0.0	44.6		48.3	Ω							
1	EBL	-	120	120	1900	3.0	1.00	1.00	0.95	1752	0.56	1032	1.00	120	0	120	3%	pm+pt	7	4	21.6	22.6	0.17	4.0	3.0	233	90.04	c0.05	0.52	47.7	1.00	1.9	49.6	□					ity ratio		ion		
	Movement	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Ideal Flow (vphpl)	Total Lost time (s)	Lane Util. Factor	FA	Fit Protected	Satd. Flow (prot)	Fit Permitted	Satd. Flow (perm)	Peak-hour factor, PHF	Adj. Flow (vph)	RTOR Reduction (vph)	Lane Group Flow (vph)	Heavy Vehicles (%)	Turn Type	Protected Phases	Permitted Phases	Actuated Green, G (s)	Effective Green, g (s)	Actuated g/C Ratio	Clearance Time (s)	Vehicle Extension (s)	Lane Grp Cap (vph)	v/s Ratio Prot	v/s Ratio Perm	v/c Ratio	Uniform Delay, d1	Progression Factor	Incremental Delay, d2	Delay (s)	Level of Service	Approach Delay (s)	Approach LOS	Intersection Summary	HCM 2000 Control Delay	HCM 2000 Volume to Capacity ratio	Actuated Cyde Length (s)	Intersection Capacity Utilization	Analysis Period (min)	c Critical Lane Group

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HCM Unsignalized Intersection Capacity Analysis 6: Regional Rd 25 & Site Dwy (South)

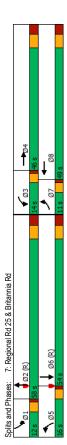
2032 Future Total PM 01-12-2024

Movement EBI EBR NBI NBI SBR		•	>	•	←	→	•	
Configurations F	Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Free Free Free Free Free Free Free Free	Lane Configurations		*		444	4413		
Sylopher (Nehrh) 0 40 1880 1075 50 Solution (Nehrh) 0 40 0 1880 1075 50 Solution (Nehrh) 0 40 0 1880 1075 50 Solution (New Tate (vph) 0 40 0 1880 1075 50 Solution (New Tate (vph) 0 40 0 1880 1075 50 Solution (New Tate (vph) 0 40 0 1880 1075 50 Solution (New Tate (vph) 0 40 0 1880 1075 50 Solution (New Tate (vph) 0 40 0 1880 1075 50 Solution (New Tate (vph) 0 40 0 171	Traffic Volume (veh/h)	0	40	0	1880	1075	20	
Stop	Future Volume (Veh/h)	0	40	0	1880	1075	20	
Hour Factor 1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,0	Sign Control	Stop			Free	Free		
Hour Fetchr 100 1,00 1,00 1,00 1,00 1,00 1,00 1,00	Grade	%0			%0	%0		
Handring) 9 Speed (mis) 11 Blockage It in Blockage	Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	
width (iii) width (iii) rt Blockage tun flater (veh) n type an signal (iii) san signal (iiii) san signal (iii) san	Hourly flow rate (vph)	0	40	0	1880	1075	20	
Width (m) Width (m) 10 Speed (nis) 10 Speed (nis) 11 Bocksge None None 12 Lum flare (veh) 186 130 13 Lize 186 130 14 Lize 127 383 1125 14 Lize 128 130 128 15 Lize 133 2.2 2.2 15 Lize 100 0 0 0 15 Lize 100 100 0 0 0 15 Lize 127 127 120 120 120 120 15 Lize 127 127 127	Pedestrians							
rd Blockage in the Blockage in	Lane Width (m)							
nt Blockage tun flate (veh) ann storage veh) ann storage veh ann stor	Walking Speed (m/s)							
turn flare (veh) None None n type n type n type 186 130 aem signal (m) 186 130 aem signal (m) 0.69 0.89 0.89 afficiently all (m) 1727 383 1125 atgest conf vol 0 711 1 stage 2 conf vol 0 771 1 ninblocked vol 0 771 1 stage 2 conf vol 0 771 1 ninblocked vol 0 771 1 stage 1 conf vol 0 771 1 stage 2 conf vol 10 0 771 stage 6 (s) 3.5 3.3 2.2 stage (s) 3.5 3.2 2.2 stage (s) 3.5 3.2 2.2 stage (s) 3.5 3.3 2.2 stage (s) 4.1 1.0 0 0 0 0 0 stage (s) 4.1	Percent Blockage							
n type an an action Capeache) n storage with a materiage with a material can found with a materia	Right turn flare (veh)							
na storage veh) am signate (m) atget 2 conf vol atget 2 conf vol atget 2 conf vol atget 3 3 3 2.2 aue free % 100 96 100 pacity (veh(h)) 711 972 800 pacity (veh(h)) 712 972 973 973 973 973 973 973 973 973 973 973	Median type				None	None		
sem signal (m) 186 130 189 189 186 130 180 180 180 180 180 180 180 180 180 18	Median storage veh)							
abon unblocked 0.69 0.89 0.89 millicity advune 1727 38.3 1125 millicity advune 1.00 0.00 0.00 millicity advune 1.00 0.00 milli	Upstream signal (m)				186	130		
rigide (s) 6 8 6.9 4.1 stage 2 cont vol millocked vol 6 8 6.9 4.1 stage 2 cont vol mblocked vol 6 8 6.9 4.1 stage 2 cont vol mblocked vol 6 8 6.9 4.1 stage 2 cont vol mblocked vol 6 8 6.9 4.1 stage 2 cont vol 0 0 711 972 800 stage (s) 3.5 3.3 2.2 stage (s) 3.5 3.3 2.2 stage 2 cont vol 0 96 100 stage (s) 711 972 800 stage 2 cont vol 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	pX, platoon unblocked	0.69	0.89	0.89				
tage 1 cont vol itage 1 cont vol itage (s) itage (s)	vC, conflicting volume	1727	383	1125				
tage 2 conf vol mitoked vol 0 711 stage (s) 6.8 6.9 4.1 stage (s) 6.9 6.9 4.1 stage (s) 6.9 6.9 4.0 stage (s) 6.9 6.100 stage (s) 6.9 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0	vC1, stage 1 conf vol							
range (s) 6.8 6.9 4.1 stage (s) 6.8 6.9 4.1 stage (s) 3.5 3.3 2.2 stage (s) 3.6 100 96 100 stage (s) 711 972 800 stage (s) 8.7 627 627 827 828 3 stage (s) 8.7 627 627 627 627 627 627 627 627 627 62	vC2, stage 2 conf vol							
ggle (s) 6.8 6.9 4.1 stage (s) 3.5 3.3 2.2 sue free % 100 96 100 paddty (wh/h) 711 972 800 paddty (wh/h) 711 972 800 paddty (wh/h) 711 972 800 paddty (s) 8.9 100 0 0 0 0 0 paddty (s) 8.9 100 0 0 0 0 0 0 paddty (s) 8.9 100 0 0 0 0 0 0 paddty (s) 8.9 0.0 0 0 0 0 0 0 paddty (s) 8.9 0.0 0.0 0.0 0.0 0.0 paddty (s) 8.9 0.0 0.0 0.0 0.0 0.0 paddty (s) 8.9 0.0 0 0 0 0 0 0 0 paddty (s) 8.9 0.0 0 0 0 0 0 0 0 paddty (s) 8.9 0.0 0 0 0 0 0 0 0 0 paddty (s) 8.9 0.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	vCu, unblocked vol	0	0	711				
stage (s) 3.5 3.3 2.2 sue free % 100 96 100 96 100 100 111 171 972 800 96 100 100 100 100 100 100 10	tC, single (s)	8.9	6.9	4.1				
aue free % 3.5 3.3 2.2 aue free % 100 96 100 poor Lane # EB 1 NB 1 NB 3 SB 1 SB 2 per Total 40 627 627 627 430 430 265 ne Left 0 0 0 0 0 0 0 0 ne Right 40 627 627 627 430 430 265 ne Right 40 0 0 0 0 0 0 0 ne Right 40 0.37 0.37 0.37 0.37 0.25 0.25 0.16 ne Right 97 0.37 0.37 0.37 0.37 0.25 0.16 0.0 0.0 0.0 ach Capacity 4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 <th< td=""><td>tC, 2 stage (s)</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th<>	tC, 2 stage (s)							
100 96 100 100	1F (s)	3.5	3.3	2.2				
FB 1 NB 1 NB 2 NB 3 SB 1 SB 2 SB 3 EB 1 NB 1 NB 2 NB 3 SB 1 SB 2 SB 3 40 627 627 430 430 265 40 0 0 0 0 0 0 0 972 1700 1700 1700 1700 1700 1700 0.04 0.37 0.37 0.37 0.25 0.25 0.16 (m) 1.0 0.0 0.0 0.0 0.0 0.0 0.0 A A A 0 0.0 0.0 0.0 0.0 0.0 Ny Utilization 397% ICU Level of Service	p0 queue free %	9	96	100				
# EB 1 NB 1 NB 2 NB 3 SB 1 SB 2 SB 3 4 0 627 627 627 430 430 265 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	cM capacity (veh/h)	711	972	800				
40 627 627 430 430 265 90 0 0 0 0 0 40 0 0 0 0 0 972 1700 1700 1700 1700 1700 1700 soity 0.04 0.37 0.37 0.37 0.25 0.25 0.16 Seth (m) 1.0 0.0 0.0 0.0 0.0 0.0 0.0 7 (s) 8.9 0.0 0.0 0.0 0.0 0.0 0.0 A A A A A O O O O O O O O O O O O O O	Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
ocity 0.04 0.37 0.37 0.37 0.25 0.25 0.16 0.05 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Volume Total	40	627	627	627	430	430	265
40 0 0 0 0 0 0 50 41 0 0 0 0 0 0 0 50 city 0.04 0.37 0.37 0.37 0.25 0.25 0.16 Seth (m) 1.0 0.0 0.0 0.0 0.0 0.0 0.0 7 (s) 89 0.0 0.0 0.0 0.0 0.0 A A D D D D D D D D D D D D D D D D D	Volume Left	0	0	0	0	0	0	0
city 0.04 0.37 0.37 0.37 0.25 0.25 0.16 95th (m) 1.0 0.0 0.0 0.0 0.0 0.0 0.0 9) A A 0.0 0.0 0.0 0.0 0.0 0.0 7(s) 8.9 0.0 0.0 0.0 7 mmary 0.1 7 ICU Level of Service (min) 15	Volume Right	9	0	0	0	0	0	50
sity 0.04 0.37 0.37 0.37 0.25 0.25 0.16 85th (m) 1.0 0.0 0.0 0.0 0.0 0.0 0.0 7(s) 89 0.0 0.0 0.0 0.0 0.0 7(s) 89 0.0 0.0 0.0 0.0 7(s) A 0.0 0.0 0.0 0.0 7(s) 89 0.0 0.0 0.0 7(s) 89 0.0 0.0 0.0 0.0 7(s) 89 0.0 0.0 0.0 0.0 0.0 7(s) 89 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	SSH	972	1700	1700	1700	1700	1700	1700
5th (m) 1.0 0.0 0.0 0.0 0.0 0.0 0.0 (0.0 0.0 0.0	Volume to Capacity	0.04	0.37	0.37	0.37	0.25	0.25	0.16
(s) 8.9 0.0 0.0 0.0 0.0 0.0 0.0 (n) (s) 8.9 0.0	Queue Length 95th (m)	1:0	0.0	0.0	0.0	0.0	0.0	0.0
(s) 89 0.0 0.0 mmary 0.1 active Utilization 39.7% ICU Level of Service (min) 15	Control Delay (s)	8.9	0.0	0.0	0.0	0.0	0:0	0.0
7 (s) 8 9 0.0 0.0 A nmary 0.1 CU Level of Service (min) 15	Lane LOS	⋖						
A	Approach Delay (s)	8.9	0.0			0.0		
nnary 0.1 0.1 sacion 39.7% ICU Level of Service (min) 15	Approach LOS	∢						
0.1 0.1 acid of Service (min) 15 15 15	Intersection Summary							
39.7% ICU Level of Service (min) 15	Average Delay			0.1				
15	Intersection Capacity Utilizat	tion		39.7%	೦	U Level o	f Service	
	Analysis Period (min)			15				

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2032 Future Total PM 01-12-2024 Timings 7: Regional Rd 25 & Britannia Rd

ame Group EBL EBT WBL WBT NBL NBT SBL SBT and Configurations	Signature Configurations The part Net		1	†	>	ţ	•	-	۶	→	
1455 180 1455 180 1455 180 1455 180 1455 180 1455 180 1455 180 1450 1450 1450 1450 1450 1450 1450 145	e Configurations	ie Group	EBF	EBT	WBL	WBT	NBL	NBT	SBL	SBT	
1455 180 1455 180 NA Prot 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2	ice Volume (vph) 50 320 300 500 250 1455 180 180 17ye are Volume (vph) 50 320 300 500 250 1455 180 180 17ye are Volume (vph) 50 320 300 500 250 1455 180 180 17ye are Volume (vph) 50 320 300 500 250 1455 180 180 180 180 180 180 180 180 180 180	ne Configurations	F	4413	F	4413	F	443	F	4413	
1455 180 NA Prot 2 1 2 1 2 0.0 44.6% 92% 4* 42.30 3.0 44.6% 92% 4* 10.10 6.7 3.0 1.0 6.7 3.0 1.0 6.7 3.0 1.0 6.7 3.0 6.7 3.0 6.7 3.0 6.7 3.0 6.7 3.0 6.7 0.10 6.7 0.10 6.4 0.1	re Yolume (yph) 50 320 300 500 250 1455 189 17 Jype	ffic Volume (vph)	20	320	300	200	250	1455	180	885	
NA Prot 2 1 2 1 2 1 2 1 2 1 2 1 2 1 1 2 2 1 1 2 1	Type	ure Volume (vph)	20	320	300	200	250	1455	180	885	
2 1 20.0 7.0 49.7 11.0 49.7 11.0 49.7 11.0 49.7 11.0 44.6% 9.2% 4.4 3.0 3.0 4.2 3.0 4.2 4.2 3.0 4.3 1.0 4.3 1.0 4.3 1.0 4.3 1.0 5.0 0.0 4.3 1.75.0 0.0 4.3 1	Control Preses 7	n Type	Prot	Ϋ́	Prot	Ϋ́	Prot	Ϋ́	Prot	ΑA	
20.0 7.0 88.0 12.0 88.0 12.0 88.0 12.0 88.0 12.0 44.6% 92% 4*. 30 4.2 30 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.	Inter Phases 7 4 3 8 5 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	otected Phases	7	4	က	80	2	2	~	9	
2 1 20.0 7.0 49.7 11.0 85.0 12.0 44.6% 92.6 4.4 42.3 30 1.0 1.0 6.7 3.0 1.0 6.7 3.0 1.0 6.7 3.0 61.0 12.9 61.0 12.9	Act	mitted Phases									
20.0 7.0 48.7 11.0 58.0 12.0 44.8% 9.2% 4.4 2.3.0 3.0 3.0 3.0 4.2 3.0 6.7 3.0 6.7 3.0 6.7 3.0 6.7 3.0 6.7 3.0 6.7 3.0 6.7 3.0 6.7 3.0 6.7 6.7 6.7 6.7 6.7 6.7 6.7 6.7 6.7 6.7	the much ripid (s) 7.0 10.0 7.0 10.0 7.0 20.0 7.0 much ripid (s) 11.0 45.5 11.0 45.5 11.0 49.7 11.0 15.0 15.0 15.0 15.0 15.0 15.0 15.0	Detector Phase	7	4	က	∞	2	2	-	9	
200 70 897 110 880 120 120 120 120 120 120 120 120 120 12	mum bitial (s) 70 100 70 100 70 200 70 70 100 100 100 100 100 100 100 100	itch Phase									
49.7 110 580 120 44.8% 9.2% 4.4 42 30 -10 -10 -10 -10 -10 -10 -10 -10 -10 -1	Split (s) 11.0 45.5 11.0 45.5 11.0 45.5 11.0 45.0 11.0 Split (s) 11.0 45.0 14.0 45.0 15.0 5.0 15.0 5.0 15.0 Split (s) 11.0 45.0 14.0 45.0 16.0 5.0 17.0 1.0 Split (s) 11.0 45.0 14.0 45.0 16.0 5.0 12.0 Split (s) 10 3.0 4.2 3.0 42 3.0 42 3.0 Split (s) 10 3.0 4.2 3.0 42 3.0 42 3.0 Split (s) 10 1.0 1.0 1.0 1.0 1.0 1.0 1.0 Split (s) 10 3.0 1.0 1.0 1.0 1.0 1.0 1.0 Split (s) 10 3.0 1.0 1.0 1.0 1.0 1.0 1.0 Split (s) 10 1.0 1.0 1.0 1.0 1.0 1.0 1.0 Split (s) 10 1.0 1.0 1.0 1.0 1.0 1.0 Split (s) 10 1.0 1.0 1.0 1.0 1.0 1.0 1.0 Split (s) 10 1.0 1.0 1.0 1.0 1.0 1.0 1.0 Split (s) 10 1.0 1.0 1.0 1.0 1.0 1.0 1.0 Split (s) 10 1.0 1.0 1.0 1.0 1.0 1.0 1.0 Split (s) 10 1.0 1.0 1.0 1.0 1.0 1.0 1.0 Split (s) 10 1.0 1.0 1.0 1.0 1.0 1.0 1.0 Split (s) 10 1.0 1.0 1.0 1.0 1.0 1.0 1.0 Split (s) 10 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 Split (s) 10 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	nimum Initial (s)	7.0	10.0	7.0	10.0	7.0	20.0	7.0	20.0	
28.0 12.0 44.6% 92% 42.4 3.0 3.5 1.0 1.0 1.0 6.7 3.0 1.0 6.7 3.0 1.0 6.7 3.0 1.0 6.7 3.0 1.0 6.7 3.0 0.0 0.0 43.1 75.0 0.0 43.1 75.0 0.0 43.1 75.0 0.0 43.1 75.0 0.0 43.1 75.0 0.0 1.0 E 45.2 E	Split (s)	nimum Split (s)	11.0	45.5	11.0	45.5	11.0	49.7	11.0	49.7	
44.6% 9.2% 4; 42 3.0 3.5 1.0 -1.0 -1.0 6.7 3.0 Leag Vess C-Max Nore C, 61.0 12.9 0.37 0.10 0.94 0.62 43.1 75.0 0.0 0.0 43.1 75.0 D E 45.2 D E 45.2 D If Sanine F	Split (%) 8.5% 35.4% 10.8% 37.7% 12.3% 44.6% 9.2% 47. w. v. Time (s) 3.0 4.2 3.0 4.2 3.0 3.0	tal Split (s)	11.0	46.0	14.0	49.0	16.0	58.0	12.0	54.0	
42 30 35 10 -10 -10 6.7 30 6.7 30 1-29 Lead Yes C-Max None C- 610 12.9 0.47 0.10 0.94 0.52 43.1 75.0 D E 45.2 D E 45.2 D I E 5 D I E D I E 5 D	wy Time (s) 30 4.2 30 4	tal Split (%)	8.5%	35.4%	10.8%	37.7%	12.3%	44.6%	9.5%	41.5%	
3.3 1.0 3.3 1.0 3.5 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	35 1.0 -1.0 6.7 3.0 6.7 3.0 6.7 3.0 6.7 3.0 6.7 0.10 0.4 0.22 0.34 0.52 43.1 75.0 0.0 0.0 43.1 75.0 0.0 0.0 43.1 75.0 0.0	'ellow Time (s)	3.0	4.2	3.0	4.2	3.0	4.2	3.0	4.2	
-1.0 -1.0 6.7 3.0 Leg Lead Yes Yes Yes G.Max None C. 61.0 12.9 0.52 0.94 0.52 0.00 0.00 43.1 75.0 D E 45.2 D E 45.2 D E 145.2	Time Adjust (s) -1.0 -1.0 -1.0 -1.0 -1.0 -1.0 -1.0 -1.0	-Red Time (s)	1.0	3.3	1.0	3.3	1.0	3.5	1.0	3.5	
6.7 3.0 Lag Lead Yes Yes C-Max None C- 61.0 12.9 0.34 0.82 0.34 0.82 43.1 75.0 0.0 0.0 43.1 75.0 D E 45.2 D E 45.2 D I E 45.3 D I E	Lings 20 65 30 65 30 67 30 Lings Lead Leag L	st Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	
Lag Lead Yes Yes C-Max None G- 61.0 12.9 61.0 12.9 0.47 0.10 0.94 0.82 43.1 75.0 D E 45.2 D E 45.2 D R 25.0 D R 3.0 D R 3.0 D R 3.0 D R 45.2 D R 5.0 D R 45.2 D R 45.2 D R 45.2	Lead	tal Lost Time (s)	3.0	6.5	3.0	6.5	3.0	6.7	3.0	2.9	
Yes Yes CAMAX None C. CAMAX None C. G. Max None C. G. G. Max None C. G. G. Max None C. G.	Hard Optimize?	ad/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag	
C-Max Nore C: 610 129 047 0.10 0.94 0.62 43.1 75.0 0.0 0.0 43.1 75.0 45.2 D E 45.2 D E 45.2 D I E 4	Effective (s) 80 260 110 312 153 610 129 Chara None None Chara None None Chara None Char	ad-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
610 129 0.47 0.10 0.94 0.52 43.1 75.0 0.0 0.0 43.1 75.0 D E 45.2 D E 45.2 D I C Soving F	## Care (s) 80 260 110 312 153 610 129 ## Care (s) 80 260 110 312 153 610 129 ## Care (s) 60 6.20 0.08 0.24 0.12 0.47 0.10 ## Care (s) 61.4 4.35 123.0 37.7 60.6 43.1 75.0 ## Care (s) 61.4 4.3 5.1 5.1 5.1 5.1 5.1 5.1 5.1 5.1 5.1 5.1	call Mode	None	None	None	None	None	C-Max	None	C-Max	
0.47 0.10 0.52 4.31 75.0 0.0 0.0 4.3.1 75.0 0.0 0.0 4.3.1 75.0 D E 45.2 D E 145.2 D E	ated g/C Ratio 0.06 0.24 0.12 0.47 0.10 dated g/C Ratio 0.05 0.00 0.02 0.02 0.12 0.47 0.10 dated g/C Ratio 0.25 0.40 0.98 0.98dr 0.61 0.94 0.52 0.40 0.99 0.98dr 0.61 0.94 0.52 0.40 0.90 0.90 0.90 0.90 0.90 0.90 0.90	t Effct Green (s)	8.0	26.0	11.0	31.2	15.3	61.0	12.9	58.5	
0.94 0.82 43.1 75.0 0.0 0.0 43.1 75.0 45.2 E 45.2 D 0 D 0 D 1 G 1 G 1 G 1 G 1 G 1 G 1 G 1 G 1 G 1 G	taking 0.25 0.40 0.88 0.89dr 0.61 0.94 0.82 Incoleay 6.14 43.5 123.0 37.7 60.6 43.1 75.0 In Delay 6.14 43.5 123.0 37.7 60.6 43.1 75.0 In Delay 6.14 43.5 123.0 37.7 60.6 43.1 75.0 Cach Delay E D F D E D E Cach Delay 45.7 59.5 45.2 B D E D E Cach Delay A. 45.7 59.5 45.2 B D E D E D E D E D E D E D E D E D E D E D E D E D E D E D E D E D E D E D	tuated g/C Ratio	90.0	0.20	0.08	0.24	0.12	0.47	0.10	0.45	
43.1 75.0 0.0 0.0 43.1 75.0 D E 45.2 D D E 145.2 D I Garine F 145.0	trol Delay 614 435 1230 377 606 43.1 75.0 see belay 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Ratio	0.25	0.40	0.98	0.89dr	0.61	0.94	0.52	0.48	
0.0 0.0 43.1 75.0 45.2 6.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	l Delay 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	ntrol Delay	61.4	43.5	123.0	37.7	9.09	43.1	75.0	18.3	
43.1 75.0 D E 45.2 D D ON LOS: D	Delay 61.4 43.5 123.0 37.7 60.6 43.1 75.0 Cach Delay E D F D E D E D E Cach Delay 45.7 59.5 45.2 Cach Delay 45.7 59.5 45.2 Cach LOS D E D E D E Cach LOS D E D E D E Cach LOS D E D E D E Cach LOS D E D E D E Cach LOS D E D E D E D E D E D E D E D E D E D	eue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
45.2 45.2 D 0 LOS:D rd Servine F	E D F D E D E Coach Delay	tal Delay	61.4	43.5	123.0	37.7	9.09	43.1	75.0	18.3	
45.2 D D On LOS: D Ird Savine F	oach Delay 45.7 59.5 45.2 oach LOS D E D section Summary E D E D e Length: 130 E E D E E D E D E D E D	S	ш	□	ш	Ω	ш	۵	ш	Ф	
proach LOS D E D C arsection Summary de Length: 130 lead Cycle Length: 130 set 104 (80%), Referenced to phase 2:NBT and 6:SBT, Start of Green http://dx.dc.dc.dc.dc.dc.dc.dc.dc.dc.dc.dc.dc.dc.	coach LOS Declaron Summary Le Length; 130 Referenced to phase 2:NBT and 6:SBT, Start and Cycle: 140 Into Types Actuated-Coordinated into Work Ratio: 0.99 section Signal Delay, 446 section Capecity Utilization 85:9% Into Type Referenced with Intount lane as a right land for the land as a right land the land as a right land and land the land as a right land and land the land as a right land land land land land land as a right land land land land land land land land	proach Delay		45.7		59.5		45.2		27.4	
streedion Summary de Length: 130 lated Cycle Length: 130 set 104 (80%), Referenced to phase 2:NBT and 6:SBT, Start of Green intral Cycle: 140 intral Cycle:	section Summary e Length: 130 and (180%), Referenced to phase 2:NBT and 6:SBT, Start. rial Cycle: 140 including Actuated-Coordinated including Signal Delay, 446 section Signal Delay, 446 section Capecity Utilization 85.9%	proach LOS		٥		ш		۵		O	
tole Length: 130 Lusted Cycle Length: 130 set 104 (80%), Referenced to phase 2:NBT and 6:SBT, Start of Green set 104 (80%), Referenced to phase 2:NBT and 6:SBT, Start of Green introl Type: Actuated-Coordinated ximum v/c Ratio: 0.38 sneeding Signal Delay 44.66 Intersection LOS: D sneeding Signal Delay 44.66 Intersection Canacity Ilitization 85.9% ICLI I away of Service F	ated Cycle Length: 130 ated Cycle Length: 130 ated Cycle Length: 130 ated Tope: Actuated-Coordinated into Type: Actuated-Coordinated into Type: Actuated-Coordinated into Type: Actuated-Coordinated section Signal Delay, 44.6 section Capacity Utilization 85.9% siss Penied (min) 15 Thefayd Rinttl Iane Recorde with Intount lane as a rinttl lan	ersection Summary									
uated Cycle Length: 130 set 104 (BWS), Referenced to phase 2:NBT and 6:SBT, Start of Green tural Cycle: 140 tural Cycle: 440 twintor Type: Actuated-Coordinated ximum v/c Ratio: 0.98 sreedino Signal Dealy 44.6 trianing Signal Dealy 44.6	ated Cycle Length: 130 et 104 (80%), Referenced to phase 2:NBT and 6:SBT, Start. rial Cycle: All Cycle Actuated Coordinated imum vic Ratio: 0.89 section Signal Delay: 44.6 section Signal Delay: 44.6 section Capacity Utilization 85.9% ysis Peado (min) 15	cle Length: 130									
Set 104 (80%), Referenced to phase 2:NBT and 6:SBT, Start of Green tural Cycle: 140 introl Type: Actuated-Coordinated ximum vic Ratio: 0.98 intersection LOS: D intersection LOS: D intersection Capacity, Illipratin, 85,9% ICLI I away of Saving P	et 104 (80%), Referenced to phase 2:NBT and 6:SBT, Start, raid Cycle; 140 raid Cycle; 140 raid Type: Actuated-Coordinated rimum vic Ratio: 0.98 section Signal Delay, 44.6 section Capacity Utilization 85.9% ysis Penied (rimi) 15 Park Art Rintl I are Recorde with 1 though lane as a rintl I an	tuated Cycle Length: 130									
	rral Cycle: 140 trol Types. Actuated-Coordinated timm vic Retion. 08.04 section Signal Delay, 44.6 section Capecity Utilization 85.9% systs Peniod (min) 15.	set 104 (80%), Referenced	d to phase	e 2:NBT a	nd 6:SBT	, Start of	Green				
	trol Type: Actualed-Coordinated Immun Vic Rabico. 0.36 section Signal Delay, 44.6 section Capacity Utilization 85.9% systs Penidd (min) 15 ThefactA Rintil Jane Recorde with I though lane as a rintil lan	tural Cycle: 140									
	innum v/c Ratio: 0.98 section Signal Delay, 44.6 section Capacity Utilization 85.9% ysis Pearod (min) 15	ntrol Type: Actuated-Coord	linated								
	section Signal Delay, 44.6 section Capacity Ultization 85.9% Size Bendo (min) 15 Dashch Rinkt Jane Peccyde with 1 though lane as a right la	ximum v/c Ratio: 0.98									
	section Capacity Utilization 85.9% ysis Period (min) 15 Defarte Right I and Records with 1 though langes a right la	ersection Signal Delay: 44.6	ပ			₹	ersection	LOS: D			
	alysis Period (min) 15 Defacto Rintri ane - Recode with 1 though lane as a rintri lane	ersection Capacity Utilization	on 85.9%			೦	U Level o	of Service	ш		
alysis Period (min) 15	Defacto Right Lane - Records with 1 though lane as a gight lane	alysis Period (min) 15									
the District and the court of the court have an entirely and	ימים יוקור במוכי ולככככ אותן הוספקר ומוכ מס מיוקריים.	acto Right Lane. Rec	ode with	1 though I	ane as a	right lane					



Synchro 11 Report Page 12 Britannia & RR25 BA Group - NHY

Queues 7: Regional Rd 25 & Britannia Rd

2032 Future Total PM 01-12-2024

	1	†	/	ţ	•	←	٠	→	
Lane Group	EB	EBT	WBL	WBT	NBL	NBT	SBL	SBT	
Lane Group Flow (vph)	20	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	9.09	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	9.09	43.1	75.0	18.3	
Queue Length 50th (m)	6.7	33.5	9.44	47.0	33.4	201.8	25.6	37.8	
Queue Length 95th (m)	13.7	45.5	#75.1	20.0	46.8	#278.1	39.3	44.2	
Internal Link Dist (m)		377.9		190.1		165.3		161.9	
Turn Bay Length (m)	0.09		120.0		90.0		90.0		
Base Capacity (vph)	203	1371	302	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	09.0	0.94	0.52	0.48	
Intersection Summary									
# 95th percentile volume exceeds capacity, queue may be longer	exceeds car	acity, qu	eue may	be longer.					
Queue shown is maximum after two cycles.	m after two	cycles.							
dr Defacto Right Lane. Recode with 1 though lane as a right lane.	ecode with	1 though	lane as a	right lane					

Britannia & RR25 BA Group - NHY

HCM Signalized Intersection Capacity Analysis 7: Regional Rd 25 & Britannia Rd

2032 Future Total PM 01-12-2024

	\	Ť	>	•	,	/		-	•	•	→	*
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	£	4413		F	4413		£	443		£	4413	
Traffic Volume (vph)	20	320	4	300	200	375	250	1455	465	180	882	20
Future Volume (vph)	20	320	40	300	200	375	250	1455	465	180	882	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	
Fit	1.00	0.98		1.00	0.94		1.00	96.0		1.00	0.99	
Fit Protected	0.95	1.00		1.00	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3303	484		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)	22	320	8	300	200	375	220	1455	465	180	882	ය
RTOR Reduction (vph)	0	Ξ	0	0	117	0	0	34	0	0	က	0
Lane Group Flow (vph)	20	349	0	300	758	0	250	1886	0	98	932	0
Heavy Vehicles (%)	%9	%0	%0	2%	1%	1%	%0	3%	2%	1%	4%	%0
Turn Type	Prot	Α		Prot	Α		Prot	Ϋ́		Prot	₹	
Protected Phases	7	4		က	∞		2	7		_	9	
Permitted Phases												
Actuated Green, G (s)	9.6	25.8		10.0	30.2		14.3	29.1		11.9	26.7	
Effective Green, g (s)	9.9	26.8		11.0	31.2		15.3	60.1		12.9	27.7	
Actuated g/C Ratio	0.02	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	0.05	0.08		c0.08	c0.18		c0.02	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		22.6	25.6	
Progression Factor	1.00	1.00		1.33	0.87		1.00	1.00		1.26	99.0	
Incremental Delay, d2	1:0	0.3		45.8	5.9		2.5	12.0		4.	0.8	
Delay (s)	60.5	44.7		124.7	42.9		27.0	45.7		71.2	17.6	
Level of Service	ш	□		ш	Δ		ш	۵		ш	В	
Approach Delay (s)		46.6			63.8			47.0			26.2	
Approach LOS		Ω			ш			Ω			O	
Intersection Summary												
HCM 2000 Control Delay			46.3	Ĭ	HCM 2000 Level of Service	Level of S	Service		□			
HCM 2000 Volume to Capacity ratio	ity ratio		0.89									
Actuated Cycle Length (s)			130.0	જ	Sum of lost time (s)	time (s)			19.2			
Intersection Capacity Utilization	lon		85.9%	೦	ICU Level of Service	f Service			ш			
Analysis Period (min)			15									
		1			1							

Synchro 11 Report Page 14 Britannia & RR25 BA Group - NHY

HCM Unsignalized Intersection Capacity Analysis 8: Site Dwy (South)/Site Dwy (North) & Etheridge Ave

2032 Future Total PM 01-12-2024

,												
Movement	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Volume (veh/h)	9	100	10	82	175	09	15	.0	35	25	0	9
Future Volume (Veh/h)	9	100	9	82	175	09	15	0	35	52	0	9
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)	9	100	10	82	175	09	15	0	32	22	0	9
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			210	230	105	535	202	205
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	192			110			476	497	105	205	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)												
(E) 4	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	8			94			6	100	96	8	9	66
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	20	35								
Volume Left	9	82	15	25								
Volume Right	9	09	35	10								
SH	1348	1493	719	200								
Volume to Capacity	0.01	90.0	0.07	0.07								
Queue Length 95th (m)	0.2	4.	<u>_</u> ∞	- 8.								
Control Delay (s)	0.7	2.4	10.4	12.7								
Lane LOS	A	∢	В	ш								
Approach Delay (s)	0.7	2.4	10.4	12.7								
Approach LOS			മ	മ								
Intersection Summary												
Average Delay			3.4									
Intersection Capacity Utilization	ation		35.1%	೦	U Level o	ICU Level of Service			∢			
Analysis Period (min)			15									

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Timings 2032 Future Total PM 10: Britannia Rd & Farmstead Dr 01-12-2024

*	SBR	R.	20	20	Perm		œ	œ		10.0	15.3	41.0	39.0%	3.3	2.0	-1.0	4.3			None	11.4	0.11	0.10	18.6	0.0	18.6	В						eeu			Intersection LOS: A	ICU Level of Service A	
٠	SBL	×	55	22	Prot	∞		œ		10.0	15.3		39.0%			-1.0	4.3			None	11.4	0.11	0.29	47.2	0.0	47.2	٥	39.6	۵				Start of Gr			Inte	ਹ	
ţ	WBT	4413	720	720	Α	9		9		20.0	29.4							Lag	Yes	C-Max	83.6	0.80	0.23	4.1	0.0	4.1	∢	4.1	∢				6:WBT,					
†	EBT	**	322	322	Ϋ́	2		2		20.0	29.4	64.0	61.0%	4.2	2.2	-1.0	5.4			C-Max	88.0	0.84	0.0	2.1	0.0	2.1	∢	2.1	∢				EBTL and					
1	留	*	25	22	pm+pt	2	2	2		7.0	11.0	11.0	10.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	89.3	0.85	0.04	2.0	0.0	2.0	∢					105	ed to phase 2:	oordinated	2001 dilitated	r. 5.6	ization 37.2%	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	SOT	Approach Delay	Approach LOS	Intersection Summary	Cycle Length: 105	Actuated Cycle Length: 105	Offset 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green	Control Type: Activated Coordinated	Maximim v/c Ratio: 0.29	Intersection Signal Delay: 5.6	Intersection Capacity Utilization 37.2%	Analysis Period (min) 15

Splits and Phases: 10: Britannia Rd & Farmstead Dr



Britannia & RR25
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Queues 2032 Future Total PM 10: Britannia Rd & Farmstead Dr 01-12-2024

ane Group Flow (vph) 25		WBT	85	SBR	
		800	22	20	
	0.09	0.23	0.29	0.10	
control Delay 2.0		4.1	47.2	18.6	
ueue Delay 0.0		0.0	0.0	0.0	
Fotal Delay 2.0		4.1	47.2	18.6	
th 50th (m)		12.8	1.1	0.0	
Queue Length 95th (m) 2.2		30.9	23.1	7.2	
nternal Link Dist (m)	101.0	377.9	199.3		
urn Bay Length (m) 20.0					
	3822	3549	909	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	

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BA Group - NHY
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HCM Signalized Intersection Capacity Analysis 10: Britannia Rd & Farmstead Dr

2032 Future Total PM 01-12-2024

																																						A		12.7	۷		
•	SBR	W.	20	20	1900	4.3	1.00	0.85	1.00	1615	1:00	1615	1:00	50	18	2	%0	Perm		8	8.4	9.4	0.09	5.3	3.0	144		0.00	0.01	43.6	1.00	0.0	43.6	۵				HCM 2000 Level of Service		ime (s)	Service		
و √	WBR SBL	je.	80 25		1900 1900	4.3	1:00	1.00	0.95	1736	0.95		1.00 1.00		0 0		0% 4%	Prot	8		8.4	9.4	0.09	5.3	3.0	155	c0.03		0.35	44.9	1:00	4:1	46.3	۵	45.6	۵		HCM 2000 L		Sum of lost time (s)	ICU Level of Service		
ţ	WBT	•		720	1900		*0.80				1.00			7				_	9				0.75		3.0		c0.18				1.00		4.1	⋖	4.1	A		5.9	0.24	105.0	37.2%	15	
† *	EBL EBT	Γ.	25 355		1900 1900		1.00 *0.80		0.95 1.00		0.29 1.00		1.00 1.00				%0 %0	_	5 2		84.9 84.9				3.0 3.0	493 3730	0.00 c0.08		0.05 0.10		1.00 1.00		1.9 1.9		1.9	A			ratio				
	Movement	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Ideal Flow (vphpl)	Total Lost time (s)	Lane Util. Factor	Frt	Fit Protected	Satd. Flow (prot)	FIt Permitted	Satd. Flow (perm)	Peak-hour factor, PHF	Adj. Flow (vph)	RTOR Reduction (vph)	Lane Group Flow (vph)	Heavy Vehicles (%)		Protected Phases	Permitted Phases	Actuated Green, G (s)	Effective Green, g (s)	Actuated g/C Ratio	Clearance Time (s)	Vehicle Extension (s)	Lane Grp Cap (vph)	v/s Ratio Prot	v/s Ratio Perm	v/c Ratio	Uniform Delay, d1	Progression Factor	Incremental Delay, d2	Delay (s)	Level of Service	Approach Delay (s)	Approach LOS	Intersection Summary	HCM 2000 Control Delay	HCM 2000 Volume to Capacity ratio	Actuated Cycle Length (s)	Intersection Capacity Utilization	Analysis Period (min)	c Critical Lane Group

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Timings 11: Britannia Rd & Rose Way

2032 Future Total PM 01-12-2024

>	SBL SBR		30 50		Prot Perm	4	4 4			43.0 43.0		38.5% 38.5%		3.0 3.0		5.0 5.0			_	11.0 11.0	0.08			58.7 18.8	В	33.8	O	
ţ	WBT	4413	1125	1125	Y C	9	9	,		29.0	1					0.9	Lag				0.80			5.1	∢	5.1	∢	
†	EBT	444	882	882	¥ C	7.	2	,	20.0	29.0	0.08	61.5%	4.0	3.0	-1:0	0.9			C-Max	112.4	0.86	0.22 2 E	0.0	2.5	∢	2.5	∢	
1	BB	*	8	8	pm+pt	ى د	2 2		7.0	11.0	15.0	11.5%	3.0	0.1	-1.0	3.0	Lead	Yes	None	114.2	0.88	0.21	0.0	2.8	∢			
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	lurn lype	Protected Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Kato	Vic Ratio	Oriene Delay	Total Delay	, SOT	Approach Delay	Approach LOS	Intersection Summary

Splits and Phases: 11: Britannia Rd & Rose Way



Britannia & RR25
BA Group - NHY
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Queues 2032 Future Total PM 11: Britannia Rd & Rose Way 01-12-2024

	1	†	ţ	۶	•	
Lane Group	EB	EBT	WBT	SBL	SBR	
Lane Group Flow (vph)	8	885	1185	e	20	
v/c Ratio	0.21		0.33	0.20	0.27	
Control Delay	2.8		5.1	28.7	18.8	
Queue Delay	0.0		0.0	0.0	0:0	
Total Delay	2.8	2.5	5.1	28.7	18.8	
Queue Length 50th (m)	5.6		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	97.6		
Turn Bay Length (m)	20.0			20.0		
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	0.02	0.08	
Intersection Summary						

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis 11: Britannia Rd & Rose Way

2032 Future Total PM 01-12-2024

14.0 HCM 2000 Level of Service Sum of lost time (s) ICU Level of Service 8.0 9.0 0.07 6.0 3.0 0.00 0.03 56.4 1.00 0.1 56.5 8.0 9.0 0.07 6.0 3.0 124 c0.02 0.24 57.3 1.00 1.0 58.3 E E E 0 0 0 09 0061 99.4 100.4 0.77 7.0 3.0 3494 c0.26 5.7 0.33 130.0 49.7% 1125 1125 1125 1125 1000 6.0 6.0 0.99 1.00 4525 1.00 1.00 0.34 4.6 0.3 0.3 4.8 A A A A 1183 0% NA 6 110.0 110.0 0.85 7.0 3.0 3858 c0.19 885 885 885 885 6.0 6.0 6.0 1.00 1.00 4560 1.00 1.00 885 0.23 1.9 1.21 0.1 2.4 0 882 0% 8 N 110.0 0.85 4.0 3.0 3.0 3.0 0.01 1.3 1.3 0.2 2.8 2.8 HCM 2000 Control Delay
HCM 2000 Volume to Capacity ratio
Aduated Cycle Length (s)
Intersection Capacity Utilization
Analysis Period (min)
c Critical Lane Group 80 80 1100 1100 1100 1100 80 80 80 80 Fit Protected Satt Fow (pot)

Fit Permitted (pot)

Fit Permitted (perm)

Peak-hour fector, PHF

Adj. Frow (phh)

Lane Group Flow (pth) v/c Ratio Uniform Delay, d1 Progression Factor Incremental Delay, d2 Turn Type
Prosteded Phases
Permited Phases
Actuated Green, G (s)
Effective Green, g (s)
Actuated g/C Ratio
Clearance Time (s)
Vehicle Extension (s)
Lane Grp Cap (vph)
WS Ratio Perm Lane Configurations
Traffic Volume (vph)
Future Volume (vph)
Ideal Flow (vphpl)
Total Lost time (s)
Lane Util. Factor ntersection Summary Delay (s) Level of Service Approach Delay (s) Approach LOS Heavy Vehides (%)

Britannia & RR25 BA Group - NHY

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Britannia & RR25 BA Group - NHY

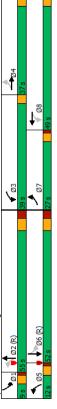
Timings 1: Regional Rd 25 & Louis St Laurent Ave

2037 Future Total AM 01-12-2024

ane Group EBL Traffic Volume (vph) 270 Truthe Volume (vph) 270 Turn Type Tronceded Phases 7 Tonceded Phases 7 Tonceded Phases 7 Aminimum Initial (s) 5.0 Minimum Split (s) 9.0 Total Split (s) 9.0	EBT 535 535 NA	WBL	WBT	NBL	F	8	F	
ations 7 7 70 70 70 70 70 70 70 70 70 70 70 70	535 NA	ŀ			200	כפר	SB-	
(vph) 270 (vph) 270 ses 7 ses 7 e 7 e 7 (s) 50 (s) 270 193% 2	535 NA	-	₩.	F	4413	*	444	
((ph) 270 ses 7 ses 4 4 8 7 8 9.0 ((s) 5.0 27.0 (s) 3.0 3.0 (v) 1.3% 2.1 (v) 1.3% 2	535 NA	495	260	115	1140	65	1280	
ses 7 7 8 9 10 10 10 10 10 10 10 10 10 10 10 10 10	Ϋ́	495	260	115	1140	92	1280	
ses 7 4 4 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6		pm+pt	Ϋ́	pm+pt	₹	pm+pt	₹	
ses 4 e 7 (s) 5.0 (s) 9.0 19.3% 2.70 19.3% 3.0	4	က	œ	2	2	_	9	
(s) 50 (s) 27.0 (s) 3.0 (s) 3.0		∞		2		9		
(s) 5.0 (s) 9.0 27.0 19.3% 2	4	က	∞	2	2	-	9	
5.0 9.0 27.0 19.3% 2								
9.0 27.0 19.3% 2 3.0	10.0	10.0	10.0	2.0	20.0	2.0	20.0	
27.0 19.3% 2 3.0	30.0	14.0	30.0	9.0	32.2	9.0	32.2	
19.3%	37.0	39.0	49.0	12.0	55.0	9.0	52.0	
	26.4%	27.9%	35.0%	%9.8	39.3%	6.4%	37.1%	
	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	
·	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	
otal Lost Time (s) 3.0	0.9	2.0	0.9	3.0	6.2	3.0	6.2	
	Lag	Lead	Lag	Lead	Lag	Lead	Lag	
timize? Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
	None	None	None	None	C-Max	None	C-Max	
	31.0	72.4	9.94	62.6	52.2	56.9	47.5	
	0.22	0.52	0.33	0.45	0.37	0.41	0.34	
0.65	0.94	0.93	0.57	0.71	0.93	0.50	0.95	
7 29.5	6.07	4.4	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	
Delay	6.07	64.4	40.1	49.3	53.0	36.6	60.3	
OS SO.	ш	ш	۵	٥	۵		ш	
Approach Delay	29.7		9.09		52.7		59.2	
Approach LOS	ш		Ω		۵		ш	
ntersection Summary								
Sycle Length: 140								
Actuated Cycle Length: 140								
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green Natural Cooler 100	3TL and	6:SBTL,	Start of (Sreen				
atulal Cycle. 100								
Jonitrol Type: Actuated-Coordinated								
laximum v/c ratio. 0.35								
ntersection Signal Delay: 55.4			₹ 9	ersection	Intersection LOS: E	ı		
ntersection Capacity Utilization 98.8%			೨	U Level (ICU Level of Service F	T.		

2037 Future Total Traffic Conditions

Splits and Phases: 1: Regional Rd 25 & Louis St Laurent Ave



Synchro 11 Report Page 1 Britannia & RR25 BA Group - NHY

2037 Future Total AM 01-12-2024 Queues 1: Regional Rd 25 & Louis St Laurent Ave

	4	†	>	ţ	•	•	۶	→	
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	0:20	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	248	1150	16	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	06:0	0.57	0.70	0.93	0.50	0.95	
0									

⁹⁵th percentile volume exceeds capacity, queue may be longer Queue shown is maximum after two cycles.

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Britannia & RR25 BA Group - NHY

HCM Signalized Intersection Capacity Analysis 1: Regional Rd 25 & Louis St Laurent Ave

2037 Future Total AM 01-12-2024

• 1370 46.4 47.4 0.34 7.2 3.0 1432 0.32 0.96 45.3 1.00 15.4 60.7 % ¥ 65 65 65 1900 3.0 1.00 1.00 1.00 0.95 1.00 1.00 65 65 50.4 0.37 4.0 3.0 3.0 113 0.02 0.19 0.58 33.5 1.00 6.9 2% 330 330 0 3% 18.2 NBT 1140 1140 1140 6.2 6.2 6.2 6.2 6.2 6.2 1.00 1.100 1.100 1.140 2.9 1.4153 1.100 1.140 50.4 51.4 0.37 7.2 3.0 1524 c0.35 0.95 1.00 13.3 56.2 E E 55.5 % ₹ 58.4 59.4 0.42 4.0 3.0 160 0.26 0.72 31.7 1.00 14.3 46.1 %9 HCM 2000 Level of Service Sum of lost time (s) ICU Level of Service 95 0 0 5 7% 95 0.57 38.4 1.00 0.6 39.0 D 51.2 46.6 0.33 7.0 3.0 3.0 1140 0.19 % ₹ 67.4 68.4 0.49 3.0 3.0 524 0.22 0.22 0.94 41.3 1.00 26.0 67.3 2% 57.2 0.95 140.0 98.8% 195 195 1900 1.00 195 0 0 % 30.0 31.0 0.22 7.0 3.0 754 c0.21 ↑↑ 535 535 535 536 6.0 0.95 1.00 % NA 4 0.93 1.00 1.00 71.8 E 62.9 47.8 49.8 0.36 4.0 3.0 4.0 0.09 0.09 0.068 34.3 1.00 4.5 2% HCM 2000 Control Delay HCM 2000 Volume to Capacity ratio ntersection Capacity Utilization Actuated Cycle Length (s) Traffic Volume (vph)
Traffic Volume (vph)
Meal Four Volume (vph)
Meal Fow (vpha)
Total Lost time (s)
Lane Vull Factor
Fig. ped/bikes
Fig. ped Permitted Phases
Actuated Green, G (s)
Effective Green, g (s)
Actuated g/C Ratio
Clearance Time (s)
Vehicle Extension (s)
Lane Gpp Cap (vph)
ws Ratio Prot
ws Ratio Prot ncremental Delay, d2 Approach Delay (s) Approach LOS Heavy Vehides (%) Turn Type Protected Phases Progression Factor Jniform Delay, d1 Delay (s) Level of Service v/c Ratio

Britannia & RR25 BA Group - NHY

Timings 2037 Future Total AM 2: Regional Rd 25 & Whitlock Ave

→	SBT	441	2120	2120	ΑN	9		9		20.0	35.5	81.0	62.3%	4.2	2.3	-1.0	5.5	Lag	Yes	C-Max	9.68	69.0	0.75	16.6	0.0	16.6	В	16.4	മ										
۶	SBL	*	20	20	pm+pt	_	9	~		7.0	11.0	11.0	8.5%	3.0	1:0	-1.0	3.0	Lead	Yes	None	28.7	92.0	0.18	2.7	0.0	2.7	∢												
←	NBT	441	1370	1370	Ä	2		7		20.0	35.5	81.0	62.3%	4.2	2.3	-1.0	5.5	Lag	Yes	C-Max	89.7	69.0	0.47	6.7	0:0	6.7	∢	7.2	∢									۵	
•	NBL	,	45	42	pm+pt	2	2	2		7.0	11.0		8.5%				3.0				28.7	0.76	0.28	22.0	0:0	22.0	ပ										LOS: B	f Service	
4	WBR	¥.	92		Perm		∞			10.0	37.5	38.0	29.2%	3.3	3.2	-1.0	5.5			None	20.4	0.16	0.31	10.9	0:0	10.9	മ						f Green				Intersection LOS: B	ICU Level of Service D	
ļ	WBT	*	32	32	ΑĀ	∞		80		10.0	37.5	38.0	29.2%	3.3	3.2	-1.0	5.5			None	20.4	0.16	0.13	45.3	0.0	45.3	Ω	29.2	ပ				L, Start o				Ē	ਹ	
\	WBL	,	20	20	Perm		∞	∞		10.0	37.5	38.0	29.2%	3.3	3.2	-1.0	5.5			None	20.4	0.16	0.33	52.5	0:0	52.5	_						nd 6:SBT						
†	EBT	÷	22	20	¥	4		4		10.0	37.5	38.0	29.2%	3.3	3.2	-1.0	5.5			None	20.4	0.16	0.49	30.2	0.0	30.2	ပ	49.2	۵				2:NBTL a						
•	EBF	*	145	145	Perm		4	4		10.0	37.5	38.0	29.2%	3.3	3.2	-1.0	5.5			None	20.4	0.16	0.69	68.1	0.0	68.1	ш						to phase		dinated		-	on 76.7%	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	ros	Approach Delay	Approach LOS	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 Capacity Utilization 76.7%	Analysis Period (min) 15

Splits and Phases: 2: Regional Rd 25 & Whitlock Ave



Britannia & RR25
BA Group - NHY
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Queues 2: Regional Rd 25 & Whitlock Ave

Lane Group EBL EBL FBL WBL WBT NBL NBT SBL SBT Lane Group Flow (vph) 145 145 50 35 95 45 1380 50 2220 Control Delay 68.1 30.2 52.5 45.3 0.1 0.0	EBL EBT 1 low (vph) 145 145 0.69 0.49 68.1 30.2		000					
145 145 50 35 95 45 1380 50 669 0.49 0.33 0.13 0.23 0.28 0.47 0.18 68.1 30.2 52.5 45.3 10.9 22.0 6.7 5.7 68.1 30.2 52.5 45.3 10.9 22.0 6.7 5.7 37.5 18.2 12.1 8.2 0.0 2.3 26.6 2.6 5.7 57.3 37.4 23.8 17.1 14.7 m8.1 153.8 7.2 2.6 5.6 2.6 1.6 2.6 1.6 2.6 1.6 2.6 1.6 2.6 1.6 2.6 1.6 1.6 2.6 1.6 2.6 1.6 2.6 1.6 2.6 1.6 2.6 1.6 2.6 1.6 2.6 1.6 2.6 1.6 2.6 1.6 2.6 1.6 2.6 1.6 2.6 2.6 1.6 2.6 1.6	low (vph) 145 145 0.69 0.49 68.1 30.2		WBK	NBL	NBT	SBL	SBT	
0.69 0.49 0.33 0.13 0.31 0.28 0.47 0.18 (88.1 30.2 5.2.5 45.3 10.9 2.20 6.7 5.7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	0.69 0.49 68.1 30.2		95	45	1380	20	2220	
68.1 30.2 52.5 45.3 10.9 22.0 6.7 5.7 6.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	68.1 30.2		0.31	0.28	0.47	0.18	0.75	
681 30.2 52.5 45.3 10.9 22.0 6.7 5.7 5.7 5.7 5.7 5.7 5.7 5.7 5.7 5.7 5			10.9	22.0	6.7	2.7	16.6	
68.1 30.2 52.5 45.3 10.9 22.0 67 57 57 57 57 57 57 57 57 57 57 57 57 57	0.0 0.0		0:0	0.0	0.0	0.0	0.0	
37.5 18.2 12.1 8.2 0.0 2.3 256 2.6 57.3 37.4 23.8 17.1 14.7 m8.1 153.8 7.2 35.0 65.0 68.1 65.0 100.0 100.0 33.3 43.1 24.1 43.9 43.5 159 2960 280 0 0 0 0 0 0 0 0 0 0 0	68.1 30.2		10.9	22.0	6.7	2.7	16.6	
57.3 37.4 23.8 17.1 14.7 m8.1 153.8 7.2 62.9 68.1 65.0 65.0 100.0 100.0 33.3 431 241 439 435 159 2960 280 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.44 0.34 0.21 0.08 0.22 0.28 0.47 0.18	37.5 18.2		0.0	2.3	56.6	5.6	153.7	
62.9 68.1 497.5 35.0 65.0 100.0 100.0 33.3 431 241 439 435 159 2960 280 0 0 0 0 0 0 0 0 0 0 <td>57.3 37.4</td> <td></td> <td>14.7</td> <td>m8.1</td> <td>153.8</td> <td>7.2</td> <td>217.4</td> <td></td>	57.3 37.4		14.7	m8.1	153.8	7.2	217.4	
35.0 65.0 65.0 65.0 100.0 100.0 333 431 241 439 435 159 2960 280 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.44 0.34 0.21 0.08 0.22 0.28 0.47 0.18		68.1			497.5		481.0	
333 431 241 439 435 159 2960 280 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	35.0	5.0	65.0	100.0		100.0		
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	333 431		435	159	2960	280	2973	
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	arvation Cap Reductn 0 0	0 0	0	0	0	0	0	
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	illback Cap Reductn 0 0	0 0	0	0	0	0	0	
0.44 0.34 0.21 0.08 0.22 0.28 0.47 0.18 arv	rage Cap Reductn 0 0	0 0	0	0	0	0	0	
Intersection Summary	0.44 0.34		0.22	0.28	0.47	0.18	0.75	
	arsection Summary							

Britannia & RR25 BA Group - NHY

HCM Signalized Intersection Capacity Analysis 2: Regional Rd 25 & Whitlock Ave

2037 Future Total AM 01-12-2024

Controlled Febre EBr EBr WB1 WB1		4	†	/	>	↓	4	•	—	•	۶	-	•
National Color Nati	Movement	EB	EBEL	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
145 50 95 50 35 95 45 1370 10 50 2120	Lane Configurations	_	4		r	+	*_	F	444		F	444	
145 50 95 50 35 95 55 1370 10 50 2120 1900	Traffic Volume (vph)	145	20	92	20	32	98	45	1370	9	20	2120	100
1500 1900 1000	Future Volume (vph)	145	20	92	20	32	98	42	1370	10	20	2120	100
1,00 1,00	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
1,00 1,00	Total Lost time (s)	5.5	2.5		2.5	5.5	5.5	3.0	5.5		3.0	5.5	
1,00 0.99 1,00	Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	*0.80		1.00	*0.80	
1,00 0.99 1,00 1,00 1,00 1,00 1,00 1,00 1,00 0.99 1,00 1,00 0.99 1,00 1,00 0.99 1,00 1,00 0.99 1,00 1,00 0.99 1,00 0.99 1,00 0.99 1,00 0.99 1,00 0.99 1,00 0.99 1,00 0.99 1,00 0.99 1,00 0.99 1,00 0.99 1,00 0.99 1,00 0.99 1,00 0.99 1,00 0.99 1,00 0.99 1,00 0.99 1,00	Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	1.00		1.00	1:00	
100 090 100 100 085 100 085 100 090 102	Flpb, ped/bikes	0.39	1:00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
1333 1516 1727 1739 1456 100 0.95 100 0.95 100 0.95 100 0.95 100 0.95 100 0.95 100 0.95 100 0.95 100 0.95 100 0.95 100 0.95 100 0.91 100 0.91 100 0.91 100 0.91 100 10	Ŧ	1:00	0.30		1.00	1.00	0.85	1.00	1.00		1.00	0.99	
1725 1516 1727 1759 1455 1671 4292 1805 4310 1733 1506 965 1759 1455 794 4292 1805 4310 1733 1516 965 1759 1455 794 4292 242 4310 145 50 95 50 35 95 45 1370 10 100 1.00 1.00 145 50 95 50 35 95 45 1380 10 50 2.120 146 50 95 50 35 95 95 95 95 95 147 148 86 96 90 90 90 90 90 90 148 94 94 94 94 94 94 95 88 95 95 88 158 95 95 95 95 95 95 95	Fit Protected	0.95	1:00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
1,100 0,72 1,00 0,62 1,00 0,04 1,00 0,13 1,00 0,13 1,00	Satd. Flow (prot)	1725	1516		1727	1759	1455	1671	4292		1805	4310	
1333 1516 965 1759 1455 79 4292 242 4310 145 50 96 50 36 96 1450 1400	Flt Permitted	0.73	1:00		0.53	1.00	1.00	0.04	1.00		0.13	1.00	
PHF 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Satd. Flow (perm)	1333	1516		965	1759	1455	62	4292		242	4310	
yph) 145 50 96 50 35 96 46 1370 10 50 2120 yph) 165 89 0 0 0 0 0 0 0 3 yph) 145 89 0 0 0 0 0 0 0 0 0 3 yph) 145 18 8 8 8 6 5 5 5 10 4 32% 17 6 6 0 0 0 0 0 0 2 10 4 32% 17 4 10 4 10 5 2 2 2 2 2 2 6	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
vph) 0 59 0 <td>Adi. Flow (vph)</td> <td>145</td> <td>20</td> <td>88</td> <td>20</td> <td>32</td> <td>32</td> <td>42</td> <td>1370</td> <td>9</td> <td>20</td> <td>2120</td> <td>100</td>	Adi. Flow (vph)	145	20	88	20	32	32	42	1370	9	20	2120	100
vph) 145 86 0 50 35 15 45 1380 0 50 2217 9 4% 32% 1% 4% 8% 9% 6% 25% 0% 5% 1 4% 32% 1% 8% 8% 8% 6% 25% 0% 5% 1 4 1% 1% 194 194 194 194 194 194 194 194 194 194 194 194 194 194 194 194 194 194 196 88.9 95.6 88.9 95.6 88.9 95.6 88.9 95.6 88.9 95.6 88.9 95.6 88.9 95.6 88.9 95.6 88.9 95.6 88.9 95.6 88.9 95.6 88.9 95.6 88.9 95.6 88.9 95.6 88.9 95.6 88.9 95.6 88.9 95.6 88.9 95.6 88.9	RTOR Reduction (vph)	0	20	0	0	0	8	0	0	0	0	က	0
5	Lane Group Flow (vph)	145	8	0	20	33	15	42	1380	0	20	2217	0
1	Confl. Peds. (#/hr)	വ		2	2		2						
Perm NA Perm NA Perm pm+pt NA pm+pt NA Perm NA Perm Pm+pt NA Perm Parm Par	Heavy Vehicles (%)	4%	32%	1%	4%	%8	%6	%8	%9	25%	%0	2%	%/
(s) 19.4 4 8 8 5 2 1 1 4 4 8 8 8 5 2 6 6 (s) 19.4 19.4 19.4 19.4 19.4 33.6 87.9 33.6 (s) 20.4 20.4 20.4 20.4 20.4 85.6 88.9 83.6 (s) 20.4 20.4 20.4 20.4 20.4 85.6 88.9 83.6 (s) 20.4 20.4 20.4 20.4 20.4 85.6 88.9 83.6 (s) 20.5 6.5 6.5 6.5 6.5 6.5 40 6.5 0.7 (s) 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Turn Type	Perm	AN		Perm	AN	Perm	pm+pt	AN		pm+pt	¥	
(s) 194 194 194 194 194 195 8 2 6 679 9 36 (68) 204 204 204 204 204 305 6 879 9 36 6 68) 204 204 204 204 204 305 6 879 9 36 6 68) 204 204 204 204 204 204 205 9 36 679 9 36 67 6 65 65 65 65 65 65 65 65 65 65 65 65 6	Protected Phases		4			ω		ω	2		-	9	
194 194 194 194 936 879 936 870 936	Permitted Phases	4			∞		00	2			9		
204 20.4 20.4 20.4 20.4 95.6 88.9 95.6 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5	Actuated Green, G (s)	19.4	19.4		19.4	19.4	19.4	93.6	87.9		93.6	87.9	
0.16 0.16 0.16 0.16 0.16 0.16 0.74 0.68 0.74 0.68 0.74 0.68 0.74 0.68 0.74 0.68 0.74 0.68 0.74 0.68 0.74 0.68 0.74 0.68 0.74 0.68 0.72 0.72 0.70 0.72 0.70 0.72 0.72 0.70 0.72 0.72	Effective Green, q (s)	20.4	20.4		20.4	20.4	20.4	92.6	88.9		92.6	88.9	
6.5 6.5 6.5 6.5 6.5 6.5 4.0 6.5 4.0 3.0 3.0 3.0 3.0 3.0 3.0 2.09 237 15.1 2.02 2.00 2.35 2.58 0.06 0.05 0.07 0.02 0.03 0.08 0.08 0.03 0.01 0.02 0.10 0.00 1.00 1.00 1.00 1.00 0.2 9.6 0.9 1.3 0.2 0.6 0.10 0.10 1.00 1.00 1.00 2.26 0.60 0.10 0.10 0.10 0.10 0.25 0.60 0.10 0.10 0.10 0.10 0.25 0.10 0.10 0.10 0.10 0.25 0.10 0.10 0.10 0.10 0.12 0.10 0.10 0.10 0.12 0.10 0.10 0.10 0.12 0.10 0.10 0.10 0.12 0.10 0.10 0.10 0.12 0.10 0.10 0.10 0.12 0.10 0.10 0.10 0.12 0.10 0.10 0.12 0.10 0.10 0.10 0.12 0.10 0.10 0.10 0.12 0.10 0.10 0.10 0.12 0.10 0.10 0.10 0.13 0.10 0.10 0.10 0.14 0.10 0.10 0.10 0.15 0.10 0.10 0.10 0.10 0.15 0.10 0.10 0.10 0.10 0.15 0.10 0.10 0.10 0.10 0.15 0.10 0.10 0.10 0.10 0.15 0.10 0.10 0.10 0.10 0.15 0.10 0.10 0.10 0.10 0.10 0.15 0.10 0.10 0.10 0.10 0.10 0.15 0.10 0.10 0.10 0.10 0.10 0.10 0.15 0.15 0.10 0.10 0.10 0.10 0.10 0.15 0.15 0.10 0.10 0.10 0.10 0.10 0.10 0.15 0.15 0.10	Actuated g/C Ratio	0.16	0.16		0.16	0.16	0.16	0.74	0.68		0.74	0.68	
3.0 3.0	Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	4.0	6.5		4.0	6.5	
9 237 151 276 228 140 2935 258 2 0.06 0.06 0.02 0.03 0.01 0.01 0.01 0.01 0.02 0.32 0.01 0.01 0.01 0.02 0.33 0.01 0.02 0.03 0.01 0.01 0.01 0.02 0.32 0.01 0.01 0.01 0.02 0.32 0.01 0.01 0.01 0.02 0.32 0.07 0.13 0.01 0.01 0.0 1.00 1.00 1.00 1.00	Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
0.06	Lane Grp Cap (vph)	209	237		151	276	228	140	2935		258	2947	
1005	v/s Ratio Prot		90:0			0.02		c0.02	0.32		0.01	c0.51	
9 0.36 0.33 0.13 0.07 0.32 0.47 0.19 8 49.0 448.1 46.7 12.9 9.6 5.6 1.00 1.00 1.00 1.26 0.65 0.04 1.3 0.2 0.1 1.2 0.65 0.04 1.4 49.9 50.0 47.3 46.8 30.4 6.2 5.9 2. D D D D C A A A A A A A A A A A A A A A	v/s Ratio Perm	დ.11			0.05		0.01	0.22			0.13		
8 490 487 47.1 467 12.9 96 5.6 1.00 1.00 1.00 1.00 2.26 0.60 1.00 1.00 1.00 1.00 2.26 0.60 1.00 1.00 1.3 0.2 0.1 1.2 6.5 0.4 1 49.9 50.0 47.3 46.8 30.4 6.2 5.9 2 D D D D C A A A A S 55.7 47.8 7.0 E E D A M 2000 Level of Service B C.72 130.0 Sum of lost time (s) 14.0 15.7% ICU Level of Service D 14.0	v/c Ratio	0.69	0.36		0.33	0.13	0.02	0.32	0.47		0.19	0.75	
1.00 1.00 1.00 1.00 2.26 0.60 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Uniform Delay, d1	51.8	49.0		48.7	47.1	46.7	12.9	9.6		9.6	13.4	
5 0.9 1.3 0.2 0.1 1.2 0.5 0.4 1.4 49.9 50.0 47.3 46.8 30.4 6.2 5.9 5.9 55.7 47.8 7.0 C.7.0 E	Progression Factor	9.	9:		1.00	9.0	1.00	2.26	09:0		1.00	1.00	
499 500 473 468 304 6.2 5.9	Incremental Delay, d2	9.6	0.9		د .	0.2	0.1	12	0.5		0.4	— 8:	
15.7 47.8 7.0 A A A A A S S A A A A A B A A B A A A A	Delay (s)	61.4	49.9		20.0	47.3	46.8	30.4	6.2		5.9	15.2	
55.7 47.8 7.0 E D A 16.5 HCM 2000 Level of Service B 0.72 Sum of lost time (s) 14.0 76.7% ICU Level of Service D	Level of Service	ш	Ω		۵	Ω		ပ	∢		∢	മ	
16.5 HCM 2000 Level of Service 0.72 130.0 Sum of lost time (s) 76.7% ICU Level of Service 15.7	Approach Delay (s)		22.7			47.8			7.0			15.0	
16.5 HCM 2000 Level of Service 0.72 130.0 Sum of lost time (s) 76.7% ICU Level of Service 15	Approach LOS		ш			٥			∢			В	
16.5 HCM 2000 Level of Service 0.72 130.0 Sum of lost time (s) 76.7% (CU Level of Service	Intersection Summary												
0.72 1300 Sum of lost time (s) 76.7% ICU Level of Service 15	HCM 2000 Control Delay			16.5	크	M 2000	Level of 3	Service		В			
130.0 Sum of lost time (s) 76.7% ICU Level of Service 15	HCM 2000 Volume to Capa	city ratio		0.72						1			
76.7% ICU Level of Service 15	Actuated Cycle Length (s)			130.0	S	m of lost	time (s)			14.0			
15	Intersection Capacity Utiliza	tion		76.7%	⊴	J Level o	of Service			۵			
	Analysis Period (min)			15									

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HCM Unsignalized Intersection Capacity Analysis 3: Regional Rd 25 & Site Dwy (North)

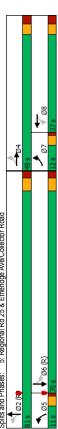
2037 Future Total AM 01-12-2024

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2037 Future Total AM 01-12-2024 Timings 5: Regional Rd 25 & Etheridge Ave/Collector Road

syph) 175 yph) 175 yph) 175 yph) 175 ss 7 ss	NA A 4 4 4 4 4 4 4 4 4 4 4 4 9 0 0 0 0 0 0 0	WBL 65 65 Perm	WBT	NBL NBL	NBT	a V.	SBT	
175 175 175 175 17 7 7 7 7 7 7 7 7 7 10.0 10.0 9.2% 3.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1		65 65 Perm	æ			1		
175 175 175 7 7 7 7 7 7 7 7 7 7 7 120 92% 30 120 120 120 30 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.		65 65 Perm		×	441	*	443	
175 pm+pt 7 7 7 7 7.0 12.0 12.0 12.0 3.0 3.0 3.0 3.0 3.0 6.5 6.8.5 6.8.5 E E		65 Perm	0	2	1195	8	2210	
7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7		Perm		20	1195	೫	2210	
7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7			Ϋ́	pm+pt	¥	Perm	ΑĀ	
7 7 7 7 7.0 11.0 12.0 92.% 3 3.0 11.0 11.0 1.0 92.% 7 Yes None 25.3 0.19 0.67 58.5 58.5 58.5 E E				2	2		9	
7 7 1.0 1.10 1.20 9.2% 3.0 3.0 1.0 1.0 1.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3		ω		2		9		
7.0 11.0 12.0 9.2% 3.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1		œ	œ	2	2	9	9	
7.0 11.0 12.0 92% 3.0 11.0 10.0 10.0 10.0 10.0 10.0 10.0								
11.0 12.0 30, 30, 30, 1.0 1.0 3.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1		10.0	10.0	7.0	20.0	20.0	20:0	
120 92% 3 30 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.		36.2	36.2	11.0	38.4	38.4	38.4	
92% 3 30 10 10 30 -1.0 30 Lead 7 Yes None 25,3 0.19 0.19 0.67 58.5 58.5			37.0	11.0	81.0	70.0	0.07	
3.0 1.0 1.0 3.0 1.0 1.0 7 Yes None 25.3 0.19 0.67 58.5 E			28.5%	8.5%	62.3%	53.8%	53.8%	
1.0 3.0 1.0 3.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1			3.3	3.0	4.2	4.2	4.2	
1.0 3.0 Lead 7 Yes None 25.3 0.19 0.67 5.85 0.0 5.85 E.E.E.E.E.E.E.E.E.E.E.E.E.E.E.E.E.E.E.			5.9	1.0	2.2	2.2	2.2	
3.0 Lead Yes None 25.3 0.19 0.67 58.5 E			-1.0	-1.0	-1.0	-1.0	-1.0	
1.6ad Yes None 25.3 0.19 0.67 58.5 0.0 58.5 E.E		5.2	5.2	3.0	5.4	5.4	5.4	
7 Yes None 25.3 0.19 0.67 58.5 E			Lag	Lead		Lag	Lag	
None 25.3 0.19 0.67 58.5 0.0 E			Yes	Yes		Yes	Yes	
25.3 0.19 0.67 58.5 0.0 58.5 E			None	None	C-Max	C-Max	C-Max	
0.19 0.67 58.5 0.0 58.5 E			13.5	28.7	96.3	86.9	6:98	
0.67 58.5 0.0 58.5 E			0.10	0.76	0.74	0.67	0.67	
58.5 0.0 58.5 m			0.21	0.41	0.38	0.13	0.79	
0.0 58.5 E			6 .	42.9	2.3	3.7	10.2	
58.5 E	0.0	0.0	0.0	0.0	0.0	0.0	0:0	
ш	6.9		6 .	42.9	2.3	3.7	10.2	
	∢	ш	∢	۵	⋖	⋖	ш	
-	40.4		36.5		4.5		10.1	
Approach LOS	٥		٥		∢		В	
ntersection Summary								
Sycle Length: 130								
Actuated Cycle Length: 130								
Offset 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	BTL and (S:SBTL,	Start of G	ireen				
Natural Cycle: 130								
Control Type: Actuated-Coordinated								
Maximum v/c Ratio: 0.79								
ntersection Signal Delay: 11.2			Ĭ	Intersection LOS: B	LOS: B			
ntersection Capacity Utilization 78.5%			ಠ	J Level o	CU Level of Service D	۵		
Analysis Period (min) 15								

Splits and Phases: 5: Regional Rd 25 & Etheridge Ave/Collector Road



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Britannia & RR25 BA Group - NHY

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2037 Future Total AM 01-12-2024 Queues 5: Regional Rd 25 & Etheridge Ave/Collector Road

Lane Group EBL Lane Group Flow (vph) 175 v/c Ratio 0.67 Control Delay 58.5	EBT 95 95 7 0.25 6.9 0.0	WBL 65 0.47	WBT					
		0.47		NBL	NBT	SBL	SBT	
		0.47	55	70	1215	30	2275	
		0 25	0.21	0.41	0.38	0.13	0.79	
		00.00	6 .	42.9	2.3	3.7	10.2	
Queue Delay 0.0		0.0	0.0	0.0	0.0	0:0	0.0	
Total Delay 58.8		65.8	1 .8	42.9	2.3	3.7	10.2	
Queue Length 50th (m) 41.8		16.9	0.0	7.9	11.1	8.0	200.3	
Queue Length 95th (m) 62.4		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	3 617	322	475	172	3182	233	2892	
Starvation Cap Reductn (0	0	0	0	0	0	0	
Spillback Cap Reductn (0	0	0	0	0	0	0	
Storage Cap Reductn (0	0	0	0	0	0	0	
Reduced v/c Ratio 0.67	7 0.15	0.20	0.12	0.41	0.38	0.13	0.79	

Intersection Summary molecular of young for 95th percentile queue is metered by upstream signal.

2037 Future Total AM 01-12-2024 HCM Signalized Intersection Capacity Analysis 5: Regional Rd 25 & Etheridge Ave/Collector Road

Movement EBL EBT EBR WBL WBT WBT NBL NBT		1	†	<i>></i>	\	ţ	✓	•	←	•	۶	→	•
175 0 95 65 0 55 70 1495 20 30 20 2	ovement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
175	ine Configurations	<u></u>	æ		<u>,-</u>	æ.		F	441		y -	444	
175	affic Volume (vph)	175	0	92	92	0	22	2	1195	20	30	2210	65
1900 1900 1900 1900 1900 1900 1900 190	rture Volume (vph)	175	0	9	93	0	32	2	1195	20	9	2210	92
3.0 5.2 5.2 5.2 3.0 5.4 5.4 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	eal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
1.00	tal Lost time (s)	3.0	5.2		5.2	5.2		3.0	5.4		5.4	5.4	
1.00	ne Util. Factor	1.00	1.00		9:	1.00		1.00	*0.80		1.00	*0.80	
0.95 100 0.95 100 0.95 100 0.95 100 0.95 100 0.95 100 0.95 100 0.95 100 0.95 100 0.95 100 0.95 100 0.95 100 0.08 100 0.08 100 10		1.00	0.85		1:00	0.85		1.00	1.00		1.00	1.00	
1787 1615 1805 1615 1752 4295 1805 4 1805 1400 100	Protected	0.95	9.		0.95	1.00		0.95	1.00		0.95	1.00	
10.57 1.00	td. Flow (prot)	1787	1615		1805	1615		1752	4295		1805	4323	
1076 1615 1321 1615 84 4295 349 4 1.00	Permitted	0.57	1.00		0.70	1.00		0.02	1.00		0.18	1.00	
HF 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	td. Flow (perm)	1076	1615		1321	1615		\$	4295		349	4323	
175	ak-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
ph) 10 77 0 0 50 0 0 1 0 0 0 0 0 0 0 1 1 0 0 0 0	j. Flow (vph)	175	0	92	92	0	22	2	1195	50	30	2210	9
ph) 175 18 0 65 5 0 70 1214 0 30 2 pm+pt 1% 0%	OR Reduction (vph)	0	11	0	0	20	0	0	_	0	0	-	0
1% 0% 0% 0% 0% 3% 6% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0%	ne Group Flow (vph)	175	8	0	92	2	0	2	1214	0	30	2274	0
(e) 23.3 23.3 10.5 10.5 10.5 94.1 94.1 Perm Parm Parm Parm Parm Parm Parm Parm Pa	avy Vehicles (%)	1%	%0	%0	%0	%0	%0	3%	%9	%0	%0	2%	%9
7	n Type	pm+pt	NA		Perm	Ν		pm+pt	AN		Perm	M	
S	stected Phases	7	4			∞		2	7			9	
(s) 233 233 105 105 941 941 840 84) 84) 233 233 105 105 105 941 941 941 840 84) 841 243 243 115 115 951 951 850 850 800 1019 019 019 019 019 019 019 019 019	mitted Phases	4			80			5			9		
s) 243 243 115 115 951 951 850 8 10.19 0.19 0.09 0.09 0.73 0.65 0.65 0.03 4.0 6.2 6.2 6.2 4.0 6.4 6.4 5) 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 0.05 0.01 106 102 0.03 0.28 0.03 0.05 0.06 0.05 0.03 0.46 0.39 0.13 0.20 0.09 0.06 0.05 0.03 0.46 0.39 0.13 0.09 0.09 0.06 0.05 0.03 0.46 0.39 0.13 0.09 0.09 0.06 0.05 0.03 0.46 0.39 0.13 0.09 0.09 0.06 0.05 0.03 0.40 0.09 0.13 0.09 0.09 0.06 0.06 0.05 0.03 0.13 0.09 0.09 0.06 0.05 0.08 0.40 0.39 0.13 0.09 0.09 0.06 0.05 0.08 0.40 0.39 0.13 0.09 0.09 0.00 0.00 0.00 0.00 0.00 0.00	tuated Green, G (s)	23.3	23.3		10.5	10.5		8 1.	8 1.		84.0	84.0	
0.19 0.19 0.09 0.09 0.73 0.73 0.65 0.64 8, 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 1.254 301 116 142 152 3141 228 2 0.005 0.01 0.00 0.00 0.03 0.28 0.03 0.008 0.05 0.05 0.01 0.00 0.04 0.05 0.009 0.05 0.05 0.05 0.04 0.00 4.81 43.5 56.8 54.2 19.0 6.5 8.5 1.00 4.81 43.5 56.8 54.2 19.0 6.5 8.5 1.00 4.81 43.5 56.8 54.2 19.0 6.5 8.5 1.00 4.82 48.1 43.5 56.8 54.2 19.0 6.5 8.5 1.00 4.84 43.5 56.8 54.2 19.0 6.5 8.5 1.00 4.85 44.1 43.5 56.8 54.2 19.0 6.5 8.5 1.00 4.87 43.5 56.8 54.2 19.0 6.5 8.5 1.00 4.88 41.4 43.5 56.8 54.2 19.0 6.5 8.5 1.00 4.89 57.4 43.5 56.9 54.3 58.6 2.2 3.0 4.89 57.4 43.5 58.9 54.3 58.9 59.3 4.89 57.3 10.00 4.80 57.4 58.9 58.3 10.00 4.80 5	ective Green, g (s)	24.3	24.3		11.5	11.5		95.1	95.1		85.0	85.0	
4.0 6.2 6.2 6.2 4.0 6.4 6.4 2.64 3.0 3.0 3.0 3.0 3.0 3.0 2.64 3.0 3.0 3.0 3.0 3.0 3.0 2.64 0.01 1.02 1.02 1.02 0.08 0.08 0.09 6.08 0.06 0.05 0.03 0.28 0.09 0.09 6.09 0.06 0.05 0.03 0.28 0.09 0.09 4.8.1 48.5 5.6.8 54.2 1.90 6.5 8.5 1.0 7.6 0.1 0.10 1.00 1.00 1.0 0.26 0.2 5.7 43.5 66.8 54.3 56. 2.2 3.0 8 F 1.0 1.0 1.0 1.0 1.0 1.0 1.0 F 2.1 5.8 5.4 5.8 5.3 8.5 3.0 F 1.0 <td< td=""><td>tuated g/C Ratio</td><td>0.19</td><td>0.19</td><td></td><td>0.0</td><td>0.0</td><td></td><td>0.73</td><td>0.73</td><td></td><td>0.65</td><td>0.65</td><td></td></td<>	tuated g/C Ratio	0.19	0.19		0.0	0.0		0.73	0.73		0.65	0.65	
30 00 00<	arance Time (s)	4.0	6.2		6.2	6.2		4.0	6.4		6.4	6.4	
254 301 116 142 152 3141 228 2 0.00 0.00 0.00 0.00 0.00 0.00 0.0	hicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
c0.05 0.01 0.00 c0.03 0.28 co.09 c0.08 0.05 0.31 0.09 c0.08 0.05 0.46 0.03 48.1 43.5 56.8 54.2 19.0 6.5 8.5 7.6 0.1 0.0 1.00 1.00 1.00 0.13 0.26 7.6 0.1 6.1 1.3 0.2 0.8 8.5 8.5 8.5 8.7 4.0 6.1 0.1 1.3 0.2 0.8 8.5 8.5 9.8 8.5 9.8 8.5 9.8 8.5 9.8 8.5 9.8	ne Grp Cap (vph)	254	301		116	142		152	3141		228	2826	
0.08 0.05 0.05 0.01 0.09 0.01 0.09 0.09 0.09 0.06 0.05 0.04 0.09 0.01 0.09 0.01 0.09 0.01 0.09 0.01 0.09 0.01 0.09 0.01 0.09 0.01 0.09 0.01 0.09 0.01 0.09 0.01 0.09 0.01 0.09 0.01 0.09 0.01 0.09 0.01 0.09 0.02 0.09 0.09 0.09 0.09 0.09 0.09	Ratio Prot	90.00	0.01			0.00		c0.03	0.28			c0.53	
0.69 0.06 0.56 0.03 0.46 0.39 0.13 4.1 43.5 56.8 54.2 19.0 6.5 8.5 4.1 1.00 1.00 1.00 1.00 0.26 7.6 0.1 6.1 0.1 1.3 0.2 0.8 55.7 43.5 62.9 54.3 58.6 2.2 3.0 E D E A A A 51.4 58.9 5.3 58.9 5.3 D HCM 2000 Level of Service B activatio 0.78 Sum of lost time (s) 16.6 2ation 78.5% ICU Level of Service D	Ratio Perm	80.09			0.05			0.31			0.09		
48.1 43.5 56.8 54.2 19.0 6.5 8.5 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.26 1.00 1.00 1.00 0.26 1.00 1.00 1.00 0.26 1.00 1.00 1.00 0.26 1.00 1.00 1.00 0.26 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Ratio	0.69	90:0		0.56	0.03		0.46	0.39		0.13	0.80	
1.00 1.00 1.00 1.00 3.01 0.30 0.26 7.5 0.1 6.1 0.1 1.3 0.2 0.8 55.7 43.5 62.9 54.3 58.6 2.2 3.0 E D E D E D E 3.1 51.4 58.9 5.3 A A E 51.4 58.9 5.3 A E 51.4 A E 51.4 CM 2000 Level of Service B E A E A E A E C C Level of Service B E A E A E A E A E A E A E A E A E A E A	iform Delay, d1	48.1	43.5		26.8	54.2		19.0	6.5		8.5	16.4	
7.6 0.1 6.1 0.1 1.3 0.2 0.8 55.7 43.5 62.9 54.3 58.6 2.2 3.0 E D E D E A A 51.4 58.9 5.3 5.3 D E D E A A A 12.5 HCM 2000 Level of Service B 130.0 Sum of lost time (s) 16.6 24.5 130.0 Sum of lost time (s) 16.5 15.5 15.5 15.5 15.5 15.5 15.5 15.5 1	ogression Factor	1.00	1.00		1.00	1.00		3.01	0.30		0.26	0.48	
55.7 43.5 62.9 54.3 58.6 2.2 3.0 E D E D E A A A 51.4 58.9 5.3 D E A A A 12.5 HCM 2000 Level of Service B activatio 0.78 Sum of lost time (s) 16.6 78.5% ICU Level of Service D	remental Delay, d2	9.7	0.1		6.1	0.1		1.3	0.2		8.0	1 .8	
E D E D E A A A B B B B B B B B B B B B B B B B	lay (s)	22.7	43.5		67.9	54.3		28.6	2.2		3.0	9.7	
51.4 58.9 5.3 D E A 12.5 HCM 2000 Level of Service B 130.0 Sum of lost time (s) 16.6 2ation 78.5% ICU Level of Service D	vel of Service	ш	□		ш	Ω		ш	⋖		⋖	∢	
D E A 12.5 HCM 2000 Level of Service B 12.5 HCM 2000 Level of Service B 130.0 Sum of lost time (s) 16.6 2ation 78.5% ICU Level of Service D 15	proach Delay (s)		51.4			58.9			5.3			9.6	
12.5 HCM 2000 Level of Service 0.78 0.78 13.0 Sum of lost time (s) ration 78.5% ICU Level of Service	proach LOS		Ω			ш			⋖			∢	
12.5 HCM 2000 Level of Service 0.78 0.78 13.0 Sum of lost time (s) ration 78.5% ICU Level of Service	ersection Summary												
acity ratio 0.78 130.0 Sum of lost time (s) ration 78.5% ICU Level of Service	M 2000 Control Delay			12.5	ĭ	M 2000 I	evel of S	Service		۵			
130.0 Sum of lost time (s) ration 78.5% IOU Level of Service	M 2000 Volume to Capac	city ratio		0.78									
Utilization 78.5% ICU Level of Service 15	tuated Cyde Length (s)			130.0	S	m of lost	time (s)			16.6			
Ω	ersection Capacity Utilizal	tion		78.5%	ਂ	U Level o	f Service			۵			
Critical Lane Group	alysis Period (min)			15									
	Critical Lane Group												

Synchro 11 Report Page 10 Britannia & RR25 BA Group - NHY

HCM Unsignalized Intersection Capacity Analysis 6: Regional Rd 25 & Site Dwy (South)

2037 Future Total AM 01-12-2024

20 20 1700 0.29 0.0 0 0.55 0.0 0.0 20 1.00 SB 1 940 0 0 0.55 0.0 0.0 SBT 2350 2350 2350 0% 0% 1.00 2350 2350 133 0.0 None None 0.025 NBT 1285 1285 0% 0% 1.00 183 0.1 0.2 56.5% 15 NB2 428 0 0 0.71700 0.25 0.0 0.62 1082 2.2 100 406 3.3 1.00 428 0 0 1700 0.25 0.0 0.62 Stop 0 0% 1.00 65 65 68 68 68 0.10 0.10 10.9 B 0.75 3.5 100 767 Average Delay Intersection Capacity Utilization Analysis Period (min) Direction, Lane #
Volume Total
Volume Left
SAH
Volume Right
SAH
Volume to Capacity
Queue Length 95th (m)
Control Delay (s)
Lane LOS Lane Configurations Traffic Volume (veh/h) Future Volume (Veh/h) Approach Delay (s) Approach LOS

Synchro 11 Report Page 11 Britannia & RR25 BA Group - NHY

ш

ICU Level of Service

2037 Future Total AM 01-12-2024 Timings 7: Regional Rd 25 & Britannia Rd

→	SBT	4413	1975	1975	ΑĀ	9		9		20:0	49.7	51.0	39.5%	4.2	3.5	-1.0	2.9	Lag	Yes	C-Max	57.3	0.44	1.05	77.3	0:0	77.3	ш	74.3	ш										
۶	SBL	£	415	415	Prot	Ψ-		-		7.0	11.0	11:0	8.5%	3.0	1:0	-1.0	3.0	Lead	Yes	None	19.7	0.15	0.78	60.1	0.0	60.1	ш											ш	
←	NBT	444	1070	1070	Ä	7		7		20.0	49.7	51.0	39.2%	4.2	3.5	-1.0	2.9	Lag	Yes	C-Max	44.3	0.34	0.90	49.0	0.0	49.0	_	49.5	٥								LOS: E	ICU Level of Service F	
•	NBL	K.	22	22	Prot	2		2		7.0	11.0	11.0	8.5%	3.0	1:0										0.0	29.7	ш						Green				Intersection LOS: E	J Level o	
Ļ	WBT	441	380	380	ΑĀ	80		80		10.0	45.5	46.0	35.4%	4.2	3.3	-1.0	6.5	Lag	Yes	None	39.8	0.31	0.39	29.5	0.0	29.5	ပ	51.2	٥				, Start of				ř	ಠ	right lane.
\	WBL	K.	465	465	Prot	က		က		7.0	11.0	22.0	16.9%	3.0	1:0	-1.0	3.0	Lead	Yes	None	19.0	0.15	0.92	75.9	0.0	75.9	ш						nd 6:SBT						ane as a
†	EBT	444	455	455	Α	4		4		10.0	45.5	46.0	35.4%	4.2	3.3	-1.0	6.5	Lag	Yes	None	27.8	0.21	0.87dr	45.9	0:0	45.9	_	47.0	٥				2:NBT a						though
4	BE	£	92	92	Prot	7		7			11.0		16.9%												0.0	0.09	ш						d to phase		linated		_	on 91.3%	ode with 1
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	ros	Approach Delay	Approach LOS	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 Capacity Utilization 91.3%	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

010		€03	- 104
11s	51s	22 s	46 s
\$00	₩ Ø6 (R)	40√	↓
11s	51s	22 s	46 s

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Queues 7: Regional Rd 25 & Britannia Rd

2037 Future Total AM 01-12-2024

	BT	00	02	7.3	0.0	7.3	3.7	5.1	9.1		20	0	0	0	.05	
→	SBT		1.05				~246	#316.1	159.1		1907				⇌	
۶	SBL	415	0.78	60.1	0.0	60.1	61.4	#162.0 m#104.1		90.0	230	0	0	0	0.78	
+	NBT	1315	06.0	49.0	0.0	49.0	136.9	#162.0 n	165.3		1463	0	0	0	06.0	
•	NBL	22	0.24	29.7	0.0	29.7	7.4	14.3		0.06	229	0	0	0	0.24	
ţ	WBT	530	0.39	29.5	0.0	29.5	45.3	22.8	182.4		1407	0	0	0	0.38	
>	WBL	465	0.92	75.9	0.0	75.9	9.49	#97.3		120.0	203	0	0	0	0.92	
†	EBT	170	0.87dr	45.9	0.0	45.9	70.3	83.0	377.9		1368	0	0	0	0.56	
4	EBL	92	0.28	0.09	0.0	0.09	8.7	16.3		0.09	482	0	0	0	0.13	
	Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Queue Delay	Total Delay	Queue Length 50th (m)	Queue Length 95th (m)	Internal Link Dist (m)	Turn Bay Length (m)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio	

- 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.

 Tolume shown is maximum after two cycles.

 Tolume for 95th percentile queue is metered by upstream signal.

 of Defacto Right Lane. Recode with 1 though lane as a right lane.

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HCM Signalized Intersection Capacity Analysis 7: Regional Rd 25 & Britannia Rd

2037 Future Total AM 01-12-2024

		Ť	-	•		,	_	-	Ĺ	ļ.	+	,
Movement	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	ř.	4413		K.	4413		K.	4413		K.	4413	
raffic Volume (vph)	92	455	315	465	380	150	22	1070	245	415	1975	25
Future Volume (vph)	8	422	315	465	380	120	22	1070	242	415	1975	22
deal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
otal 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	
Ĕ	1.00	0.94 26.0		1.00	96:0		1.00	0.97		1.00	1.00	
Fit 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)	92	455	315	465	380	120	22	1070	242	415	1975	22
ROR Reduction (vph)	0	8	0	0	22	0	0	23	0	0	_	0
-ane Group Flow (vph)	92	989	0	465	475	0	22	1292	0	415	1999	0
leavy Vehicles (%)	%9	1%	1%	%/	%	5%	4%	2%	4%	%0	2%	27%
urn Type	Prot	Ν		Prot	Ν		Prot	A		Prot	¥	
Protected Phases	7	4		က	∞		2	2		_	9	
Permitted Phases												
Actuated Green, G (s)	8.9	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	22.8	
Actuated g/C Ratio	90.0	0.22		0.15	0.31		90.0	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	
/ehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
ane Grp Cap (vph)	198	932		503	1319		191	1415		230	1855	
/s Ratio Prot	0.02	c0.16		c0.13	0.11		0.02	0.31		c0.12	c0.46	
//s Ratio Perm												
//c Ratio	0.33	0.87dr		0.92	0.36		0.29	0.91		0.78	1.08	
Jniform Delay, d1	58.6	47.1		54.8	35.2		28.8	41.4		53.1	37.1	
Progression Factor	1.00	1.00		0.93	96:0		1.00	1.00		0.97	1.34	
ncremental Delay, d2	1:0	5.9		22.5	0.2		0.8	10.6		5.1	45.5	
Delay (s)	9.69	20.0		73.3	33.8		9.69	52.0		26.8	92.3	
evel of Service	ш	۵		ш	ပ		ш	۵		ш	ш	
proach Delay (s)		20.7			52.3			52.3			86.2	
Approach LOS		Ω			Ω			Ω			ш	
ntersection Summary												
HCM 2000 Control Delay			9.99	¥	HCM 2000 Level of Service	Level of S	service		ш			
ICM 2000 Volume to Capacity ratio	ty ratio		0.94									
Actuated Cyde Length (s)			130.0	જ	Sum of lost time (s)	time (s)			19.2			
ntersection Capacity Utilization	uo		91.3%	೦	ICU Level of Service	f Service			ш			
Analysis Period (min)			15									

Synchro 11 Report Page 14 Britannia & RR25 BA Group - NHY

HCM Unsignalized Intersection Capacity Analysis 8: Site Dwy (South)/Site Dwy (North) & Etheridge Ave

2037 Future Total AM 01-12-2024

Movement EBL Lane Configurations Traffe Volume (vehth) 5 Sign Control Grade Peak Hour Factor 1.00 Peak Hour Factor 5 Pedestrians Lane Wudth (m) 5 Pedestrians Lane Wudth (m) 18 Percent Blockage 18 Right turn flare (veh) 18 Median type 18 Median ty	EBT ++++++++++++++++++++++++++++++++++++	EBR	WBL	WRT	WBD	2	Tan	NBR	SBL	SBT	SBR
	165			-	אטא	NBL	- Q				
	165			4			4			₽	
		2	25	82	25	20	0	09	45	0	15
	165	2	52	82	25	50	0	09	42	0	15
	Free			Free			Stop			Stop	
	%0			%0			%0			%0	
	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	165	2	22	82	52	20	0	09	42	0	15
	None			None							
				28							
			170			340	338	168	382	328	88
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol 110			170			340	338	168	382	328	88
tC, single (s) 4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
stage (s)											
			2.2			3.5	4.0	3.3	3.5	4.0	3.3
			86			97	9	93	9	9	88
cM capacity (veh/h) 1493			1420			298	275	882	529	582	964
Direction, Lane # EB 1	WB 1	NB 1	SB 1								
Volume Total 175		80	09								
Volume Left 5	25	20	45								
ne Right		09	15								
cSH 1493	1420	789	296								
_		0.10	0.10								
Queue Length 95th (m) 0.1	0.4	2.7	2.7								
lay (s)		10.1	11.7								
	∢	В	മ								
Approach Delay (s) 0.2	7.5	10.1	11.7								
Approach LOS		М	മ								
Intersection Summary											
Average Delay		3.9									
Intersection Capacity Utilization		34.1%	ੁ	ICU Level of Service	f Service			∢			
Analysis Period (min)		15									

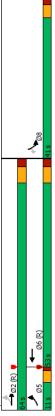
Synchro 11 Report Page 15 Britannia & RR25 BA Group - NHY

Timings 2037 Future Total AM 10: Britannia Rd & Farmstead Dr 01-12-2024

745 435 90 30 NA NA Prot Perm 2 6 8 8 2 6 8 8 2 6 8 8 2 8 8 2 2 2 2 2 2 0 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	435 90 30 NA Prof Perm 6 8 8 6 8 8 20.0 10.0 10.0 29.4 15.3 15.3 2.2 2.0 2.0 5.4 4.3 4.3 1.0 -1.0 5.4 4.3 4.3 1.8 0.78 0.12 0.12 0.14 0.00 0.0 4.4 4.90 15.4 0.0 0.0 0.0 4.4 4.0 6 A D B 4	435 90 30 NA Prof Perm 6 8 8 6 8 8 20.0 10.0 10.0 28.4 15.3 15.3 53.0 41.0 41.0 59.5% 39.0% 39.0% 4.2 2.0 2.0 -1.0 -1.0 -1.0 -1.8 12.8 0.78 0.12 0.12 0.14 0.43 0.14 0.0 0.0 0.0 4.4 49.0 15.4 0.0 0.0 0.0 4.4 40.6 A D B A D B A D B A D CU Lovel of Service A Independent CU Lovel of Service A
2 6 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	2 6 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	2 6 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8
2 6 8 8 2.0 20.0 10.0 10.0 3.4 29.4 15.3 15.3 4.0 53.0 41.0 41.0 9.8 50.5% 39.0% 39.0% 2.2 2.2 2.0 2.0 1.0 -1.0 -1.0 -1.0 5.4 5.4 4.3 4.3 Yes 1.8 C-Max None None 6.7 82.3 12.8 12.8 6.8 8.4 49.0 15.4 A A D B 2.8 4.4 40.6 A A D B 2.8 4.4 40.6 A A D B 2.8 4.4 40.6 A A D B 2.9 4.4 40.6 A A D B 2.9 4.4 40.6 A A D B 2.9 4.4 40.6 A A D B 3.0 6.0 0.0 0.0 3.0 0.0 0.0 0.0 4.0 0.0 0.0 0.0 5.4 4.4 40.6 A A D B 5.5 4.4 40.6 A A D B 5.6 4.8 40.6 A A D B 5.7 5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4	2 6 8 8 80.0 20.0 10.0 10.0 9.4 29.4 15.3 15.3 4.0 53.0 41.0 41.0 0% 50.5% 39.0% 39.0% 1.0 -1.0 -1.0 -1.0 5.4 4.3 4.3 4.3 1.2 2.2 2.0 2.0 1.0 -1.0 -1.0 -1.0 5.4 4.3 4.3 4.3 1.2 2.2 2.0 2.0 1.0 -1.0 1.0 1.0 1.0 -1.0 1.0 1.0 2.8 4.4 4.9 0.15.4 0.0 0.0 0.0 2.8 4.4 4.9 0.15.4 0.0 0.0 0.0 2.8 4.4 4.0 6 0.0 0.0 0.0 0.0 2.8 4.4 4.0 6 0.0 0.0 0.0 0.0 2.8 4.0 6 0.0 0.0 0.0 0.0 2.8 4.0 6 0.0 0.0 0.0 0.0 2.8 4.0 6 0.0 0.0 0.0 0.0 2.8 4.0 6 0.0 0.0 0.0 0.0 2.8 4.0 6 0.0 0.0 0.0 0.0 2.8 4.0 6 0.0 0.0 0.0 0.0 2.8 4.0 6 0.0 0.0 0.0 0.0 2.8 4.0 6 0.0 0.0 0.0 0.0 2.8 4.0 6 0.0 0.0 0.0 0.0 2	2 6 8 8 60 20.0 10.0 10.0 9.4 29.4 15.3 15.3 4.0 53.0 41.0 41.0 9% 50.5% 39.0% 39.0% 50.5% 39.0% 33.3 2.2 2.2 2.0 2.0 1.0 -1.0 -1.0 -1.0 5.4 4.4 4.3 4.3 2.8 4.4 49.0 15.4 2.8 4.4 49.0 15.4 2.8 4.4 49.0 15.4 2.8 4.4 49.0 15.4 2.8 4.4 49.0 15.4 2.8 4.4 49.0 15.4 3.9
200 200 100 100 294 294 153 153 163 153 163 153 164 294 153 153 165 50.5% 39.0% 42 42 33 33 33 22 22 20 20 20 20 21 -1.0 -1.0 -1.0 54 54 43 43 186 7 82.3 128 128 187 82.3 128 128 188 7 82.3 128 128 189 0.14 49.0 154 28 44 49.0 154 28 44 40.6 28 44 40.6 28 44 40.6 31 And 6:WBT, Start of Green	0.0 20.0 10.0 10.0 10.0 10.0 10.0 10.0 1	0.0 20.0 10.0 10.0 10.0 10.0 10.0 10.0 1
42 4.4 4.90 15.4 15.3 15.3 15.3 15.3 15.3 15.3 15.3 15.3	24. 23. 41.0 41.0 0% 50.5% 39.0% 39.0% 42	14.0 53.0 41.0 41.0 41.0 41.0 45.0 55.5 39.0% 39
61.0% 50.5% 39.0% 39.0% 4.2 4.2 3.3 3.3 4.4 4.2 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 4.3 4.3 4.3 4.3 4.3 4.3 4.3 4.3 4.3 4.3	10% 50.5% 39.0% 39.0% 4.2 4.2 3.3 3.3 4.2 4.2 3.3 3.3 4.2 4.2 4.2 3.3 3.3 4.2 4.2 4.3 4.3 4.3 4.3 4.3 4.3 4.3 4.3 4.3 4.3	0% 50.5% 39.0% 39.0% 42 33 33 42 22 22 20 20 20 20 20 20 20 20 20 20 20
4.2 4.2 3.3 3.3 2.2 2.0 2.0 2.2 2.0 2.0 2.0 2.0 5.4 5.4 4.3 4.3 Lag Nax C-Max None None 86.7 82.3 12.8 12.8 86.7 82.3 12.8 12.8 0.20 0.14 0.43 0.14 0.8 0.76 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	4.2 4.2 3.3 3.3 4.2 2.2 2.0 2.0 4.3 4.3 4.3 5.4 5.4 4.3 4.3 4.8 5.4 4.3 4.3 4.8 5.4 4.3 4.3 4.8 5.4 4.3 4.3 4.8 6.12 12.8 6.2 6.12 12.8 6.10 6.10 0.0 6.0 0.0 0.0 0.0 6.0 0.0 0.0 0.0 0.0 6.0 0.0 0.0 0.0 0.0 6.0 0.0 0.0 0.0 0.0 6.0 0.0 0.0 0.0 0.0 6.0 0.0 0.0 0.0 0.0 6.0 0.0 0.0 0.0 0.0 6.0 0.0 0.0 0.0 0.0 6.0 0.0 0.0 0.0 0.0 6.0 0.0 0.0 0.0 0.0 6.0 0.0 0.0 0.0 0.0 0.0 6.0 0.0 0.0 0.0 0.0 0.0 6.0 0.0 0.0 0.0 0.0 0.0 6.0 0.0 0.0 0.0 0.0 0.0 0.0 6.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	4.2
-1.0 -1.0 -1.0 -1.0 -1.0 -1.0 -1.0 -1.0	-1.0 -1.0 -1.0 -1.0 5.4 4.3 4.3 4.3 4.3 4.3 4.3 4.3 4.3 4.3 4	1.0 -1.0 -1.0 -1.0 1.0
54 54 4.3 4.3 Lag Yes Yes -Max C-Max None None 86.7 82.3 12.8 12.8 0.20 0.12 0.12 0.20 0.0 0.0 0.0 0.0 0.0 0.0 0.0 2.8 4.4 49.0 15.4 A A D B 2.8 4.4 40.6 A A D B 3.TL and 6.WBT, Start of Green	5.4 5.4 4.3 4.3 Lag Yes Max C-Max None None 887 82.3 12.8 12.8 0.20 0.14 0.43 0.14 2.8 4.4 49.0 15.4 A A 49.0 15.4 A A 40.6 A A D B 2.8 4.4 40.6 A A D A A D A A A D A A A D A A A D A A A D A A A D A A A D A A A D A A A D A A A D B A A A D B A A A D B A A D B A A D B A A D B A A D B A A D B A A D B A A D B A A D B A A D B A A D B A A D B A A D B A A D B A A D B A A D B A D D B A D	5.4
Lag Yes None None 86.7 82.3 12.8 12.8 0.12 0.12 0.20 0.14 0.43 0.14 0.00 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Lag Ves None No	Lag
Yes Max C-Max None None 86.7 82.3 12.8 12.8 0.83 0.78 0.12 0.12 0.20 0.14 0.43 0.14 2.8 44 49.0 15.4 A A D B 2.8 4.4 40.6 A A D SIL and 6:WBT, Start of Green	Max C-Max None None 86.7 823 12.8 12.8 0.83 0.75 0.12 0.12 0.14 0.43 0.14 0.0 0.0 0.0 2.8 4.4 490 15.4 A A D B A A D B A A D A A D A D A A D A D A A D A D B A A D A D B A A D B A A D B A A D B A A D B A A D B A A D B A A D B A A D B A A D B A A D B A A D B A A D B A A D B A A D B A A D B A A D B A A D B B A A D B B B B B B B B B B B B B B B B B B B	As X None None (6.7 82.3 12.8 12.8 12.8 12.8 12.8 12.8 12.8 12.8
Max C-Max None None 86.7 82.3 12.8 12.8 0.83 0.78 0.12 0.12 0.20 0.14 0.43 0.14 0.0 0.0 0.0 0.0 0.0 0.0 2.8 4.4 49.0 15.4 A A D B 2.8 4.4 40.6 A A D B 3.12	Max C-Max None None 86.7 at 28 128 0.83 0.78 0.12 0.12 0.20 0.14 0.43 0.14 0.0 0.0 0.0 2.8 4.4 49.0 15.4 A A D B A A D B A A D A D B A A D A D B A A D A D A A D A D A A D A D B A A D A D B A A D A D B B A A D B B A A D B B A A D B B A A D B B A A D B B A A D B B A A D B B A A D B B A A D B B A A D B B A A D B B A A D B B A A D B B B B B B B B B B B B B B B B B B B	Alax C-Max None None None None R57 823 128 128 128 128 128 128 128 128 129 129 129 129 129 129 129 129 129 129
08.1 02.3 12.6 12.6 08.3 01.4 0.43 0.14 0.12 0.12 0.20 0.14 0.43 0.14 2.8 44 49.0 15.4 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	08.1 0.23 12.6 12.6 0.83 0.14 0.43 0.14 0.43 0.14 0.43 0.14 0.00 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	120 0.14 0.43 0.14 0.12 0.12 0.12 0.14 0.43 0.14 0.43 0.14 0.00 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0
0.20 0.14 0.43 0.14 2.8 4.4 4.90 15.4 0.0 0.0 0.0 0.0 2.8 4.4 4.90 15.4 A A D B 2.8 4.4 4.06 A A D 3.1Land 6.WBT, Start of Green	0.20 0.14 0.43 0.14 2.8 4.4 490 15.4 0.0 0.0 0.0 2.8 4.4 490 15.4 A D B 2.8 4.4 40.6 A D D A D A D A D A D A D A D A D A D A	1.20 0.14 0.43 0.14 2.8 4.4 49.0 15.4 2.8 4.4 49.0 15.4 2.8 4.4 40.6 2.8 4.4 40.6 3.8 4.4 40.6 3.8 4.4 A.D 3.8 A.A D 4 A.D 4 A.D 6 C.D. Lowel of Service A.
2.8 4.4 49.0 15.4 0.0 0.0 0.0 0.0 2.8 4.4 49.0 15.4 A A D B 2.8 4.4 40.6 A A D 3.1Land 6.WBT, Start of Green	28 4.4 49.0 15.4 0.0 0.0 0.0 0.0 2.8 4.4 40.6 A D B A D D B A D D B A D D B A D D B D B A D D B D D D D D D D D D D D D D D D D	2.8 4.4 49.0 15.4 0.0 0.0 0.0 0.0 0.0 0.0 2.8 4.4 40.6 2.8 4.4 40.6 A D B 2.8 A D B 2.8 A C D B A D C C Level of Service A
0.0 0.0 0.0 0.0 2.8 4.4 4.9.0 15.4 2.8 4.4 4.0.6 A A D B A D	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 2.8 4.4 49.0 15.4 4.0 15.4 4.0 15.4 4.0 15.4 4.0 15.4 4.0 15.4 4.0 15.4 4.0 15.4 4.0 15.4 4.0 15.4 4.0 15.4 15.5 15.5 15.5 15.5 15.5 15.5 15.5
28 44 490 154 A A D B 28 44 406 A A D 31L and 6:WBT, Start of Green	28	2.8
2.8	A A D B 2.8 4.4 40.6 A A D TL and 6:WBT, Start of Green Intersection LOS: A	A A D B A A A D A A D Intersection LOS: A ICU Level of Service A
28	ZS 4.4 40.6 A A D TL and 6:WBT, Start of Green	2.8 4.4 40.5 A A D Land 6.WBT, Start of Green Intersection LOS: A IOU Level of Service A
TL and 6:WBT, Start of Green	TL and 6:WBT, Start of Green	TL and 6:WBT, Start of Green Intersection LOS: A ICU Level of Service A
TL and 6:WBT, Start of Green	TL and 6:WBT, Start of Green	IL and 6:WBT, Start of Green Intersection LOS: A ICU Level of Service A
TL and 6:WBT, Start of Green	TL and 6:WBT, Start of Green	TL and 6:WBT, Start of Green Intersection LOS: A ICU Level of Service A
TL and 6:WBT, Start of Green	TL and 6:WBT, Start of Green Intersection LOS: A	T. and 6:WBT, Start of Green Intersection LOS: A ICU Level of Service A
IL and 6:WB I , Start of Green	IL and 6:WB I , Start of Green Intersection LOS: A	L and 6:WB I, Start of Green Intersection LOS: A ICU Level of Service A
	Intersection LOS: A	Intersection LOS: A ICU Level of Service A
	Intersection LOS: A	Intersection LOS: A ICU Level of Service A
	Intersection LOS: A	Intersection LOS: A ICU Level of Service A
	Intersection LOS: A	Intersection LOS: A ICU Level of Service A

Intersection Summary

Splits and Phases: 10: Britannia Rd & Farmstead Dr



Britannia & RR25 Synchro 11 Report BA Group - NHY Page 16

 Queues

 10: Britannia Rd & Farmstead Dr

 Inmediate
 Lane Group
 EBI
 EBI
 FBI
 SBI
 SBI

 Lane Group
 EBI
 EBI
 FBI
 SBI
 SBI

 Lane Group Flow (vph)
 20
 745
 460
 90
 30

 Ve Ratio
 Control Delay
 24
 2.8
 4.4
 490
 15.4

 Queue Delay
 24
 2.8
 4.4
 490
 15.4

 Queue Length Soth (m)
 2.8
 1.2
 7.3
 18.4
 0.0

 Queue Length Soth (m)
 2.8
 1.2
 7.3
 18.4
 0.0

 Queue Length (m)
 2.8
 1.8
 0.0
 0.0
 0.0

 Queue Length (m)
 2.3
 1.1
 19.7
 33.1
 8.5
 1.1

 Lun Bay Length (m)
 2.8
 3.65
 35.6
 55.7
 1.1
 1.1
 1.1
 1.2
 1.2
 1.2
 1.2
 1.2
 1.2
 1.2
 1.2
 1.2
 1.2

Britannia & RR25
BA Group - NHY
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HCM Signalized Intersection Capacity Analysis 10: Britannia Rd & Farmstead Dr

2037 Future Total AM 01-12-2024

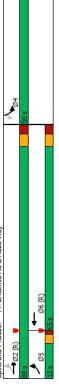
	4	†	Į.	4	٠	*	
Movement	EBF	EBT	WBT	WBR	SBL	SBR	
ane Configurations	F	444	4413		F	¥.	
raffic Volume (vph)	8	745	435	52	6	ഉ	
Future Volume (vph)	8	745	435	22	6	8	
deal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
otal Lost time (s)	3.0	5.4	5.4		4.3	4.3	
ane Util. Factor	1:00	*0.80	*0.80		1.00	1.00	
	1:00	1.00	0.99		1.00	0.85	
It Protected	0.95	1.00	1.00		0.95	1.00	
Satd. Flow (prot)	1656	4427	4205		1703	1538	
-It 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	52	6	೫	
RTOR Reduction (vph)	0	0	2	0	0	27	
ane Group Flow (vph)	20	745	458	0	6	က	
leavy Vehicles (%)	%6	3%	%8	%0	%9	2%	
urn Type	pm+pt	ΑN	Ν		Prot	Perm	
Protected Phases	2	2	9		œ		
Permitted Phases	2					∞	
ctuated Green, G (s)	83.5	83.5	7.97		8.6	8.6	
Effective Green, g (s)	84.5	84.5	7.77		10.8	10.8	
ctuated 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	
'ehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	
ane Grp Cap (vph)	637	3562	3111		175	158	
/s Ratio Prot	0.00	c0.17	0.11		c0.05		
//s Ratio Perm	0.02					0.00	
//c Ratio	0.03	0.21	0.15		0.51	0.02	
Jniform Delay, d1	2.1	2.4	4.0		44.6	42.3	
Progression Factor	1.00	1.00	1:00		1.00	1.00	
ncremental Delay, d2	0.0	0.1	0.1		2.5	0.0	
lelay (s)	2.1	2.5	4.1		47.2	42.4	
evel of Service	∢	⋖	⋖		□	۵	
Approach Delay (s)		2.5	4.1		46.0		
pproach LOS		∢	∢		۵		
ntersection Summary							
HCM 2000 Control Delay			6.9	 	M 2000 L	HCM 2000 Level of Service	Service A
HCM 2000 Volume to Capacity ratio	y ratio		0.25				
Actuated Cyde Length (s)			105.0	Su	Sum of lost time (s)	time (s)	12.7
ntersection Capacity Utilization	Ē		33.1%	ರ	ICU Level of Service	Service	A
Analysis Period (min)			15				
Critical Lane Group							

Synchro 11 Report Page 18 Britannia & RR25 BA Group - NHY

2037 Future Total AM 01-12-2024 Timings 11: Britannia Rd & Rose Way

Iranic Volume (vph) Future Volume (vph) Turn Type Protected Phases Permitted Phases	r		444	SB -	SBR	
	22 23	1090	920	22 22	75	
ed Phases	pm+pt	۸ ۲	¥ °	Prot	Реш	
r Dhoeo	2	1	•		4	
I Flidse	S)	5	9	4	4	
Switch Phase						
Minimum Initial (s)	10.7	20.0	20.0	10.0	10.0	
	15.0	80.0	65.0	20.0	50.0	
. 11		61.5%	20.0%	38.5%	38.5%	
	3.0	4.0	4.0	3.0	3.0	
All-Red Time (s)	1.0	3.0	3.0	3.0	3.0	
(8	-1.0	-1.0	-1.0	-1.0	-1.0	
otal Lost Time (s)	3.0	0.9	0.9	2.0	2.0	
	Lead		Lag			
.ead-Lag Optimize?	Yes		Yes			
Recall Mode			C-Max	None	None	
Act Effet Green (s) 1	110.2	107.2	100.6	11.8	11.8	
y/C Ratio	0.85	0.82	0.77	0.09	0.09	
	0.05	0.29	0.26	0.34	0.35	
Control Delay	3.6	9.6	4.8	61.1	16.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
otal Delay	3.6	9.6	4.8	61.1	16.3	
	∢	⋖	∢	ш	മ	
Approach Delay		5.5	4.8	35.2		
Approach LOS		∢	4	٥		
ntersection Summary						
Ovcle Length: 130						
Actuated Cycle Length: 130	C	Ē	TOWN	,		
Jitset: U (U%), Referenced to phase Z:EBTL and b:WBT, Start of Green Natural Cycle: 85	nase Z.E	BIL and	6:WB1,	Start of G	eeu	
Control Type: Actuated-Coordinated	ated					
Maximum v/c Ratio: 0.35						
ntersection Signal Delay: 7.0				Int	Intersection LOS: A	OS: A
ntersection Capacity Utilization 38.6%	38.6%			٥	CU Level of Service A	Service A

Splits and Phases: 11: Britannia Rd & Rose Way



Synchro 11 Report Page 19 Britannia & RR25 BA Group - NHY

Queues 2037 Future Total AM 11: Britannia Rd & Rose Way 01-12-2024

Lane Group Lane Group Flow (vph) 25 1090 930 55 75 Control Delay Control Delay Control Delay Control Delay Control Length Softh (m) Lotal Delay Course Length Softh (m) Lotal Delay Lotal Delay Course Length Softh (m) Lotal Delay Lotal Delay Course Length Softh (m) Lotal Delay Course Length Softh (m) Lotal Delay Lotal Delay Course Length Softh (m) Lotal Delay Lotal Delay Lotal Lotal Lotal Delay Course Length Softh (m) Lotal Delay Lotal Delay Lotal Delay Course Length Softh (m) Lotal Delay L		ì				
EBL EBT WBT SBL 35 1090 930 55 1090 930 55 1090 930 55 1090 930 55 1090 930 55 1090 930 55 1090 930 55 1090 930 55 1090 930 55 1090 930 55 1090 930 55 1090 930 930 55 1090 930 930 930 930 930 930 930 930 930		†	ţ	٠	•	
25 1090 930 55 0.05 0.29 0.28 0.34 3.6 5.6 4.8 61.1 0.0 0.0 0.0 0.0 3.6 5.6 4.8 61.1 1.7 45.9 29.2 14.3 m2.4 m52.8 39.1 27.8 50.0 50.0 50.0 0 0 0 0 0 0 0 0 0 0 0 0			WBT	SBL	SBR	
3.6 0.29 0.26 0.34 3.6 5.6 4.8 61.1 3.6 5.6 4.8 61.1 1.7 45.9 29.2 14.3 m.24 m52.8 39.1 27.8 50.0 50.0 0 0 0 0 0 0 0 0.0 0		ľ		55	75	
3.6 5.6 4.8 61.1 3.6 5.6 4.8 61.1 3.6 5.6 4.8 61.1 1.7 45.9 29.2 14.3 m2.4 m52.8 39.1 27.8 50.0 517 3761 35.3 624 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0				0.34	0.35	
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0				61.1	16.3	
3.6 5.6 4.8 61.1 1.7 45.9 29.2 14.3 m2.4 m52.8 39.1 27.8 50.0 50.0 50.0 60.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0				0.0	0.0	
1.7 45.9 29.2 14.3 m2.4 m52.8 39.1 27.8 18.24 155.7 76.0 50.0 50.0 517 3761 3523 624 0 0 0 0 0 0 0 0				61.1	16.3	
m2.4 m52.8 39.1 27.8 182.4 155.7 76.0 50.0 517 3761 3523 624 0 0 0 0 0 0 0 0 0.05 0.29 0.26 0.09	ue Length 50th (m)	.7 45.9		14.3	0.0	
50.0 50.0 517 3761 3523 624 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0				27.8	15.3	
50.0 517 3761 3523 624 0 0 0 0 0 0 0 0 0.05 0.29 0.26 0.09	nal Link Dist (m)	182.4		76.0		
517 3761 3523 624 0 0 0 0 0 0 0 0 0 0 0 0 0.05 0.29 0.26 0.09		0:		20.0		
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0				624	809	
0 0 0 0 0 0 0 0 0 0.05 0.29 0.26 0.09	vation Cap Reductn	0 0	0	0	0	
0.05 0.29 0.26 0.09	oack Cap Reductn	0 0	0	0	0	
0.05 0.29 0.26 0.09	age Cap Reductn	0 0	0	0	0	
Intersection Summary				0.00	0.12	
	O continue					
	section summary					

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis 11: Britannia Rd & Rose Way

2037 Future Total AM 01-12-2024

Movement EBL	EBT 1090 1090 1900 6.0 *0.80	WBT ↑	WBR	SBL	SBR	
	1090 1090 1900 6.0 6.0	444		<u>, </u>		
	1090 1090 1900 6.0 *0.80				¥.	
	1090 1900 6.0 *0.80	920	10	22	75	
_ , , , , , ,	6.0 *0.80	920	9	22	75	
	6.0 *0.80	1900	1900	1900	1900	
	*0.80	0.9		2.0	5.0	
		*0.80		1.00	1.00	
	1.00	1.00		1.00	0.85	
	1.00	1.00		0.95	1.00	
	4560	4553		1805	1615	
	1.00	1.00		0.95	1.00	
	4560	4553		1805	1615	
	1.00	1.00	1.00	1.00	1.00	
(huy) ut	1090	920	9	22	75	
	0	0	0	0	89	
Lane Group Flow (vph) 25	1090	930	0	22	7	
Heavy Vehides (%) 0%	%0	%0	%0	%0	%0	
Turn Type pm+pt	Ν	ΑN		Prot	Perm	
Protected Phases 5	7	9		4		
Permitted Phases 2					4	
106.2	106.2	0.86		10.8	10.8	
s) 107.2	107.2	0.66		11.8	11.8	
	0.82	92.0		60.0	60:0	
	7.0	7.0		0.9	0.9	
(9	3.0	3.0		3.0	3.0	
(vph) 436	3760	3467		163	146	
00:00	c0.24	0.20		c0.03		
Perm					0.00	
v/c Ratio 0.06	0.29	0.27		0.34	0.05	
	5.6	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		29.7	54.1	
	∢	∢		ш	۵	
Approach Delay (s)	5.4	4.8		55.2		
Approach LOS	⋖	¥		ш		
Intersection Summary						
HCM 2000 Control Delay		8.1	오	M 2000 L	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio		0:30				
Actuated Cycle Length (s)		130.0	Sul	Sum of lost time (s)	ime (s)	14.0
Intersection Capacity Utilization		38.6%	ಶ	ICU Level of Service	Service	¥
Analysis Period (min)		15				

Britannia & RR25 BA Group - NHY

> Synchro 11 Report Page 20

Britannia & RR25 BA Group - NHY

2037 Future Total PM 01-12-2024 Timings 1: Regional Rd 25 & Louis St Laurent Ave

→	SBT	4413	1130	1130	ΑĀ	9		9		20.0	32.2	56.0	40.0%	4.2	3.0	-1.0	6.2	Lag	Yes	C-Max	9.99	0.40	0.76	40.0	0.0	40.0	۵	39.9	O									
٠	SBL	F	92	92	pm+pt	_	9	-		2.0	0.6	10.0	7.1%	3.0	1.0	-1.0	3.0	Lead	Yes		2.79	0.48	09:0	39.8	0.0	39.8	۵											
•	NBT	4413	1305	1305	A A	7		7		20.0	32.2	0.89	%9.84	4.2	3.0	-1.0	6.2	Lag	Yes	C-Max	65.3	0.47	0.88	39.6	0:0	39.6	۵	41.5	٥								LOS: D	TI I aviol of Caning E
•	NBL	r	220	220	om+pt	2	2	ა		2.0	0.6											0.57	0.82	56.9	0.0	6.99	ш						reen				Intersection LOS: D	ا مرسا
ļ	WBT	₩	545	545				∞			30.0														0.0	55.8	ш	55.4	ш				Start of G				Inte	Ξ
\	WBL	r.	365	365	pm+pt	က	∞	က			14.0												98.0		0.0		۵						6:SBTL, 8					
†	EBT	₩	375		A A			4		10.0	30.0											0.17	0.84	66.4	0.0	66.4	ш	59.1	ш				BTL and					
1	EBL	*	205	202	pm+pt	7	4	7		2.0	9.0									None					0.0	41.4	٥						phase 2:N		dinated		2	708 CO ac
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	SOT	Approach Delay	Approach LOS	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 Capacity I Hilization 92 8%

603 Splits and Phases: 1: Regional Rd 25 & Louis St Laurent Ave • * Ø6 (R) ↑ Ø2 (₩ **√** Ø5

Synchro 11 Report Page 1 Britannia & RR25 BA Group - NHY

Queues 1: Regional Rd 25 & Louis St Laurent Ave

2037 Future Total PM 01-12-2024

	_	5	9	0	0	0	2	9	2		_	0	0	0	9
→	SBT	132	92.0	40.	0	40	143	170	113		1751				0.76
٠	SBL	95	09.0	39.8	0.0	39.8	12.8	#37.1		80.0	159	0	0	0	09:0
←	NBT	1750	0.88	39.6	0.0	39.6	192.7	#223.8	481.0		1980	0	0	0	0.88
•	NBL	ı	0.82		0.0	6.95	44.9	#81.9		65.0	299	0	0	0	0.74
ţ	WBT	610	0.75	22.8	0.0	22.8	84.8	106.9	117.1		865	0	0	0	0.71
>	WBL	365	98.0	54.7	0.0	54.7	79.1	115.9		35.0	467	0	0	0	0.78
†	EBT	200	0.84	66.4	0.0	66.4	2.69	#93.7	126.1		620	0	0	0	0.81
1	EB	205	0.68	41.4	0.0	41.4	39.5	58.3		0.06	331	0	0	0	0.62
	Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Queue Delay	Total Delay	Queue Length 50th (m)	Queue Length 95th (m)	Internal Link Dist (m)	Turn Bay Length (m)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio
	Lane Gr	Lane Gr	v/c Ration	Control	Quene	Total De	Quene	Quene	Internal	Turn Ba	Base Ca	Starvatic	Spillbac	Storage	Reducer

Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Synchro 11 Report Page 2 Britannia & RR25 BA Group - NHY

HCM Signalized Intersection Capacity Analysis 1: Regional Rd 25 & Louis St Laurent Ave

2037 Future Total PM 01-12-2024

Movement EB			Ì	•	•								
205 375 125 386 545 65 220 1305 445 95 1130 205 375 125 386 545 65 220 1305 445 95 1130 1130 1900 1900 1900 1900 1900 1900	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
206 375 125 365 545 65 220 1305 445 95 1130 1900	Lane Configurations	<u></u>	₩.		<u>_</u>	(F	441		۴	441	
205 375 125 365 545 65 220 1305 445 95 1130 1900 1900 1900 1900 1900 1900 1900	Traffic Volume (vph)	202	375	125	365	545	92	220	1305	445	92	1130	195
1900 1900	Future Volume (vph)	202	375	125	365	545	92	220	1305	445	92	1130	195
1,00 0.95 1.00 0.96 1.00 0.98 1.00 0.98 1.00 0.98 1.00 0.98 1.00 0.98 1.00 0.98 1.00 0.98 1.00 0.98 1.00 0.98 1.00 0.98 1.00 0.98 1.00 0.98 1.00 0.99 1.00	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
1,00 0,99	Total Lost time (s)	3.0	0.9		2.0	0.9		3.0	6.2		3.0	6.2	
1,00	Lane Util. Factor	9.	0.95		1.0	0.95		9.	*0.80		1.00	*0.80	
1,00	Frpb, ped/bikes	1:00	0.99		1.00	1.00		1.00	0.99		1.00	1.00	
1,00 0.96 1,00 1,00	Flpb, ped/bikes	1:00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
100 100	F	1:00	96.0		1.00	0.98		1.00	96.0		1.00	0.98	
1768 3431 1899 3537 1787 4166 1805 4299 1806 20.28 1300 1301 13	Fit Protected	0.95	1.00		1.00	1.00		0.95	1.00		0.95	1.00	
Color Colo	Satd. Flow (prot)	1768	3431		1899	3537		1787	4166		1805	4299	
He 1,00 1,	Flt Permitted	0.26	1.00		0.17	1.00		0.07	1.00		0.07	1.00	
PHF 1:00 1:00 1:00 1:00 1:00 1:00 1:00 1:0	Satd. Flow (perm)	483	3431		331	3537		132	4166		134	4299	
yph) 205 375 125 366 545 65 220 130 445 95 113 yph) 205 477 0 36 60 7 0 38 0 0 13 yph) 206 477 0 366 603 20 172 6 95 113 1 2% 1% 0% 0% 2% 1% 6% 1% 0% 4% 1 2% 1% 0% 0% 2% 1% 6% 1% 0% 4% 1 4 4 8 8 8 2 6 6 5 5 5 6 6 7 4 4% 9 112 1 6 6 6 6 6 6 6 6 6 6 1 1 1 6 6 6 6 6 1 1 1	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
vph) 0 23 0 0 0 38 0 0 13 vph) 205 477 0 365 603 0 172 0 95 1312 0 2% 1% 0% 0% 0% 0% 2% 1% 0% 4% 1 2% 1% 0% 0% 0% 2% 1% 6% 4% 1 2% 1% 0% 0% 2% 2% 1% 6% 4% 1 2% 0% 0% 2% 2% 1% 6% 4% 1 4 1% 1% 1% 1% 1% 1% 4% 1 4 1%	Adi. Flow (vph)	202	375	125	365	545	92	220	1305	445	92	1130	195
vph) 205 477 0 365 603 0 220 1712 0 95 1312 9 1% 0% 0% 0% 2% 1% 0% 4% 1 2% 1% 0% 0% 2% 1% 0% 4% 1 2% 1% 0% 0% 2% 1% 0% 4% 1 4 3 8 5 2 1 6 4 4 8 8 5 2 4 1 6 4 4 8 8 5 2 4 6 6 55.7 1 6 55.7 1 6 <	RTOR Reduction (vph)	0	23	0	0	7	0	0	38	0	0	13	0
5	Lane Group Flow (vph)	205	477	0	365	603	0	220	1712	0	92	1312	0
1, 2% 1% 0% 0% 0% 2% 1% 6% 1% 0% 4%	Confl. Peds. (#/hr)	Ŋ		2	2		2	2		2	2		2
PMH-PDI NA	Heavy Vehicles (%)	2%	1%	%0	%0	%0	5%	%	%9	1%	%0	4%	%0
(s) 38.1 22.4 8.8 5.2 64.3 6.6 6.8 (s) 38.1 22.4 50.6 30.9 75.2 64.3 6.6 6.8 (s) 40.1 23.4 51.6 31.9 762 65.3 64.6 5.0 0.29 0.17 0.37 0.23 0.54 0.47 0.46 0.9 0.17 0.37 0.23 0.54 0.47 0.46 0.9 0.17 0.30 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.	Turn Type	pm+pt	AN		pm+pt	AN		pm+pt	AN		pm+pt	¥	
(s) 34 4 8 8 2 2 6 4 3 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	Protected Phases	7	4		ო	∞		2	2		-	9	
38.1 22.4 50.6 30.9 75.2 64.3 62.6 0.29 0.17 3.0 7.0 4.0 7.2 64.6 4.0 7.0 3.0 7.0 4.0 7.2 64.6 4.0 7.0 3.0 7.0 4.0 7.2 4.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 2.91 57.3 4.15 80.5 2.6 1943 156 0.08 0.01 0.1 0.1 0.1 0.04 0.05 0.12 0.14 0.1 0.1 0.1 0.04 0.05 0.12 0.10 0.1 0.1 0.1 0.04 0.05 0.12 0.10 0.1 0.1 0.1 0.0 0.0 0.0 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.01 1.00 1.00 1.00 1.00 <td>Permitted Phases</td> <td>4</td> <td></td> <td></td> <td>00</td> <td></td> <td></td> <td>5</td> <td></td> <td></td> <td>9</td> <td></td> <td></td>	Permitted Phases	4			00			5			9		
401 234 516 319 762 65.3 64.6 40	Actuated Green, G (s)	38.1	22.4		50.6	30.9		75.2	64.3		62.6	55.7	
Section Sect	Effective Green a (s)	40.1	23.4		516	310		76.2	65.3		64.6	299	
4.0 7.0 3.0 7.0 4.0 7.2 4.0 3.1 3.0 3.0 3.0 3.0 3.0 2.29 5.73 4.5 805 5.66 1943 156 0.08 0.014 0.016 0.17 0.03 0.05 0.07 0.83 0.88 0.75 0.35 0.88 0.61 0.70 0.83 0.88 0.75 0.38 0.88 0.61 0.70 0.83 0.88 0.75 0.38 0.81 0.70 1.00 1.00 1.00 1.00 1.00 0.75 1.00 1.00 1.00 1.00 1.00 0.75 0.75 0.86 5.42 5.73 4.0 0.5 0.70 0.89 0.85 0.88 0.61 0.70 0.89 0.80 0.80 0.70 0.80 0.80 0.80 0.70 0.80 0.80 0.80 0.70 0.80 0.80 0.80 0.70 0.80 0.80 0.80 0.70 0.80 0.80 0.80 0.70 0.80 0.80 0.80 0.70 0.80 0.80 0.80 0.80 0.80 0.70 0.80 0.80 0.80 0.80 0.80 0.70 0.80 0.80 0.80 0.80 0.80 0.80 0.70 0.80 0	Actuated a/C Ratio	0 29	0.17		0.37	0.23		0.54	0.47		0.46	0.41	
S 3.0	Clearance Time (s)	4.0	2.0		3.0	7.0		4.0	7.2		4.0	7.2	
291 573 415 805 266 1943 156 156 150	Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
0.08 c0.14 c0.16 0.17 c0.10 c0.41 0.03 0.12	l ane Gm Can (vnh)	291	573		415	805		266	1043		156	1741	
0.12 0.16 0.38 0.25 0.25 0.25 0.35 0.26 0.25 0.25 0.35 0.35 0.25 0.25 0.35 0.35 0.25 0.25 0.35 0.35 0.25 0.25 0.35 0.35 0.25 0.25 0.35 0.35 0.35 0.25 0.25 0.35 0.35 0.35 0.25 0.25 0.35 0.35 0.35 0.35 0.25 0.25 0.35 0.35 0.35 0.25 0.25 0.35 0.35 0.35 0.35 0.35 0.35 0.35 0.3	v/s Ratio Prot	80 0	00 14		0.0	0.17		010	0.04		0 03	0.31	
0.70 0.83 0.88 0.75 0.83 0.88 0.61 40,7 56,4 38,0 50,3 38,7 33,8 27,7 10,0 1.00 1.00 1.00 1.00 1.00 1.00 42 7.5 10,0 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	v/s Ratio Perm	0.12			0.16	5		0.35			0.25	5	
40.7 56.4 38.0 50.3 38.7 33.8 27.7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	v/c Ratio	0.70	0.83		0.88	0.75		0.83	0.88		0.61	0.75	
1.00 1.00	Uniform Delay, d1	40.7	56.4		38.0	50.3		38.7	33.8		27.7	35.7	
d2 7,5 10.0 18.7 3.8 18.6 6.1 6.6 48.2 66.4 56.6 54.2 57.3 40.0 34.3 B E D E D C C C Interval of Capacity ratio 46.1 HCM 2000 Level of Service D D C C Interval of Service 0.89 CU Level of Service F C F C F Interval of Service 140.0 Sum of lost time (s) 18.2 F F F	Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
48.2 66.4 56.6 54.2 57.3 40.0 34.3 Delay 6.1 E D E D C E D	Incremental Delay, d2	7.5	10.0		18.7	3.8		18.6	6.1		9.9	3.1	
Delay 46.1 HCM.2000 Level of Service D C C Application 22.8% CU Level of Service F C C C C C C C C C C C C C C C C C C	Delay (s)	48.2	66.4		9.99	54.2		57.3	40.0		34.3	38.7	
### 55.1 41.9 E E E D Delay 46.1 HCM 2000 Level of Service D Capacity ratio 140.0 Sum of lost time (s) 49.1 Willication 18.2 P Willication 18.2 P Willication 18.2	Level of Service	Ω	ш		ш	۵		ш	۵		ပ	□	
any Belay 46.1 HCM 2000 Level of Service to Capacity ratio 0.89 (gth (s) 140.0 Sum of lost time (s) y Wilization 15.8% (CU Level of Service 17.10 Sum of lost time (s) 18.10 Sum of lost time (s) 19.11 Sum of lost time (s) 19.12 Sum of lost time (s) 19.13 Sum of lost time (s) 19.14 Sum of lo	Approach Delay (s)		61.1			55.1			41.9			38.4	
46.1 HCM 2000 Level of Service 0.89 Sum of lost time (s) 92.8% ICU Level of Service	Approach LOS		ш			ш			۵			Ω	
46.1 HCM 2000 Level of Service 0.89 Sum of lost time (s) 92.8% ICU Level of Service	Intersection Summary												
ratio 0.89 Sum of lost time (s) 92.8% ICU Level of Service 15.	HCM 2000 Control Delay			46.1	I	M 2000	Pypl of 9	Parvice		_			
140.0 Sum of lost time (s) 92.8% ICU Level of Service 15	HCM 2000 Volume to Capa	city ratio		0.89	-	2007	5			2			
92.8% ICU Level of Service	Actuated Cycle Length (s)			140.0	Su	m of lost	time (s)			18.2			
5	Intersection Capacity Utiliza	ation		92.8%	ਹ	J Level o	of Service			ш			
	Analysis Period (min)			7									

Critical Lane Group

Britannia & RR25 BA Group - NHY

Timings 2: Regional Rd 25 & Whitlock Ave

2037 Future Total PM 01-12-2024

→	SBT	ተ ቶኑ	1365	1365	A A	9		9		20.0	35.5	81.0	62.3%	4.2	2.3	-1.0	5.5	Lag	Yes	C-Max	91.1	0.70	0.50	10.1	0:0	10.1	Ф	10.1	മ										
۶	SBL	*	09	9	pm+pt	_	9	-		7.0	11.0	11.0	8.5%	3.0	1:0	-1.0	3.0	Lead	Yes	None	102.0	0.78	0.33	12.1	0.0	12.1	Ф												
←	NBT	4413	1970	1970	≨	2		2		20.0	35.5	81.0	62.3%	4.2	2.3	-1.0	5.5	Lag	Yes	C-Max	93.2	0.72	0.65	7.9	0.0	7.9	∢	7.8	∢									ပ	
•	NBL	*	06	90	pm+pt	2	7	2		7.0	11.0	11.0	8.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	102.5	0.79	0.35	2.8	0.0	2.8	∢										LOS: B	CU Level of Service C	
4	WBR	¥C	75	75	Perm		∞	∞		10.0	37.5	38.0	29.5%	3.3	3.2	-1.0	5.5			None	16.6	0.13	0.29	13.0	0.0	13.0	Ф						of Green				Intersection LOS: B	U Level o	
ţ	WBT	*	40	40	ΑĀ	∞		∞		10.0	37.5	38.0	29.5%	3.3	3.2	-1.0	5.5			None	16.6	0.13	0.17	20.0	0.0	20.0	_	30.2	ပ				L, Start o				Ξ	೦	
>	WBL	*	25	25	Perm		∞	∞		10.0	37.5	38.0	29.5%	3.3	3.2	-1.0	5.5			None	16.6	0.13	0.15	50.2	0.0	50.2	Ω						Ind 6:SB1						
†	EBT	æ	40	40	Ϋ́	4		4		10.0	37.5			3.3			5.5			None	16.6	0.13	0.32	31.8	0.0	31.8	ပ	52.0	Ω				2:NBTL a						
1	EBF	#	105	105	Perm		4	4		10.0	37.5	38.0	29.5%	3.3	3.2	-1.0	5.5			None	16.6	0.13	09:0	67.4	0.0	67.4	ш						ed to phase		rdinated		1.5	tion 72.1%	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	√c Ratio	Control Delay	Queue Delay	Total Delay	ros	Approach Delay	Approach LOS	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 Capacity Utilization 72.1%	Analysis Period (min) 15

Splits and Phases: 2: Regional Rd 25 & Whitlock Ave



Britannia & RR25 BA Group - NHY

> Synchro 11 Report Page 3

2037 Future Total PM 01-12-2024 Queues 2: Regional Rd 25 & Whitlock Ave

Lane Group	•									
Lane Group	١	†	,	Ļ	1	✓	←	۶	→	
	田田	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	
Lane Group Flow (vph)	105	8	22	9	75	6	2010	09	1500	
v/c Ratio	09.0	0.32	0.15	0.17	0.29	0.35	0.65	0.33	0.50	
Control Delay	67.4	31.8	50.2	20.0	13.0	2.8	7.9	15.1	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	20.0	13.0	2.8	7.9	15.1	10.1	
Queue Length 50th (m)	27.2	10.6	6.1	8.6	0.0	1.3	69.3	5.6	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)		67.9		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.

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Britannia & RR25 BA Group - NHY

HCM Signalized Intersection Capacity Analysis 2: Regional Rd 25 & Whitlock Ave

2037 Future Total PM 01-12-2024

	4	†	>	>	ţ	4	•	•	•	۶	→	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	¥	£,		r	*	*	r	443		F	4413	
Traffic Volume (vph)	105	40	40	25	40	75	90	1970	40	90	1365	135
Future Volume (vph)	105	40	40	22	40	75	90	1970	40	09	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	2.5	5.5	3.0	2.5		3.0	2.5	
Lane Util. Factor	9:	1.00		1.00	0.1	1.00	1.00	*0.80		0.1	%0.80 *0.80	
Frpb, ped/bikes	9:	0.99		1.00	1.00	0.98	1.00	1.00		1.00	9.	
Flpb, ped/bikes	0.39	1.00		0.99	1.00	1.00	1.00	1.00		1.00	1.0	
Ĕ	1:00	0.93		1.00	1.00	0.85	1.00	1.00		1.00	66.0	
Fit 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	
Fit Permitted	0.73	1.00		0.70	1.00	1.00	0.11	1.00		0.05	1.00	
Satd. Flow (perm)	130/	6601		1332	0061	523	107	433		35	4700	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.0	1.00	1.00
Adj. Flow (vprl)	9 0	32	04	دم د	04	0 4	06	1970	04	00	202	3
l ane Group Flow (yoh)	105.0	7 87	o c	25.0	9 0	3 5	8	2000	o c	9	1405	O
Confl Peds (#/hr)	2 10	2	, rc	3 10	2	יט ק	3	200	ייי כ	2 10	3	
Heavy Vehicles (%)	, %	2%	%0	%0	%0	3%	1%	2%	0%	2%	%9	%0
Turn Type	Perm	Y Y		Perm	¥	Perm	pm+pt	¥		pm+pt	Y Y	
Protected Phases		4			∞		S	7		-	9	
Permitted Phases	4			80		∞	2			9		
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		00.05	0.35	
v/s Ratio Perm	0.08			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	2.1	10.1		8.9	9.0	
Progression Factor	9.	1.00		1.00	1.00	1.00	96.0	0.64		1.00	1.00	
Incremental Delay, d2	2.8	0.5		0.4	0.3	0.1	9.0	0.8		1.5	9.0	
Delay (s)	59.4	51.4		20.8	50.9	49.9	2.6	7.3		10.4	9.6	
Level of Service	ш	۵		۵	□	۵	∢	∢		മ	∢	
Approach Delay (s)		55.9			50.3			7.2			9.6	
Approach LOS		ш			۵			∢			∢	
Intersection Summary												
HCM 2000 Control Delay			11.9	F	HCM 2000 Level of Service	Level of 5	Service		В			
HCM 2000 Volume to Capacity ratio	ty ratio		0.63									
Actuated Cycle Length (s)			130.0	S	Sum of lost time (s)	time (s)			14.0			
Intersection Capacity Utilization	on		72.1%	⊇	U Level o	f Service			ပ			
Analysis Period (min)			15									
c Critical Lane Group												

Britannia & RR25 BA Group - NHY

2037 Future Total PM 01-12-2024 HCM Unsignalized Intersection Capacity Analysis 3: Regional Rd 25 & Site Dwy (North)

	•	>	•	←	→	•	
Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations		*		444	441		
Traffic Volume (veh/h)	0	8	0	2100	1390	40	
Future Volume (Veh/h)	0	8	0	2100	1390	9	
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	93	0	2100	1390	40	
Pedestrians							
Lane Width (m)							
Walking Speed (m/s)							
Percent Blockage							
Right tum 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)	8.9	6.9	4.1				
tC, 2 stage (s)	į						
tF (s)	3.5	3.3	2.2				
p0 queue free %	100	8	100				
cM capacity (veh/h)	125	535	482				
Direction, Lane #	EB 1	NB 1	NB 2	NB3	SB1	SB 2	SB 3
Volume Total	30	200	200	200	556	556	318
Volume Left	0	0	0	0	0	0	0
Volume Right	೫	0	0	0	0	0	40
cSH	535	1700	1700	1700	1700	1700	1700
Volume to Capacity	90:0	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	В						
Approach Delay (s)	12.1	0:0			0.0		
Approach LOS	В						
Intersection Summary							
Average Delay			0.1				
Intersection Capacity Utilization		Ì	43.9%	ਹ	ICU Level of Service	Service	A
Analysis Period (min)			15				

Synchro 11 Report Page 7 Britannia & RR25 BA Group - NHY

Timings 5: Regional Rd 25 & Etheridge Ave/Collector Road

2037 Future Total PM 01-12-2024

	_		2	2	4	9		9		0	4	0	9	2	8	0	4	Б	s	×	_	က	0	0	0	o	⋖	∞	4										
-	SBT	#	1225	122	₹			_		20.0	38.4	70.	53.8%	4	2.2	-1.0	5.4	Ĕ	Yes	C-Max	82.	0.63	0.5	6.9	0.0	6.9	_	7.8	_										
۶	SBL	-	55	22	pm+pt	_	9	_		7.0	11.0	11.0	8.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	92.8	0.71	0.31	32.1	0.0	32.1	O										ر	د	
←	NBT	4413	1940	1940	₹	2		5		20.0	38.4	70.0	23.8%	4.2	2.2	-1.0	5.4	Lag	Yes	C-Max	88.9	0.68	0.67	8.7	0.0	8.7	⋖	9.7	∢				_				Intersection LOS: B	an Aige	
•	NBL	*	180	180	pm+pt	2	2	2		7.0	11.0	11.0	8.5%	3.0	1:0	-1.0	3.0	Lead	Yes	None	100.4	0.77	0.55	21.0	0.0	21.0	ပ						t of Greer				Intersection LOS: B	n revel	
ţ	WBT	2	0	0	Ν	∞		∞		10.0	36.2	37.0	28.5%	3.3	5.9		5.2				1.8	0.09	0.14	1.0	0.0	1.0	⋖	31.6	O				JL, Star					2	
>	WBL	r	40	40	Perm		∞	∞		10.0	36.2	37.0	28.5%	3.3	5.9	-1.0	5.2	Lag	Yes	None	11.8	0.09	0.32	62.1	0.0	62.1	ш						and 6:SE						
†	EBT	£,	0	0	Ϋ́	4		4		10.0	36.2	49.0	37.7%	3.3	5.9	-1.0	5.2			None	21.4	0.16	0.10	9.0	0.0	9.0	∢	39.9	۵				e 2:NBTL						
1	EBF	*	120	120	pm+pt	7	4	7		7.0	11.0	12.0	9.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	23.6	0.18	0.50	53.0	0.0	53.0	_						ed to phas		rdinated		0.8 tion 70.2%	1011 / 0.2 %	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	ros	Approach Delay	Approach LOS	Intersection Summary	Ovcle Lenath: 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 Katio: 0.6/	Intersection Signal Delay: 10.8	Analysis Doriod (min) 15	Allaysis railou (IIIII) io

Splits and Phases: 5: Regional Rd 25 & Etheridge Ave/Collector Road



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Queues 2037 Future Total PM 5: Regional Rd 25 & Etheridge Ave/Collector Road 01-12-2024

	120 EB	↑ ⊞ ⁹	₩BL 40	↑ WBT	№ 180	→ NBT 2005	→ 88 53	→ SBT 1365	
	0.50	0.10	0.32	0.14	0.55	79.0	32.1	0.50	
	0.0	0:0	0.0	0:0	0.0	0.0	0.0	0.0	
	53.0	9.0	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	0.07	5.9	81.9	
Jueue Length 95th (m)	46.4	0:0	22.4	0.0	m23.0	m66.3	12.1	113.1	
		53.9		63.5		106.2		169.0	
	40.0		40.0		70.0		70.0		
	241	623	339	515	327	2990	175	2739	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	
	0	0	0	0	0	0	0	0	
	0	0	0	0	0	0	0	0	
	0.50	90.0	0.12	0.08	0.55	0.67	0.31	0.50	
	ľ	l		ŀ					

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis 5: Regional Rd 25 & Etheridge Ave/Collector Road

ity Analysis 2037 Future Total PM /Collector Road 01-12-2024

	4	†	<i>></i>	>	ţ	4	•	•	•	۶	→	`*
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	÷		F	£,		۴	4413		۴	444	
Traffic Volume (vph)	120	0	40	40	0	40	180	1940	9	22	1225	140
Future Volume (vph)	120	0	40	40	0	40	180	1940	92	22	1225	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.5		5.5	5.2		3.0	5.4		3.0	5.4	
Lane Util. Factor	1.0	1.00		1.00	1.00		1.00	*0.80		1.0	*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		0.02	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	22	1225	140
RTOR Reduction (vph)	0	33	0	0	37	0	0	7	0	0	7	0
Lane Group Flow (vph)	120	7	0	40	က	0	180	2003	0	22	1358	0
Heavy Vehicles (%)	3%	%0	%0	%0	%0	%0	%0	4%	%0	%0	4%	2%
Turn Type	pm+pt	ΑN		Perm	¥		pm+pt	¥		pm+pt	NA	
Protected Phases	7	4			∞		2	7		_	9	
Permitted Phases	4			∞			5			9		
Actuated Green, G (s)	21.6	21.6		8.8	8.8		92.8	85.9		82.8	29.6	
Effective Green, g (s)	22.6	22.6		8.6	9.8		96.8	86.9		87.8	80.9	
Actuated g/C Ratio	0.17	0.17		0.08	80:0		0.74	29.0		99.0	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		<u>1</u> 2	2692	
v/s Ratio Prot	c0.04	0.00			0.00		90:00	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	69.0		0.36	0.50	
Uniform Delay, d1	47.7	44.6		57.2	25.7		8.9	13.2		11.4	13.5	
Progression Factor	1.00	1.00		1.00	1.00		2.89	0.63		5.69	0.46	
Incremental Delay, d2	6:	0.0		2.4	0.1		0.2	0.1		1.3	9.0	
Delay (s)	49.6	44.6		9.69	55.8		25.8	8.5		31.8	8.9	
Level of Service	□	Ω		ш	ш		ပ	∢		O	∢	
Approach Delay (s)		48.3			27.7			6.6			7.8	
Approach LOS					ш			¥			∢	
Intersection Summary												
HCM 2000 Control Delay			11.7	ĭ	HCM 2000 Level of Service	Level of S	Service		а			1
HCM 2000 Volume to Capacity ratio	ity ratio		19.0									
Actuated Cycle Length (s)			130.0	Sn	Sum of lost time (s)	time (s)			16.6			
Intersection Capacity Utilization	ioi		70.2%	೦	ICU Level of Service	f Service			ပ			
Analysis Period (min)			15									
c Critical Lane Group												

Britannia & RR25
BA Group - NHY
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Britannia & RR25 BA Group - NHY

HCM Unsignalized Intersection Capacity Analysis 2037 Future Total PM 6: Regional Rd 25 & Site Dwy (South)

	4	<i>></i>	•	←	→	•	
Movement	EBE	EBR	NBL	NBT	SBT	SBR	
Lane Configurations		*		444	4413		
Traffic Volume (veh/h)	0	9	0	2185	1255	20	
Future Volume (Veh/h)	0	40	0	2185	1255	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	40	0	2185	1255	20	
Pedestrians							
Lane Width (m)							
Walking Speed (m/s)							
Percent Blockage							
Right tum flare (veh)							
Median type				None	None		
Median storage veh)							
Upstream signal (m)				186	130		
	29.0	0.85	0.85				
•	2008	443	1305				
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	0	0	741				
tC, single (s)	8.9	6.9	4.1				
tC, 2 stage (s)							
tF (s)	3.5	3.3	2.2				
p0 queue free %	9	8	100				
cM capacity (veh/h)	989	927	744				
Direction, Lane #	EB 1	NB 1	NB 2	NB3	SB 1	SB 2	SB 3
Volume Total	40	728	728	728	205	502	301
Volume Left	0	0	0	0	0	0	0
Volume Right	4	0	0	0	0	0	20
SSH	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)	[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	∢						
Approach Delay (s)	9.1	0.0			0.0		
Approach LOS	⋖						
Intersection Summary							
Average Delay			0.1				
Intersection Capacity Utilization			45.6%	0	ICU Level of Service	Service	A
Analysis Period (min)			15				

Britannia & RR25 BA Group - NHY Page 11

Timings 7: Regional Rd 25 & Britannia Rd

2037 Future Total PM 01-12-2024

→	SBT	4413	1050	1050	≨	9		9		20.0	49.7	54.0	41.5%	4.2	3.5	-1.0	6.7	Lag	Yes	C-Max	55.8	0.43	0.59	20.0	0.0	20.0	В	28.3	ပ											
٠	SBL	1	190	190	Prot	-		-		7.0	11.0		9.2% 4	3.0	1.0	-1.0	3.0	Lead			12.6	0.10	0.57	8.92	0.0	8.92	ш											ш		
•	NBT	444	1725	1725	≨	2		2		20.0	49.7	58.0	44.6%	4.2	3.5	-1.0	6.7	Lag	Yes	C-Max	28.8	0.45	1.13	100.3	0.0	100.3	ш	96.1	ш								LOS: E	ICU Level of Service F		
•	NBL	F	275	275	Prot	2		2		7.0	11.0	16.0	12.3%	3.0	1.0	-1.0	3.0	Lead					99.0	62.5	0.0	62.5	ш						Green				tersection	U Level o		ø;
ţ	WBT	444	220	220	Ϋ́	∞		∞		10.0	45.5	49.0	37.7%	4.2	3.3	-1.0	6.5	Lag	Yes	None	33.7	0.26	0.92dr	37.4	0.0	37.4	٥	63.4	ш				T, Start of				=	0		right lane
>	WBL	F	325	325	Prot	က		က		7.0	11.0	14.0	10.8%	3.0	1.0	-1.0	3.0	Lead	Yes	None	11.0	0.08	1.07	139.7	0.0	139.7	ш						and 6:SB							lane as a
†	EBT	4413	320	320	Ϋ́	4		4		10.0	45.5	46.0	35.4%	4.2	3.3	-1.0	6.5	Lag	Yes	None	28.5	0.22	0.40	41.7	0.0	41.7	٥	44.2	Ω				e 2:NBT							1 though
1	EBL	r.	52	22	Prot	7		7		7.0	11.0	11.0	8.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	8.0	90.0	0.27	61.9	0.0	61.9	ш						ed to phas		dinated		4.	on 93.6%		code with
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	ros	Approach Delay	Approach LOS	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 Capacity Utilization 93.6%	Analysis Period (min) 15	dr Defacto Right Lane. Recode with 1 though lane as a right lane.

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2037 Future Total PM 01-12-2024 Queues 7: Regional Rd 25 & Britannia Rd

	•	†	•	ţ	•	•	۶	→	
Lane Group	EBL	EBT	WBL	WBT	퓜	NBT	SBL	SBT	
Lane Group Flow (vph)	55	395	325	922	275	2230	190	1105	
v/c Ratio	0.27	0.40	1.07	0.92dr	99.0	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	20.0	36.7	~301.7	27.8	44.4	
Queue Length 95th (m)	14.6	44.6	#83.6	52.7	52.7	#351.6	412	51.2	
Internal Link Dist (m)		377.9		190.1		165.3		161.9	
Turn Bay Length (m)	0.09		120.0		90.0		0.06		
Base Capacity (vph)	203	1372	302	1483	421	1967	332	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	
Internation Cummons									

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.

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HCM Signalized Intersection Capacity Analysis 7: Regional Rd 25 & Britannia Rd

2037 Future Total PM 01-12-2024

	•	†	>	>	ţ	4	•	•	•	۶	→	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	K	4413		ķ.	4413		K.	4413		F	4413	
Traffic Volume (vph)	22	320	45	325	220	405	275	1725	202	190	1050	22
Future Volume (vph)	22	320	42	325	220	405	275	1725	202	190	1050	22
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	
Ft	1.00	0.98		1.00	0.94		1.00	0.97		1.00	0.99	
Fit 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)	22	320	42	325	220	405	275	1725	202	190	1050	22
RTOR Reduction (vph)	0	12	0	0	112	0	0	30	0	0	က	0
Lane Group Flow (vph)	22	383	0	325	843	0	275	2200	0	190	1102	0
Heavy Vehicles (%)	%9	%0	%0	2%	1%	1%	%0	3%	2%	1%	4%	%0
Turn Type	Prot	Ν		Prot	W		Prot	¥		Prot	NA	
Protected Phases	7	4		က	∞		2	2		_	9	
Permitted Phases												
Actuated Green, G (s)	9.6	28.3		10.0	32.7		14.6	56.9		11.6	53.9	
Effective Green, g (s)	9.9	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	60.0		60.00	c0.20		80.00	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	09.0	
Uniform Delay, d1	29.6	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		8.89	3.2		3.7	75.4		2.0	1.3	
Delay (s)	2.09	42.9		147.5	41.9		58.3	111.4		72.3	19.4	
Level of Service	ш	□		ш	□		ш	ш		ш	ш	
Approach Delay (s)		45.1			68.7			105.6			27.2	
Approach LOS		Ω			ш			ш			O	
Intersection Summary												
HCM 2000 Control Delay			73.8	H	HCM 2000 Level of Service	evel of S	ervice		ш			
HCM 2000 Volume to Capacity ratio	y ratio		1.01									
Actuated Cycle Length (s)			130.0	ง	Sum of lost time (s)	ime (s)			19.2			
Intersection Capacity Utilization	_		93.6%	೨	ICU Level of Service	Service			ш			
Analysis Period (min)			15									
dr Defacto Right Lane. Recode with 1 though lane as a right lane.	ode with	1 though I	ane as a I	right lane	ai.							

Britannia & RR25 BA Group - NHY

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis 2037 Future Total PM 8: Site Dwy (South)/Site Dwy (North) & Etheridge Ave

Movement EBI EBT EBR WBI WBT WBR NBI NBT NBR SBI SBT SBR SBT SBR Late Configurations 44		4	†	<i>></i>	>	ţ	4	•	←	•	۶	→	•
Owingurations 4b	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (verlyt) 10 100 10 85 175 60 15 0 35 25 0 or volume (verlyt) 10 100 10 85 175 60 15 0 35 25 0 or volume (verlyt) 10 100 10 10 10 100 100 100 100 100 10	ane Configurations		4			4			4			4	
outroi (Vet/hi) 10 100 10 85 175 60 15 0 35 25 0 0 outroi (Vet/hi) 10 100 10 100 100 100 100 100 100 100	raffic Volume (veh/h)	10	100	10	82	175	09	15	0	35	25	0	10
Pres Free Stop	uture Volume (Veh/h)	9	9	9	88	175	8	5	0	32	52	0	9
flow rate (rph) 10% 0%	Sign Control		Free			Free			Stop			Stop	
100 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Srade		%0			%			%0			%0	
None None 78 175 60 15 0 35 25 0 0 10 10 10 10 10 10 10 10 10 10 10 10	Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1:00	1:00	1.00	1.00	1.00	1.00	1.00
None None 78 0.97 0.97 0.97 0.97 0.97 0.97 0.97 0.97	Hourly flow rate (vph)	9	100	9	82	175	8	15	0	32	25	0	9
None None 78 0.97 0.97 0.97 0.97 0.97 0.97 0.97 0.97	Pedestrians												
None None 78 0.97 0.97 0.97 0.97 0.97 0.97 0.97 0.97	Lane Width (m)												
None 78 0.97 0.97 0.97 0.97 0.97 0.97 0.97 0.97	Walking Speed (m/s)												
None 78 0.97 0.97 0.97 0.97 0.97 0.97 0.97 0.97	Percent Blockage												
None 78 None 79 None 7	Right turn flare (veh)												
0.97 78 235 110 610 630 697 697 192 110 476 497 105 605 471 4.1 4.1 7.1 6.5 6.2 7.1 6.5 99 94 97 100 96 94 100 134 1433 457 432 956 42 40 120 320 36 10 96 94 40 140 85 16 457 432 956 42 40 10 60 35 10 96 94 40 134 1493 457 432 956 428 447 10 60 35 10 96 94 40 134 18 25 10 33 35 40 10 60 35 10 96 94 40 10 60 35 10 96 94 40 10 127 8 8 8 8 8 10 127 8 8 8 8 8 10 24 104	Median type		None			None							
0.97 78 0.97 0	Median storage veh)												
0.97 0.97 <td< td=""><td>Jostream signal (m)</td><td></td><td></td><td></td><td></td><td>8/</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>	Jostream signal (m)					8/							
235 110 510 530 105 535 505 105 105 530 105 53	X, platoon unblocked	0.97						0.97	0.97		0.97	0.97	0.97
192 110 476 497 105 502 471 4.1 4.1 4.1 7.1 6.5 6.2 7.1 6.2 7.1 6.	C, conflicting volume	235			110			510	230	105	535	202	205
192 110 476 497 105 502 471 4.1 4.1 4.1 7.1 6.5 6.2 7.1 6.5 2.2 2.2 2.2 3.5 4.0 3.3 3.5 4.0 1348 1493 457 452 965 428 447 120 320 50 35 10 10 86 15 25 10 10 86 15 25 10 10 86 15 25 10 10 87 104 12.7 10 0.01 0.06 0.07 0.07 10 0.02 1.4 1.8 1.8 B 10 0.7 2.4 10.4 12.7 10 0.7 2.4 10.4 1	C1, stage 1 conf vol												
192 110 476 497 105 502 471 4.1 4.1 7.1 6.5 6.2 7.1 6.2 7.1 6.	C2, stage 2 conf vol												
4.1 4.1 7.1 6.5 6.2 7.1 6.5 6.1 (1.1 6.5 6.2 7.1 6.5 6.2 7.1 6.5 6.2 7.1 6.5 6.2 7.1 6.5 6.2 7.1 6.5 6.2 7.1 6.5 6.2 7.1 6.5 6.2 7.1 6.5 6.2 7.1 6.5 6.2 7.1 6.5 6.2 7.1 6.5 6.2 7.1 6.5 6.2 7.1 6.5 6.2 7.1 6.5 6.2 7.1 6.5 6.2 7.1 6.5 6.2 7.1 6.5 6.2 7.1 6.5 7.1 6	'Cu, unblocked vol	192			110			476	497	105	205	471	161
2 2 2 2 3.5 4.0 3.3 3.5 4.0 100 100 100 100 100 100 100 100 100 1	C, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
6 99 92 22 3.5 4.0 3.3 3.5 4.0 174 174 174 174 174 174 174 174 174 174	C, 2 stage (s)												
1348	F (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
He He We NB SB He He He NB SB He He NB SB He He NB SB He He He NB SB He He He He He He He H	0 queue free %	66			ヌ			26	100	96	94	100	66
# EB1 WB1 NB1 SB1 120 320 50 35 10 85 15 25 10 85 15 25 10 0.01 0.06 0.07 0.07 5) 0.7 2.4 10.4 12.7 Bacity Utilization 35.1% ICU Level of Service (mini) 120 320 50 35 10 8 15 25 10 0.7 0.7 0.7 0.07 10 0.06 0.07 0.07 10 0.07 0.07 0.07 10 0.07 0.07 0.07 10 0.06 0.07 0.07 10 0.07 0.07 10 0.07 0.07 1	:M capacity (veh/h)	1348			1493			457	432	922	428	447	860
120 320 50 35 10 85 15 25 10 86 15 25 10 87 19 500 soly 0.01 0.06 0.07 0.07 5) 0.7 2.4 10.4 12.7 https://dication.com/d	Direction. Lane #	EB 1	WB 1	NB 1	SB 1								
10 85 15 25 10 80 35 10 1348 1498 719 500 soliy 0.01 0.06 0.07 0.07 55th (m) 0.2 1.4 1.8 1.8 1 A B B B Inmary 3.4 ICU Level of Service (mini) 15	/olume Total	120	320	20	33								
10 60 35 10 1348 1493 719 500 city 0.01 0.07 0.07 0.7 24 104 12.7 5) A A B B B 70 0.7 2.4 10.4 12.7 6) 0.7 2.4 10.4 12.7 8 A S B B 70 0.7 2.4 10.4 12.7 8 A S B B 70 0.7 2.4 10.4 12.7 8 A S B B 70 0.7 2.4 10.4 12.7 8 A S B B 70 0.7 2.4 10.4 12.7 8 A S B B 70 0.7 2.4 10.4 12.7 8 A S B B 70 0.7 2.4 10.4 12.7 8 B B 70 0.7 2.4 10.7 8 B B 70 0.7 2.7 8 B B 70 0.7	/olume Left	9	82	15	52								
1348 1493 719 500 solity 0.01 0.06 0.07 0.07 s) 0.2 1.4 1.8 1.8 f(s) 0.7 2.4 104 12.7 mmary 3.4 ICU Level of Service (mini) 15	/olume Right	9	99	32	9								
acity 0.01 0.06 0.07 0.07 55) 0.7 2.4 10.4 12.7 7 (s) 0.7 2.4 10.4 12.7 8 A B B B 7 (s) 0.7 2.4 10.4 12.7 9 B B B Inmary 3.4 (CU Level of Service (mini) 15	HS:	1348	1493	719	200								
95th (m) 0.2 1.4 1.8 1.8 5) 0.7 2.4 10.4 12.7 7 (s) 0.7 2.4 10.4 12.7 B B mmary 3.4 ICU Level of Service (min) 15.1%	/olume to Capacity	0.01	90.0	0.07	0.07								
s) 0.7 2.4 10.4 12.7 (s) 0.7 2.4 10.4 12.7 B B mmary 3.4 (min) 15	Jueue Length 95th (m)	0.2	1.4	1.8	- 8:								
(s) 0.7 2.4 10.4 12.7 mmary	Control Delay (s)	0.7	2.4	10.4	12.7								
/ (s) 0.7 2.4 10.4 12.7 B B B mmary 3.4 ICU Level of Service (min) 15	ane LOS	∢	∢	В	മ								
B B ***Turnary 3.4 ***Pocity Utilization 35.1% ICU Level of Service (min) 15	opproach Delay (s)	0.7	2.4	10.4	12.7								
3.4 ICU Level of Service 15 15 15 15 15 15 15 15 15 15 15 15 15	Approach LOS			Ω	В								
3.4 Idilization 35.1% ICU Level of Service	ntersection Summary												
Utilization 35.1% ICU Level of Service	Average Delay			3.4									
	ntersection Capacity Utilization	uo		35.1%	೦	U Level o	f Service			∢			
	Analysis Period (min)			15									

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Timings 10: Britannia Rd & Farmstead Dr

2037 Future Total PM 01-12-2024

•	SBR	X	20	20	Perm		∞	8		10.0	15.3	41.0	39.0%	3.3	2.0	-1.0	4.3			None	11.4	0.11	0.10	18.6	0.0	18.6	В									Intersection LOS: A	ICU Level of Service A	
٠	SBL			22	Prot	∞		∞					39.0%	3.3	2.0	-1.0	4.3			_		0.11	0.29	47.2	0.0	47.2	٥	39.6	۵			9	, otali ol G			Ī	⊴	
ţ	WBT	444			¥	9		9			29.4		20		2.2	-1.0	5.4	Lag	Yes	ن			0.25			4.2		4.2	∢			FONT	Id o.wb I					
†	EBT	*	395		Ν	2		2			29.4		6				5.4			ن	88.0				0.0		∢	2.2	∢			Ė	בו ה				vo.	
^	nt EBL	ane Configurations	raffic Volume (vph) 25	nme (vph)	+md	Protected Phases 5	SS				Split (s) 11.0		.		ime (s) 1.0	(9	otal Lost Time (s) 3.0		.ead-Lag Optimize? Yes	_	Act Effct Green (s) 89.3	y/C Ratio			elay 0.0		A	ו Delay	SOTU	ntersection Summary	Sycle Length: 105	Actuated Cycle Length: 105	oliset. 0 (0%), Keletericed to priase z.Ebilt and o.Wbi, Start of Green Vatural Cycle: 60	Control Type: Actuated-Coordinated	Maximum v/c Ratio: 0.29	ntersection Signal Delay: 5.5	ntersection Capacity Utilization 37.2%	Analysis Period (min) 15
	Lane Group	Lane Cor	Traffic Vo	Future Vo	Turn Type	Protected	Permitted	Detector Phase	Switch Phase	Minimum	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time	Total Los	Lead/Lag	Lead-Lag	Recall Mode	Act Effct	Actuated	v/c Ratio	Control Delay	Queue Delay	Total Delay	SOT	Approach Delay	Approach LOS	Intersection	Cycle Ler	Actuated	Natural C	Control	Maximum	Intersectiv	Intersection	Analysis

Splits and Phases: 10: Britannia Rd & Farmstead Dr



Britannia & RR25
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Queues 2037 Future Total PM 10: Britannia Rd & Farmstead Dr 01-12-2024

	1	†	ţ	٠	•	
Lane Group	B	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	1.1	0.0	
Queue Length 95th (m)	2.2	9.5	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	909	277	
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						

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Britannia & RR25 BA Group - NHY

HCM Signalized Intersection Capacity Analysis 10: Britannia Rd & Farmstead Dr

2037 Future Total PM 01-12-2024

Lane Configurations Traffic Volume (vph) Future Volume (vph)	2	EBT	WBT	WBR	SBL	SBR	
Traffic Volume (vph) Future Volume (vph)	æ	***	441		k	×	
Future Volume (vph)	52	395	800	80	22	20	
14 - 1 Plant A Land	52	395	800	80	22	20	
ideal Flow (vpnpl)	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	
표	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)	52	395	800	80	22	20	
RTOR Reduction (vph)	0	0	4	0	0	18	
Lane Group Flow (vph)	52	395	9/8	0	22	2	
Heavy Vehicles (%)	%0	%0	1%	%0	4%	%0	
Turn Type	pm+pt	A	A		Prot	Perm	
Protected Phases	2	2	9		∞		
Permitted Phases	5					8	
Actuated Green, G (s)	84.9	84.9	78.1		8.4	8.4	
Effective Green, g (s)	82.9	82.9	79.1		9.4	9.4	
Actuated g/C Ratio	0.82	0.82	0.75		60.0	60:0	
Clearance Time (s)	4.0	6.4	6.4		5.3	5.3	
Vehide 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	90.0	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	V	∢	∢		□	۵	
Approach Delay (s)		2.0	4.2		45.6		
Approach LOS		∢	⋖		Ω		
Intersection Summary							
HCM 2000 Control Delay			2.8	ĭ	3M 2000	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	ity ratio		0.26				
Actuated Cycle Length (s)			105.0	S	Sum of lost time (s)	time (s)	12.7
Intersection Capacity Utilization	ion		37.2%	೨	ICU Level of Service	f Service	¥
Analysis Period (min)			15				

Timings 2037 Future Total PM 11: Britannia Rd & Rose Way 01-12-2024

11: Britannia Rd & Rose way	cose W	/ay				0.1-12-2024
	•	†	ţ	٠	*	
Lane Group	EBL	EBT	WBT	SBL	SBR	
Lane Configurations	*	**	4413	×	¥.	
Traffic Volume (vph)	8	965	1230	8	.20	
Future Volume (vph)	8	965	1230	ၕ	50	
Turn Type	pm+pt	Ϋ́	Ϋ́	Prot	Perm	
Protected Phases	2	7	9	4		
Permitted Phases	2				4	
Detector Phase	2	2	9	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	20.0	50.0	
Total Split (%)	11.5%	61.5%	20.0%	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	0.9	0.9	2.0	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		0.80	0.08	0.08	
v/c Ratio	0.23		0.36	0.20	0.27	
Control Delay	3.0		5.3	28.7	18.8	
Queue Delay	0.0		0.0	0.0	0.0	
Total Delay	3.0		5.3	28.7	18.8	
ros	∢	∢	∢	ш	В	
Approach Delay		5.6	5.3	33.8		
Approach LOS		∢	∢	ပ		
Intersection Summary						
Cycle Length: 130						
Actuated Cycle Length: 130						
Offset 65 (50%), Referenced to phase 2:EBTL and 6:WBT, Start of Green	to phase	2:EBTL	and 6:WB	r, Start of	Green	
Natural Cycle: 85						
Control Type: Actuated-Coordinated	dinated					
Maximum v/c Ratio: 0.36						
Intersection Signal Delay: 5.1				₹	Intersection LOS: A	
Intersection Capacity Utilization 51.8%	on 51.8%			೦	ICU Level of Service A	
Analysis Period (min) 15						

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Queues 2037 Future Total PM 11: Britannia Rd & Rose Way 01-12-2024

	4	†	ţ	۶	•	
Lane Group	EBE	EBT	WBT	SBL	SBR	
Lane Group Flow (vph)	8	965	1290	30	20	
v/c Ratio	0.23	0.24	0.36	0.20	0.27	
Control Delay	3.0	5.6	5.3	28.7	18.8	
Queue Delay	0.0	0.0	0.0	0.0	0:0	
Total Delay	3.0	5.6	5.3	28.7	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	97.6		
Turn Bay Length (m)	20.0			20.0		
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						
Wolfing for 95th percentile is metered by unstream signal	file or re re	s metere	hymetra	anis med		
III VOIGING IOI OCE POLOCE	and decea	2000	יייטקט לעו	an and		

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HCM Signalized Intersection Capacity Analysis 11: Britannia Rd & Rose Way

2037 Future Total PM 01-12-2024

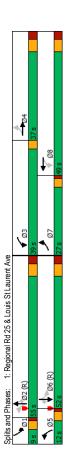
Movement	-	FOL	1	00/41	ā		
	ם	<u> </u>	WBT	WBK	SPL	SBR	
Lane Configurations	* -8	₩	444	8	F 5	*- (;	
Future Volume (vph)	8 8	965	1230	8 8	8 8	20	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	3.0	0.9	0.9		2.0	5.0	
Lane Util. Factor	1.00	*0.80	*0.80		1.00	1.00	
±.	9.1	0.1	0.3		9.	0.85	
Fit Protected	0.95	0.1	9:		0.95	1.00	
Satd. Flow (prot)	1805	4560	4528		1805	1615	
FIt Permitted	0.15	1.00	1.00		0.95	1.00	
Satd. Flow (perm)	588	4560	4528		1805	1615	
Peak-hour factor, PHF	1.00	1.00	1:00	1.00	1.00	1.00	
Adj. Flow (vph)	8	962	1230	09	೫	20	
RTOR Reduction (vph)	0	0	_	0	0	47	
Lane Group Flow (vph)	8	965	1289	0	8	က	
Heavy Vehicles (%)	%0	%0	%0	%0	%0	%0	
Turn Type	pm+pt	A	Ν		Prot	Perm	
Protected Phases	2	2	9		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	20:0	
Clearance Time (s)	4.0	7.0	7.0		0.9	0.9	
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	2.0		58.3	56.5	
Level of Service	V	∢	⋖		ш	ш	
Approach Delay (s)		2.5	2.0		57.2		
Approach LOS		⋖	∢		ш		
Intersection Summary							
HCM 2000 Control Delay			5.7	욷	M 2000 L	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	city ratio		0.35				
Actuated Cycle Length (s)			130.0	Sul	Sum of lost time (s)	time (s)	14.0
Intersection Capacity Utilization	tion		21.8%	ಠ	ICU Level of Service	f Service	⋖
Analysis Period (min)			5				
 c Critical Lane Group 							

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2029 (South Parcel Only) Future Total Traffic Conditions - NO RIRO Accesses

2029 Future Total AM (South Parcel) 01-12-2024 Timings 1: Regional Rd 25 & Louis St Laurent Ave

	4	†	>	ţ	•	+	•	۶	→	•	
Lane Group	EBF	EBT	WBL	WBT	MBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	*	₩.	*	₩.	*	‡	*-	*	‡	*	
Traffic Volume (vph)	270	535	480	260	110	860	320	65	790	92	
Future Volume (vph)	270	535	480	290	110	860	320	92	790	92	
Turn Type	pm+pt	ΑN	pm+pt	¥	pm+pt	Ϋ́	Perm	pm+pt	Ϋ́	Perm	
Protected Phases	7	4	က	∞	2	2		_	9		
Permitted Phases	4		∞		7		7	9		9	
Detector Phase	7	4	က	∞	2	2	2	-	9	9	
Switch Phase											
Minimum Initial (s)	2.0	10.0	10.0	10.0	2.0	20.0	20.0	2.0	20.0	20.0	
Minimum Split (s)	9.0	30.0	14.0	30.0	0.6	32.2	32.2	9.0	32.2	32.2	
Total Split (s)	27.0	37.0	39.0	49.0	12.0	22.0	92.0	9.0	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		
All-Red Time (s)	1.0	3.0	0.0	3.0	1.0	3.0	3.0	1.0	3.0		
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0		
Total Lost Time (s)	3.0	0.9	5.0	0.9	3.0	6.2	6.2	3.0	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	99.0	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	
ros	ပ	ш	ш	□	ပ	□	⋖	O	_	⋖	
Approach Delay		58.3		49.8		32.3			38.6		
Approach LOS		ш		٥		O			٥		
Intersection Summary											
Cycle Length: 140											
Actuated Cycle Length: 140											
Offset 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	phase 2:1	NBTL an	d 6:SBTL	Start of	Green						
Natural Cycle: 90											
Control Type: Actuated-Coordinated	linated										
Maximum v/c Ratio: 0.92											
Intersection Signal Delay: 44.1	_			드	Intersection LOS: D	n LOS: D					
Intersection Capacity Utilization 92.1%	on 92.1%			9	CU Level of Service F	of Servic	H e				
Analysis Period (min) 15											



Synchro 11 Report Page 1 Britannia & RR25 BA Group - NHY

Queues 1: Regional Rd 25

	2029 Future Total AM (South Parcel)
5 & Louis St Laurent Ave	01-12-2024

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Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Group Flow (vph)	270	720	480	655	110	980	320	9	230	92	
v/c Ratio	99.0	0.92	0.92	0.58	0.46	89.0	0.43	0.31	89.0	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)	0.06		32.0		65.0		65.0	80.0		90.0	
Base Capacity (vph)	477	790	248	1136	239	1268	748	202	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	89.0	0.43	0.31	89.0	0.15	

Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

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HCM Signalized Intersection Capacity Analysis 2029 Future Total AM (South Parcel) 1: Regional Rd 25 & Louis St Laurent Ave

Traffic Volume (ryth) 270 285 Traffic Volume (ryth) 270 285 Traffic Volume (ryth) 270 285 Traffic Volume (ryth) Traffic Volume	WBT WE 560 1900	NR NBL	NBT	NBR 320 320 1900 6.2 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.	SBL 65 65 1900 1.00 1.00 1.00	\$BT 790 790	SBR 95
1	568 569 560 1900 1 1.00 1.00 1.00 1.00 3427 1.00 3427 1.00 560 560 560 560 560 560 560 560 560 5	E 14440404	860 860 860 1900 6.2 0.95 1.00 1.00 1.00 1.00 3374 1.00 860 860	320 320 320 1900 6.2 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.	65 1900 3.0 1.00 1.00 1.00	\$ 062	6 93 − 8
(a) 270 535 185 185 185 180 1900 1900 1900 1900 1900 1900 1900	560 1900 10.95 1.00 1.00 1.00 3427 1.00 3427 1.00 3.427 1.00 569 646 646 650 650 650 650 650 650 650 650 650 65	E 1	860 860 1900 6.2 6.2 0.95 1.00 1.00 1.00 3374 1.00 860 860 860	320 320 1900 6.2 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.	3.0 1.00 1.00 1.00 1.00	790	95
(s) 270 535 185 185 180 1900 1900 1900 1900 1900 1900 1900	560 6.0 6.0 6.0 6.0 6.0 6.0 6.0 9 9 9 9 9 9 646 8 8 8 8 45.0 8 45.0 8 45.0 8 45.0 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	£ 777797916	1900 6.2 6.2 6.2 6.3 1.00 1.00 1.00 3374 1.00 3374 1.00 860 860 860	320 1900 1.00 1.00 1.00 1.00 1.00 1.00 1.0	1900 3.0 1.00 1.00 1.00	230	c
1900 1900 1900 1900 1900 1900 1900 1900	1900 1000	£ 44442	1900 6.2 0.95 1.00 1.00 1.00 3374 1.00 3374 1.00 860 860 860	1900 1.00 1.00 1.00 1.00 1.00 1.00 1.00	3.0 1.00 1.00 1.00		32
30 6.0 1.00 0.95 1.00 1.00 1.00 0.96 0.95 1.00 0.95 1.00 0.77 3411 1767 3411 0.77 3411 0.77 3411 0.78 185 ph) 270 696 0 2% 2% 1% 100 1.00 100 0.22 100 0.22 100 0.22 100 0.02 100 0.03 100	6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0	F 1 2 3 1 2	6.2 0.95 1.00 1.00 1.00 3374 1.00 3374 1.00 860 860 860	6.2 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.	3.0	1900	1900
1.00 0.95 1.00 1	0.95 0.98 0.98 0.98 0.98 0.99 0.99 0.99 0.99	[a]	1.00 1.00 1.00 1.00 3374 1.00 3374 1.00 860 860 860 860	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	0.1.00.1.00.1	6.2	6.2
1.00 1.00 1.00 1.00 1.00 0.96 1.00 0.96 1.00 0.96 1.00 0.96 1.00 1.00 1.00 1.00 1.00 1.00 1.00 24 0 1.00 270 696 0 2.00 28 185 1.00 270 696 0 2.00 28 185 1.00 270 696 0 2.00 28 185 1.00 28 178 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	100 0.98 1.00 3427 1.00 3427 1.00 560 560 9 9 646 8 8 8 45.0 0.33	,	1.00 1.00 1.00 1.00 3374 1.00 860 860 860 860	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	0.1.0	0.95	1.00
1.00 0.06 0.96 1.00 1.767 3411 0.39 1.00 777 3411 0.39 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	100 100 3427 100 100 100 560 560 560 560 57 8 8 8 8 450 033	,	1.00 1.00 1.00 3374 1.00 1.00 860 860 860 860	1.00 1.568 1.00 1.00 1.00 320 160	1.00	1.00	1.00
1.00 0.96 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	0.98 1.00 3427 1.00 3427 1.00 560 646 646 8 8 8 8 8 8 0.33 0.33 0.33	,	1.00 3374 1.00 860 860 860 NA	0.85 1.00 1.00 1.00 1.00 320 160 160	1.00	1.00	1.00
(s) 100 177 3411 177 3411 177 3411 189 1.00 190 24 0 190 270 190 270	1.00 3427 1.00 1.00 1.00 646 646 8 8 8 8 8 650 0.33	g.	1.00 3374 1.00 1.00 860 860 860 860	1.00 1.568 1.00 1.00 320 160		1.00	0.85
(a) 1767 3411 (b) 270 4411 (c) 3411 (c) 447 3411 (c) 535 185 (c) 535 185 (c) 535 185 (c) 535 185 (c) 696 0 (c) 696 0 (d) 47.9 30.1 (e) 47.9 30.1 (f) 47.9 30.1 (g) 47.9 30.1 (h) 69.3 (h) 69.3	3427 1.00 3427 1.00 1.00 560 646 646 8 8 8 8 45.0 46.0	.	3374 1.00 3374 1.00 860 860 7%	1.00 1.00 1.00 320 160 160	0.95	1.00	1.00
(s) 100 (100 (100 (100 (100 (100 (100 (100	1.00 3427 1.00 560 646 646 NA NA 8 8 45.0 46.0	<u> </u>	1.00 3374 1.00 860 860 860 NA	1.00 1.568 1.00 320 160 160	1719	3374	1583
HF 1.00 1.00 1.00 ph) 2.70 6.96 0 24 0 ph) 2.70 6.96 0 0 24 0 ph.+pt NA 7 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	3427 1.00 560 9 646 8 8 8 45.0 46.0 0.33	<u>a</u>	1.00 860 860 860 7%	1568 1.00 320 160 160	0.19	1.00	1.00
HF 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	1.00 560 9 646 646 NA 8 8 8 45.0 46.0 0.33	<u>a</u>	1.00 860 860 860 NA	1.00 320 160 160	352	3374	1583
ph) 270 535 185 ph) 270 696 0 5 80 0 2% 2% 1% 7 4 7 7 4 7 8) 49.9 31.1 8) 30.022 4.0 7.0 8) 3.0 9.06 0.20 0.16 0.20 1.00 1.00 1.00	560 9 646 646 NA NA 45.0 46.0 9.33	9	860 860 87 87	320 160 160	1.00	1.00	1.00
ph) 0 24 0 ph) 270 696 0 696 0 696 0 696 0 696 0 696 0 696 0 696 0 696 0 696 0 696 0 696 0 696 0 696 0 693 0	9 646 2% 7 NA 8 8 45.0 46.0		098 %Z	160	92	790	92
ph) 270 696 0 5 5 2% 1% 1% 2 5 2% 1% 1 5 2 5 2% 1 5 2 5 2 5 2 5 2 5 2 5 2 5 2 5 2 5 2 5	646 2% 7 NA 8 8 45.0 46.0 0.33		860 7%	160	0	0	62
5 2% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1%	2% 7 NA 8 8 45.0 46.0		%Z AN		65	790	33
(s) 47.9 30.1 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1%	2% NA 8 8 45.0 46.0 0.33		%2 NA				
(e) 47.9 30.1 4 4 4 4 4 4 4 4 4 30.1 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6		pm+pt 5 2	Ν	3%	2%	%2	2%
(s) 47.9 30.1 s) 47.9 31.1 (s) 47.9 31.1 0.36 0.22 4.0 7.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 0.09 0.20 0.16 0.92 34.2 53.2 1.00 1.00 4.8 16.1 6.33 6.33 7.64 6.48 16.1		2 2		Perm	pm+pt	¥	Perm
(s) 47.9 30.1 (s) 49.9 31.1 49.9 31.1 0.36 0.22 4.0 7.0 3.0 3.0 0.09 0.20 0.16 0.22 0.42 53.2 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	45.0 46.0 0.33	2	5		~	9	
(s) 47.9 30.1 s) 49.9 31.1 0.36 0.22 4.0 7.0 1.0 0.09 0.20 0.15 0.09 0.15 0.05 0.16 0.32 34.2 53.2 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	45.0 46.0 0.33			2	9		9
s) 499 311 0.36 0.22 4.0 7.0 5) 3.0 3.0 0.09 0.20 0.15 0.08 0.92 34.2 83.2 1.00 1.00 4.8 16.1 5.0 1.00 1.00 1.00	46.0	28.8	20.8	20.8	51.2	47.0	47.0
0.36 0.22 4.0 7.0 5) 3.0 3.0 3.0 3.0 0.09 0.22 0.09 0.22 0.08 0.22 0.10 1.00 1.00 1.00 4.8 16.1 2.4 16.1 2.5 2.2 3.0 3.0 0.6 6.20 0.7 6.20 0.7 6.20 0.8 6.30 0.8 6.30 0.9 6.30 0.	0.33	0.09	51.8	51.8	53.2	48.0	48.0
s) 4.0 7.0 s) 3.0 3.0 0.09 c.0.20 cd 0.15 0.22 cd 0.15 0.22 cd 1.00 1.00 cd 4.8 16.1 cd 39.0 69.3 cd		0.43	0.37	0.37	0.38	0.34	0.34
s) 3.0 3.0 3.86 757 0.09 c0.20 cl 0.15 0.15 0.44 0.32 4.8 16.1 3.40 1.00 1.00 1.0	7.0	4.0	7.2	7.2	4.0	7.2	7.2
3.86 767 0.00 0.00 0.00 0.00 0.00 0.00 0.00	3.0	3.0	3.0	3.0	3.0	3.0	3.0
0.09 c0.20 c.20 c.20 c.20 c.20 c.20 c.20 c.2	1126	229	1248	280	184	1156	542
0.15 0.68 0.92 34.2 53.2 1.00 1.00 4.8 16.1 39.0 69.3	0.19	c0.03	c0.25		0.01	0.23	
0.68 0.92 34.2 53.2 1.00 1.00 42 4.8 16.1 39.0 69.3		0.17		0.10	0.12		0.02
34.2 53.2 1.00 1.00 d2 4.8 16.1 39.0 69.3	0.57	0.48	69.0	0.28	0.35	0.68	90.0
1.00 1.00 d2 4.8 16.1 39.0 69.3	38.9	27.0	37.3	30.9	29.5	39.5	30.9
ntal Delay, d2 4.8 16.1 39.0 69.3	1.00	1:00	1.00	1.00	1.00	1.00	1.00
39.0 69.3	2.0	1.6	3.1	1.2	1.2	3.3	0.2
п С	39.6	28.6	40.4	32.1	30.7	45.8	31.1
ב	۵	ပ	۵	ပ	ပ	۵	O
Approach Delay (s) 61.0	50.5		37.4			40.8	
Approach LOS E	٥		_				
ntersection Summary							
HCM 2000 Control Delay 46.9 HC	HCM 2000 Level of Service	of Service		۵			
pacity ratio 0.82							
140.0	Sum of lost time (s)	S)		18.2			
zation 92.1%	ICU Level of Service	.e.		ш			
15							

Britannia & RR25 BA Group - NHY

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Timings 2: Regional Rd 25 & Whitlock Ave

	1	†	>	Ļ	1	•	←	•	۶	→	•	
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	*	\$	×	*	*	r	‡	*	*	#	*	
Traffic Volume (vph)	145	20	20	35	92	45	1075	9	20	1605	100	
Future Volume (vph)	145	20	20	35	92	45	1075	10	20	1605	100	
Turn Type	Perm	ΑN	Perm	Ϋ́	Perm	pm+pt	≨	Perm	pm+pt	Ϋ́	Perm	
Protected Phases		4		∞		2	2		_	9		
Permitted Phases	4		∞		∞	7		2	9		9	
Detector Phase	4	4	∞	∞	∞	2	2	2	-	9	9	
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		81.0	81.0	
Total Split (%)	29.5%	29.5%	29.5%	29.5%	29.5%	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		4.2	4.2	
All-Red Time (s)	3.2	3.2	3.2	3.2	3.2	1.0	2.3	2.3		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	
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	_	Lag	Lag	
Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	_	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	9.70	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	0.0	
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	
ros	ш	ပ	_	_	Ф	⋖	⋖	⋖	∢	ш	⋖	
Approach Delay		49.2		29.5			7.8			14.3		
Approach LOS		٥		ပ			∢			В		
Intersection Summary												
Oxcle Lenath: 130												
Actuated Cycle Length: 130												
Offset: 64 (49%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	I to phase	2:NBTL a	Ind 6:SB	IL, Start o	of Green							
Natural Cycle: 95												
Control Type: Actuated-Coordinated	dinated											
Maximum v/c Ratio: 0.69												
Intersection Signal Delay: 15.9	<u>ە</u>			Ξ	ntersection LOS: B	LOS: B						
Intersection Capacity Utilization 77.9%	on 77.9%			೦	CU Level of Service D	f Service	۵					
Allaysis I circa (IIIII)												

Splits and Phases: 2: Regional Rd 25 & Whitlock Ave



Queues 2: Regional Rd 25 & Whitlock Ave 01-12-2024

	4	†	>	ţ	4	•	←	•	٠	→	•	
ane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
ane Group Flow (vph)	145	145	20	32	92	45	1075	10	20	1605	100	
	69.0	0.49	0.33	0.13	0.31	0.20	0.46	0.01	0.12	0.68	0.09	
Sontrol Delay	68.1	30.2	52.5	45.3	10.9	5.1	8.0	0.1	4.9	15.2	4.1	
ueue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
otal Delay	68.1	30.2	52.5	45.3	10.9	5.1	8.0	0.1	4.9	15.2	4.1	
Jueue Length 50th (m)	37.5	18.2	12.1	8.2	0.0	6.0	104.2	0.0	5.6	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	
ntemal Link Dist (m)		67.9		68.1			6.969			481.0		
urn Bay Length (m)	35.0		65.0		65.0	100.0		25.0	100.0		25.0	
iase 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	
pillback 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	60.0	
tereortion Summany												
Jil Guillilai y												

m Volume for 95th percentile queue is metered by upstream signal.

Britannia & RR25 BA Group - NHY

HCM Signalized Intersection Capacity Analysis 2: Regional Rd 25 & Whitlock Ave

2029 Future Total AM (South Parcel)

0.08 0.08 1.00 7.0 7% Perm 87.9 88.9 0.68 6.5 3.0 87.9 88.9 0.68 6.5 3.0 2351 2% NA 00.47 0.68 12.2 1.00 1.6 13.8 B B 13.2 1605 50 50 3.0 3.0 1.00 1.00 1.00 0.95 1.00 0.23 430 1.00 1.00 0.23 430 1.00 93.6 95.6 0.74 4.0 3.0 3.0 3.0 0.01 0.09 0.13 5.4 1.00 1.00 %0 25% 87.9 88.9 0.68 6.5 3.0 0.01 6.5 1.00 0.0 6.5 6.5 14.0 D 1075 87.9 88.9 0.68 6.5 3.0 2329 0.32 0.46 9.5 0.70 0.6 7.3 A %9 ¥ 93.6 95.6 0.74 4.0 3.0 208 20.01 0.15 0.74 0.5 A 45 45 3.0 3.0 1.00 1.00 1.00 0.95 0.95 0.95 1.00 45 45 8% HCM 2000 Level of Service Sum of lost time (s) ICU Level of Service 19.4 20.4 0.16 6.5 3.0 228 0.07 46.7 1.00 0.1 D 0.13 47.1 1.00 0.2 47.3 D D 19.4 20.4 0.16 6.5 3.0 276 0.02 % ₹ 0.05 0.33 1.00 1.3 50.0 19.4 20.4 0.16 6.5 3.0 151 16.7 0.66 130.0 77.9% 95 95 1900 95 0 0 2 % 19.4 20.4 0.16 6.5 3.0 237 237 0.06 0.36 49.0 1.00 0.9 49.9 D 19.4 20.4 0.16 6.5 3.0 0.69 51.8 1.00 9.6 61.4 509 HCM 2000 Control Delay HCM 2000 Volume to Capacity ratio ntersection Capacity Utilization Actuated Cycle Length (s) Traffic Volume (vph)
Traffic Volume (vph)
Meal Four Volume (vph)
Meal Fow (vpha)
Total Lost time (s)
Lane Vull Factor
Fig. ped/bikes
Fig. ped Permitted Phases
Actuated Green, G (s)
Effective Green, g (s)
Actuated g/C Ratio
Clearance Time (s)
Vehicle Extension (s)
Lane Gpp Cap (vph)
ws Ratio Prot
ws Ratio Prot ncremental Delay, d2 Heavy Vehides (%) Turn Type Protected Phases Approach Delay (s) Progression Factor Jniform Delay, d1 Delay (s) Level of Service Approach LOS v/c Ratio

Britannia & RR25 BA Group - NHY

Timings 2029 Future Total AM (South Parcel) 5: Regional Rd 25 & Etheridge Ave/Collector Road 01-12-2024

S. 1.091011 1.4 20 0	, ,	3	5		5	I	l	l	
	•	†	•	ţ	•	+	۶	→	
Lane Group	EBL	EBT	WBL	WBT	BE	NBT	SBL	SBT	
Lane Configurations	*	£	*	2	F	₩	*	₽	
Traffic Volume (vph)	155	0	92	0	22	920	8	1645	
Future Volume (vph)	155	0	92	0	22	920	೫	1645	
Turn Type	pm+pt	Ϋ́	Perm	Ϋ́	pm+pt	Α	Perm	ΑN	
Protected Phases	7	4		∞	2	2		9	
Permitted Phases	4		∞		2		9		
Detector Phase	7	4	∞	∞	2	2	9	9	
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 (%)	9.5%	37.7%	28.5%	28.5%	8.5%	62.3%	53.8%	23.8%	
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	5.9	5.9	5.9	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	[:	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	[:	19.8	2.3	3.6	11.2	
TOS	_	ω	ш	∢	ш	∢	∢	Ф	
Approach Delay		34.5		36.4		3.2		1.1	
Approach LOS		ပ		Ω		∢		В	
Intersection Summary									
Cycle Length: 130									
Actuated Cycle Length: 130									
Offset 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	o phase 2:	NBTL and	6:SBTL	Start of (Green				
Natural Cycle: 120									
Control Type: Actuated-Coordinated	rdinated								
Maximum v/c Ratio: 0.75									
Intersection Signal Delay: 11.7	-7.			≟	Intersection LOS: B	LOS: B			
Intersection Capacity Utilization 77.7%	ion 77.7%			೦	U Level	CU Level of Service D	۵		
Analysis Period (min) 15									

Britannia & RR25 Synchro 11 Report BA Group - NHY Page 7

Queues 5: Regional Rd 25 & Etheridge Ave/Collector Road 01-12-2024

re Group Feb. EBL EBT WBL NBL NBL SBT re Group Flow (vph) 155 135 65 55 940 30 1720 Ratio 0.58 0.35 0.49 0.17 0.27 0.07 0.07 rirol Delay 53.9 1.2.1 66.2 1.1 1.98 2.3 36 1.12 euc Delay 53.9 1.2.1 66.2 1.1 1.98 2.3 36 1.12 euc Delay 50.0 0.0	EBL EBT WBL WBT NBL NBL NBT SBL 155 135 65 55 59 940 30 0.58 0.35 0.49 0.17 0.27 0.27 0.08 53.9 12.1 66.2 1.1 198 2.3 3.6 50.0 0.0 0.0 0.0 0.0 0.0 0.0 55.3 12.1 66.2 1.1 198 2.3 3.6 53.9 12.1 66.2 1.1 198 2.3 3.6 54. 20.5 31.6 0.0 0 0 0 0 56.4 20.5 31.6 0.0 m.7.5 15.2 m.1 40.0 40.0 m.7.5 15.2 m.1 70.0 265 623 311 523 20.1 20.1 30.0 0 0 0 0 0 0 0 0		١	Ť	-	,		_	•	+	
155 135 65 55 56 940 30	155 135 65 55 56 940 30	ane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	
0.58 0.35 0.49 0.17 0.27 0.37 0.08 0.39 1.2.1 66.2 1.1 198 2.3 3.6 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	0.58 0.35 0.49 0.17 0.27 0.37 0.08 53.9 12.1 66.2 11.1 198 2.3 3.6 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	ane Group Flow (vph)	155	135	9	22	22	940	30	1720	
53.9 12.1 66.2 1.1 19.8 2.3 3.6 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	53.9 12.1 66.2 1.1 19.8 2.3 3.6 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	c Ratio	0.58	0.35	0.49	0.17	0.27	0.37	0.08	0.75	
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	ontrol Delay	53.9	15.1	66.2	[-	19.8	2.3	3.6	11.2	
53.9 12.1 66.2 1.1 19.8 2.3 3.6 36.5 3.6 16.9 0.0 2.8 9.0 0.9 36.5 40.0 2.8 9.0 0.9 3.6 40.0 2.8 9.0 0.9 3.6 40.0 2.8 9.0 0.9 3.6 40.0 2.8 9.0 0.9 3.7 40.0 2.8 9.0 0.9 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	53.9 12.1 66.2 11 19.8 2.3 3.6 3.6 16.9 0.0 2.8 9.0 0.9 3.6 55.4 20.5 31.6 0.0 m/z 15.2 m1.1 40.0 2.8 9.0 0.9 3.0 40.0 2.8 9.0 0.0 9.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	lueue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
36.5 3.6 16.9 0.0 2.8 9.0 0.9 55.4 20.5 31.6 0.0 m7.5 15.2 m1.1 53.9 40.0 2.8 9.0 0.9 63.1 40.0 m7.5 15.2 m1.1 265 623 311 523 201 2513 387 0.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	36.5 3.6 16.9 0.0 2.8 9.0 0.9 55.4 20.5 31.6 0.0 m7.5 15.2 m1.1 53.9 40.0 2.8 9.0 0.9 63.1 40.0 m7.5 15.2 m1.1 265 62.3 31.1 52.3 20.1 2513 387 0.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	otal Delay	53.9	12.1	66.2	[-	19.8	2.3	3.6	11.2	
55.4 20.5 31.6 0.0 m7.5 15.2 m1.1 5.8 m2.1 5.9 m2.1 70.0 m2.8 62.3 311 52.3 201 2513 387 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	55.4 20.5 31.6 0.0 m7.5 15.2 m1.1 5.8 m2.1 5.9 m7.5 292.1 m1.1 5.8 63.1 5.9 m7.0 70.0 m7.0 m7.0 m7.0 m1.1 5.8 62.3 311 5.2 201 2513 387 0.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ueue Length 50th (m)	36.5	3.6	16.9	0.0	5.8	9.0	6.0	186.2	
63.9 63.1 292.1 70.0 40.0 40.0 40.0 40.0 70.0 70.0 70.0	63.9 63.1 292.1 70.0 40.0 62.3 41.0 52.3 70.0 70.0 70.0 0 0 0 0 0 0 0 0 0 0 0 0	ueue Length 95th (m)	55.4	20.5	31.6	0.0	m7.5	15.2	m1.1	248.8	
40.0 40.0 70.0 70.0 265 623 311 523 201 2513 387 20 0	40.0 40.0 70.0 70.0 265 623 311 523 201 2513 387 20 0	ternal Link Dist (m)		53.9		63.1		292.1		6.969	
265 623 311 523 201 2513 387 2 0.58 0.22 0.21 0.11 0.27 0.37 0.08	265 623 311 523 201 2513 387 2 0.58 0.22 0.21 0.11 0.27 0.37 0.08	urn Bay Length (m)	40.0		40.0		0.07		70.0		
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ase Capacity (vph)	202	623	311	523	201	2513	387	2287	
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.58 0.22 0.21 0.11 0.27 0.37 0.08	Starvation Cap Reductn	0	0	0	0	0	0	0	0	
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	pillback Cap Reductn	0	0	0	0	0	0	0	0	
0.58 0.22 0.21 0.11 0.27 0.37 0.08 any	0.58 0.22 0.21 0.11 0.27 0.37 0.08 any	torage Cap Reductn	0	0	0	0	0	0	0	0	
tersection Summary	tersection Summary	educed v/c Ratio	0.58	0.22	0.21	0.11	0.27	0.37	0.08	0.75	
		tersection Summary									

Britannia & RR25 BA Group - NHY

2029 Future Total AM (South Parcel) 01-12-2024 HCM Signalized Intersection Capacity Analysis 5: Regional Rd 25 & Etheridge Ave/Collector Road

- ∺	↑ ₩	₩ WBL	↑ WBT	₩	√ Be	← NBT	√ Man	≯ ₩	→ SBT	→ SBR
1		-	2	É	-	4	Í	-	₹	
J	135	92	0	22	22	920	20	30	1645	75
0	135	99	0	22	5 55	920	20	8 3	1645	75
1900	1900	1900 5.3	1900	1900	3.0	1900	1900	1900	1900	1900
1.00		1.00	100		00.1	0.95		1.00	0.95	
0.85		1.00	0.85		1.00	1.00		1.00	0.99	
1.00		0.95	1.00		0.95	1.00		0.95	1.00	
1615		1805	1615		1752	3399		1805	3414	
1.00		0.67	1.00		0.07	1.00		0.30	1.00	
010	8	100	010	0	100	100	100	27.0	100	1 00
9 0	135	3 59	9 0	3 55	22	026	20	30	1645	75
26	0	0	20	0	0	-	0	0	2	0
æ	0	99	2	0	22	939	0	30	1718	0
%0	%0	%0	%0	%0	3%	%9	%0	%0	2%	%9
NA		Perm	A		pm+pt	ΑN		Perm	¥	
4			∞		2	2			9	
		œ			5			9		
23.5		10.7	10.7		93.9	93.9		¥.1	84.1 1.	
24.5		11.7	11.7		94.9	94.9		85.1	85.1	
0.19		0.09	0.09		0.73	0.73		0.65	0.65	
6.2		6.2	6.2		4.0	6.4		6.4	6.4	
3.0		3.0	3.0		3.0	3.0		3.0	3.0	
304		114	145		180	2481		378	2234	
0.02			0.00		0.02	c0.28			c0.50	
		0.05			0.21			0.05		
0.13		0.57	0.03		0.31	0.38		0.08	0.77	
43.9		26.7	54.0		14.0	6.5		8.2	15.6	
1.00		1:00	1.00		3.35	0.28		0.31	0.56	
0.2		6.7	0.1		0.8	0.4		0.3	5.0	
44.0		63.5	7.7		47.6	2.2		2.9	10.8	
_		ш	□		۵	⋖		⋖	Ф	
47.8			59.2			4.7			10.7	
Ω			ш			⋖			മ	
	14.0	Ĭ	HCM 2000 Level of Service	Level of S	ervice		В			
	0.73									
	130.0	ଊ	Sum of lost time (s)	time (s)			16.6			
	%1.77	O	ICU Level of Service	f Service			□			
	15									

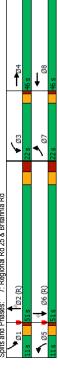
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Timings 7: Regional Rd 25 & Britannia Rd

2029 Future Total AM (South Parcel)	01-12-2024
202	

•	SBR	¥.	50	20	Perm		9	9		20.0	49.7	51.0	39.2%	4.2	3.5	-1.0	6.7	Lag	Yes	C-Max	61.9	0.48	0.03	0.1	0:0	0.1	∢												
→	SBT	‡	1510	1510	¥	9		9		20.0	49.7	51.0	39.5%	4.2	3.5	-1.0	6.7	Lag			61.9	0.48	0.92	52.0	0.0	52.0	۵	50.9	۵										
۶	SBL	F	315	315	Prot	~		~		7.0	11.0	11.0	8.5%	3.0	1.0	-1.0	3.0	Lead	Yes		23.5		0.50	48.9	0.0	48.9	۵												
•	NBR	*	210	210	Perm		7	5		20.0	49.7	51.0	39.2%	4.2	3.5	-1.0	6.7	Lag	Yes	C-Max	45.0	0.35	0.31	5.2	0.0	5.2	⋖											ш	
←	NBT	ŧ	810	810	≨	7		7		20.0	49.7						6.7	Lag	Yes	C-Max	45.0	0.35	0.68	40.0	0.0	40.0	_	34.1	ပ								LOS: D	CO Level of Service E	
•	NBL	K.	20	20	Prot	2		2		7.0	11.0		8.5%	3.0	1.0		3.0				8.7		0.22	9.69	0.0	9.6	ш						Green				Intersection LOS: D	n revelo	
ļ	WBT	4413	325	325	Ϋ́	∞		∞		10.0	45.5	46.0	35.4%	4.2	3.3	-1.0	6.5	Lag	Yes	None	35.5	0.27	0.36	29.5	0.0	29.5	ပ	46.8	Ω				, Start of				₫ 3	2	
>	WBL	K.	410	410	Prot	က		ო		7.0	11.0	22.0	16.9%	3.0	1.0	-1.0	3.0	Lead	Yes	None	18.6	0.14	0.83	65.8	0.0	65.8	ш						nd 6:SBT						
†	EBT	443	330	330	Ä	4		4		10.0	45.5	46.0	35.4%	4.2	3.3	-1.0	6.5	Lag	Yes	None	23.8	0.18	0.76	46.5	0.0	46.5	_	47.6	Ω				2:NBT a						
•	EBL	K.	09	09	Prot	7		7		7.0	11.0	22.0	16.9%	3.0	1.0	-1.0	3.0	Lead	Yes	None	0.6	0.07	0.26	59.9	0.0	59.9	ш						to phase		nated		/02	1 90.5%	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	SOT	Approach Delay	Approach LOS	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 Capacity Utilization 90.5%	Aldiyas reliou (IIIII) 13

Splits and Phases: 7: Regional Rd 25 & Britannia Rd



Synchro 11 Report Page 10 Britannia & RR25 BA Group - NHY

2029 Future Total AM (South Parcel) 01-12-2024 Queues 7: Regional Rd 25 & Britannia Rd

	•	†	>	ţ	•	•	•	۶	→	•	
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Group Flow (vph)	9	099	410	450	20	810	210	315	1510	20	
v/c Ratio	0.26	92.0	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	9.69	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	9.69	40.0	5.2	48.9	52.0	0.1	
Queue Length 50th (m)	8.0	28.7	26.0	34.4	6.7	9.96	0.0	45.5	182.6	0.0	
Queue Length 95th (m)	15.3	71.6	#19.8	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)	0.09		120.0		90.0		90.0	90.0		0.06	
Base Capacity (vph)	482	1371	203	1363	225	1188	674	632	1637	099	
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	

HCM Signalized Intersection Capacity Analysis 7: Regional Rd 25 & Britannia Rd

2029 Future Total AM (South Parcel)

Movement EBL EBT EBR WBL Lane Configurations Name 440 74 Traffic Volume (vph) 60 390 270 410 Traffic Volume (vph) 60 390 270 410 Lane Usil. Factor 30 65 3.0 170 410 Lane Usil. Factor 0.97 0.98 0.97 1.00 100 FIT Lane Usil. Factor 0.95 1.00 0.94 1.00 1.00 FIT Permitted 0.95 1.00 <th>* \ /-</th> <th>√ 1</th> <th>•</th> <th>←</th> <th>•</th> <th>۶</th> <th>→</th> <th>•</th>	* \ /-	√ 1	•	←	•	۶	→	•
h		3T WBR	NBL	NBT	NBR	SBL	SBT	SBR
(vph) 60 390 270 100 1900 1900 1900 1900 1900 1900 190	*		F	\$	*-	F	‡	*
(c) 1900 1900 1900 1900 1900 1900 1900 190		25 125	20	810	210	315	1510	8
(c) 1900 1900 1900 1900 1900 1900 1900 190	410		20	810	210	315	1510	8
3.00 6.5 3.00 6.5 1.00 0.94 1.00 0.94 1.00 0.94 3.303 4.238 3.303 4.238 3.303 4.238 3.00 1.00 1.00 3.00 1.00 3.00 1.00 3.00 1.00 3.00 2.0 3.00 0.10 3.0	1900	00 1900	1900	1900	1900	1900	1900	1900
(c) 10.07 (0.94 (0.94 (0.94 (0.94 (0.94 (0.94 (0.94 (0.94 (0.99 (0.94 (0		.5	3.0	6.7	6.7	3.0	6.7	6.7
(c)		20	0.97	0.95	1.00	0.97	0.95	1.00
(c) 7.6 (2.2) (d) 7.7 (2.2) (e) 7.6 (2.2) (e) 7.6 (2.2) (f) 7.6 (2.2) (g) 7.7 (2.2) (g) 7.8 (2.2) (g) 7.9 (2.3) (g) 7.9 (2.3) (g) 7.9 (2.3) (g) 7.9 (2.3) (g) 8.7 (49.4) (g) 8.7 (49.4) (g) 8.7 (49.4) (g) 9.2 (2.3) (g) 9.2 (2.3) (g) 9.2 (3.3) (g)		96	1.00	1.00	0.85	1.00	1.00	0.85
100 100		1.00	0.95	1.00	1.00	0.95	1.00	1.00
(vph) 60 390 270 (vph) 60 390 270 (vph) 60 390 270 (vph) 60 563 0 (vph) 6% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1%		4315	3367	3438	1553	3502	3438	1272
3303 4238 (28) (vph) 0 97 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1.00 1.00	00	0.95	1.00	1.00	0.95	1.00	1.00
PHF 1.00 1.00 1.00 (vph) 60 563 0 770 (vph) 60 563 0 6	3445		3367	3438	1553	3502	3438	1272
(vph) 60 390 270 (vph) 60 67 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1%	1.00	1.00 1.00	1.00	1.00	1.00	1.00	1.00	1.00
(c) (vph) 60 97 0 (vph) 60 563 0 0 (vph) 60 563 0 0 0 (vph) 6% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1%	410	-	20	810	210	315	1510	8
(vph) 60 563 0 Port NA Prot NA	0	55 0	0	0	139	0	0	=
(s) 6% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1%	410		20	810	7.1	315	1510	6
(s) 6.6 23.5 (s) 6.6 24.5 (s) 7.6 24.5 (s) 7.6 24.5 (s) 1.0 0.06 0.19 (s) 1.0 0.02 co.13 co.03 (s) 2.0 0.03 (s) 2.0 (s	%2	1% 2%	4%	2%	4%	%0	2%	27%
(s) 66 23.5 (s) 7.6 24.5 (s) 7.6 24.5 (s) 7.6 24.5 (s) 3.0 7.5 (s) 3.0 7.9 (s) 193 798 (s) 100.2 c.0.13 c.0.13 (c) 2.9 2.9 (d) 2.9 2.9 (d) 2.9 2.9 (d) 3.9 (d) 48.9	Prot N	NA	Prot	¥	Perm	Prot	NA	Perm
(s) 66 23.5 (s) 7.6 24.5 (s) 7.6 24.5 (s) 0.06 0.19 3.0 3.0 (s) 3.0 3.0 (h) 193 786 0.31 0.71 83.7 49.4 r 1.00 1.00 (d2 0.39 2.9 (d2 0.9 2.9 (d2 0.9 2.9 (d2 0.9 2.9 (d3 0.8) 2.2 (d4 0.8) 2.2 (d5 0.9 2.9 (d6 0.8) 2.9 (d7 0.8) 2.9 (d8 0.8) 2.9 (d8 0.8) 2.9 (d8 0.8) 2.9 (d8 0.8) 2.9 (d8 0.8) 2.9 (d9 0.8) 2.9 (d1 0.8) 2.9 (d1 0.8) 2.9 (d2 0.8) 2.9 (d3 0.8) 2.9 (d4 0.8) 2.9 (d5 0.8) 2.9 (d6 0.8) 2.9 (d7 0.8) 2.9 (d8 0.	ო	8	2	5		_	9	
A, G(s) 6.6 23.5 at a constant of the constant					2			9
1, g (s) 7, 6 24.5 and 0,006 0.19 and 0,006 0.19 and 1,00 1.00 and 1,00 1.00 and 1,00 1.00 and 2,00 2,00 and 3,00 1.00 and 4,00 2,00 and 6,00 1.00 and 6,00 1.00 and 7,00 1.00 and 6,00 1.00 and 7,00 1.00 and 8,00 1.00 and 1,00 1.00		34.5	6.3	43.2	43.2	22.5	59.4	59.4
atio 0.06 0.19 a (s) 4.0 7.5 con (s) 3.0 3.0 con (s) 193 798 d.1 58.7 49.4 ctor 1.00 1.00 lay, d.2 0.9 2.9 ctor 1.00 1.00 lay, d.2 59.6 52.2 a E D y (s) E 22.8 round to Capacity ratio 0.085 Length (s) 130.0 pacity Utilization 90.5%		.5	7.3	44.2	44.2	23.5	60.4	60.4
(s) 4.0 75 ford (s) 3.0 3.0 ford (s) 3.0 3.0 ford (vph) 193 798 0.02 c0.13 0.31 0.71 d1 58.7 49.4 ctor 1.00 1.00 lay, d2 0.9 2.9 s E D y (s) 52.2 s E D y (s) 52.2 s To d.0.0 2.0 s To d.0.0 s To d	J	0.27	90.0	0.34	0.34	0.18	0.46	0.46
ron (s) 3.0 3.0 (vph) 193 798 0.02 c0.13 c d1 63.7 49.4 cor 1.00 1.00 lay, d2 0.9 2.9 s E D y (s) 52.2 s E D y (s) 52.2 mmany mmany tric Delay 48.9 met o Capacity ratio 0.85 Length (s) 130.0 pacity Utilization 0.5%		7.5	4.0	7.7	7.7	4.0	7.7	7.7
(vph) 193 798 (vph) 0.02 co.13	3.0 3	3.0	3.0	3.0	3.0	3.0	3.0	3.0
0.02 c0.13 c c c c c c c c c c c c c c c c c c c		1178	189	1168	528	633	1597	290
d1 58.7 49.4 ctor 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	c0.12 0.0	60.0	0.01	0.24		60.00	00.44	
d1 58.7 49.4 ctor 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0					0.05			0.0
d1 58.7 49.4 cdr 1.00 1.00 lay, d2 0.9 2.9 B E D B y (s) 52.8 y (s) 62.2 mmary 48.9 mmery 48.9 me to Capacity ratio 0.85 Length (s) 130.0 pacity Utilization 90.5%		0.34	0.26	69.0	0.14	0.50	0.95	0.02
ctor 1.00 1.00 ilay, d2 0.9 2.9 5.06 52.2 F D D with the companity ratio 0.85 Length (s) 130.0 pacity Utilization 90.5% from the companity ratio 0.85		80	28.8	37.0	29.7	47.9	33.2	18.8
lay, d2 0.9 2.9 s 59.6 52.2 y (s) E D minary min to Delay 48.9 Length (s) 130.0 peoity Utilization 90.5% (finit) 15	_	0.91	1.00	1.00	1.00	0.95	1.38	1.00
s		0.2	0.8	3.4	0.5	0.4	9.9	0:0
y (s) E 2.8 y (s) 52.8 D D D D D D D D D D D D D D D D D D D		34.7	59.5	40.5	30.2	45.8	22.7	18.8
y (s) 52.8 mmany trol Delay me to Capacity ratio 1 Length (s) 1 (min)		ပ	ш	Δ	ပ	٥	ш	Ф
D mmary hrol Delay Lime to Capacity ratio Length (s) pacity Utilization (finin)	47.7	.7		39.3			53.6	
sacity ratio 1 zation 9		Ω		Ω			۵	
sacity ratio 1 zation 90								
acity ratio		HCM 2000 Level of Service	ervice		Ω			
zation	0.85							
Utilization		Sum of lost time (s)			19.2			
Analysis Period (min)		ICU Level of Service			ш			
	15							
c Critical Lane Group								

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Britannia & RR25 BA Group - NHY

[#] Sich percental volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

The control of the percentile queue is metered by upstream signal.

2029 Future Total AM (South Parcel) 01-12-2024 HCM Unsignalized Intersection Capacity Analysis 8: Site Dwy (South) & Etheridge Ave

	†	~	\	ţ	•	•	
Movement	EBT	EB	WBL	WBT	NBL	NBR	
Lane Configurations	¢ŝ			÷	>		
Traffic Volume (veh/h)	165	2	42	82	20	125	
Future Volume (Veh/h)	165	2	42	82	70	125	
Sign Control	Free			Free	Stop		
Grade	%0			%0	%0		
Peak Hour Factor	9.	1.00	1.00	9.	9.	9.	
Hourly flow rate (vph)	165	2	45	92	70	125	
Pedestrians							
Lane Width (m)							
Walking Speed (m/s)							
Percent Blockage							
Right tum flare (veh)							
Median type	None			None			
Median storage veh)							
Upstream signal (m)				8/			
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 %			26		97	88	
cM capacity (veh/h)			1420		637	882	
Direction, Lane #	EB 1	WB1	NB 1				
Volume Total	170	130	145				
Volume Left	0	45	20				
Volume Right	2	0	125				
cSH	1700	1420	837				
Volume to Capacity	0.10	0.03	0.17				
Queue Length 95th (m)	0.0	0.8	2.0				
Control Delay (s)	0.0	2.8	10.2				
Lane LOS		⋖	ω				
Approach Delay (s)	0.0	2.8	10.2				
Approach LOS			Ф				
Intersection Summary							
Average Delay			4.1				
Intersection Capacity Utilization	_		34.8%	ਠੁ	ICU Level of Service	Service	¥
Analysis Period (min)			15				

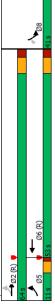
Synchro 11 Report Page 13 Britannia & RR25 BA Group - NHY

Timings 10: Brit

2029 Future Total AM (South Parcel)	01-12-2024	
sbı	iritannia Rd & Farmstead Dr	

•	SBR	*	25	25	Perm		æ	80		10.0	15.3	41.0	39.0%	3.3	2.0	-1.0	4.3			None	12.8	0.12	0.12	16.1	0.0	16.1	В						een			Intersection LOS: A	ICU Level of Service A	
٠	SBL	<u>, </u>	90	06	Prot	œ		œ		10.0	15.3			3.3	2.0	-1.0	4.3			None	12.8	0.12	0.43	49.0	0.0	49.0	٥	41.9	Ω				Start of Gr			Inte	0	
ţ	WBT	4413	370	370	ΑN	9		9		20.0	29.4	53.0	20.5%	4.2	2.2	-1.0	5.4	Lag	Yes	C-Max	82.3	0.78	0.12	4.3	0.0	4.3	∢	4.3	∢				16:WBT, 8					
†	EBT	**	630	630	Ϋ́	2		2		20.0	29.4	64.0	61.0%	4.2	2.2	-1.0	5.4			C-Max	86.7	0.83	0.17	2.7	0.0	2.7	⋖	2.7	⋖				EBTL and					
^	EBL	*	20	20	bm+pt	2	2	5		7.0	11.0	11.0	10.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	88.0	0.84	0.03	2.4	0.0	2.4	∢					105	ed to phase 2:	potonipood	Coolumated	v: 7.2	ilization 33.1%	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	SOT	Approach Delay	Approach LOS	Intersection Summary	Cycle Length: 105	Actuated Cycle Length: 105	Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green	Control Type: Actional	Maximum v/n Datio: 0.43	Intersection Signal Delay: 7.2	Intersection Capacity Utilization 33.1%	Analysis Period (min) 15

Splits and Phases: 10: Britannia Rd & Farmstead Dr



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Queues 2029 Future Total AM (South Parcel) 01-12-2024 01-12-2024

	4	†	ţ	٠	*	
Lane Group	EBF	EBT	WBT	SBL	SBR	
Lane Group Flow (vph)	8	630	395	6	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)	9.0	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	292	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						

Britannia & RR25
BA Group - NHY
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HCM Signalized Intersection Capacity Analysis 10: Britannia Rd & Farmstead Dr

2029 Future Total AM (South Parcel) 01-12-2024

																																						A		12.7	∢		
•	SBR	R _	25	25	1900	4.3	1.00	0.85	1.00	1538	1.00	1538	1.00	25	22	3	2%	Perm		80	8.6	10.8	0.10	5.3	3.0	158		0.00	0.02	42.3	1.00	0.0	42.4	O				HCM 2000 Level of Service		time (s)	f Service		
٠	SBL	r	90	90	1900	4.3	1.00	1.00	0.95	1703	0.95	1703	1.00	90	0	90	%9	Prot	∞		8.6	10.8	0.10	5.3	3.0	175	c0.05		0.51	44.6	1.00	2.5	47.2	□	46.1			:M 2000 L		Sum of lost time (s)	ICU Level of Service		
1	WBR		22	22	1900								1.00	25	0	0	%0																					I 모		Su	⊴		
ţ	WBT	441	370	370	1900	5.4	*0.80	0.99	1.00	4202	1.00	4202	1.00	370	က	392	8%	NA	9		7.97	77.7	0.74	6.4	3.0	3109	60.0		0.13	3.9	1.00	0.1	4.0	⋖	4.0	⋖		7.3	0.22	105.0	33.1%	15	
†	EBT	+++	630	630	1900	5.4	*0.80	1.00	1.00	4427	1.00	4427	1.00	630	0	630	3%	NA	2		83.5	84.5	0.80	6.4	3.0	3562	c0.14		0.18	2.3	1.00	0.1	2.4	⋖	2.4	⋖							
1	EBF	*	20	20	1900	3.0	1:00	1:00	0.95	1656	0.46	811	1.00	20	0	20	%6	pm+pt	2	2	83.5	84.5	0.80	4.0	3.0	683	0.00	0.02	0.03	2.1	1:00	0.0	2.1	∢					scity ratio		ation		
	Movement	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Ideal Flow (vphpl)	Total Lost time (s)	Lane Util. Factor	Ft	Fit Protected	Satd. Flow (prot)	Flt Permitted	Satd. Flow (perm)	Peak-hour factor, PHF	Adj. Flow (vph)	RTOR Reduction (vph)	Lane Group Flow (vph)	Heavy Vehicles (%)	Turn Type	Protected Phases	Permitted Phases	Actuated Green, G (s)	Effective Green, g (s)	Actuated g/C Ratio	Clearance Time (s)	Vehide Extension (s)	Lane Grp Cap (vph)	v/s Ratio Prot	v/s Ratio Perm	v/c Ratio	Uniform Delay, d1	Progression Factor	Incremental Delay, d2	Delay (s)	Level of Service	Approach Delay (s)	Approach LOS	Intersection Summary	HCM 2000 Control Delay	HCM 2000 Volume to Capacity ratio	Actuated Cycle Length (s)	Intersection Capacity Utilization	Analysis Period (min)	c Critical Lane Group

Britannia & RR25 BA Group - NHY

Timings 2029 Future Total AM (South Parcel) 11: Britannia Rd & Rose Way 01-12-2024

																																					A	Δ ας
•	SBR	ĸ.	75	75	Perm		4	4		10.0	43.0	50.0	38.5%	3.0	3.0	-1.0	5.0			None	11.8	0.09	0.35	16.3	0.0	16.3	Ф						ireen				Intersection LOS: A	A going of Congres A
٠	SBL	*	22	55	Prot	4		4		10.0	43.0	20.0	38.5%	3.0	3.0	-1.0	2.0			None	11.8	0.09	0.34	61.1	0.0	61.1	ш	35.2	۵				Start of G				Ξ	2
ţ	WBT	441	785	785	ΑN	9		9		20.0	29.0	65.0	20.0%	4.0	3.0	-1.0	0.9	Гag	Yes	C-Max	100.6	0.77	0.23	4.6	0.0	4.6	∢	4.6	∢				16:WBT,					
†	EBT	444	890	830	ΑN	5		7		20.0	29.0	80.0	61.5%	4.0	3.0	-1.0	0.9			C-Max	107.2	0.82	0.24	7.1	0.0	7.1	∢	7.0	∢				EBTL and					
4	田田	*	25	25	pm+pt	5	2	2		7.0	11.0	15.0	11.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	110.2	0.85	0.02	4.6	0.0	4.6	4					130	ed to phase 2:		Soordinated		7. 8.0	/00 00 mailari
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	SOT	Approach Delay	Approach LOS	Intersection Summary	Cvcle Lenath: 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	Interportion Consolity I Hilliantion 28 3%

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Queues 11: Britannia Rd & Rose Way 01-12-2024

Lane Group EBL EBI WBT SBL SBR Lane Group Flow (vph) 25 890 795 55 75 Ver Ratio 0.05 0.24 0.23 0.34 0.35 Control Delay 4.6 7.1 4.6 61.1 16.3 Queue Length Soft (m) 2.3 4.4 2.4 14.3 0.0 Queue Length Soft (m) 2.3 4.4 2.2 2.7 15.3 Internal Link Dist (m) 2.3 4.1 3.2 2.7 15.3 Internal Link Dist (m) 50.0 18.2 2.7 15.0 Base Capacity (ph) 584 15.2 76.0 0 Slonge Cap Reductn 0 0 0 0 Spinage Cap Reductn		1	†	ţ	٠	•	
25 890 795 55 60 0.05 0.24 0.23 0.34 0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Lane Group	EBE	EBT	WBT	SBL	SBR	
0.05 0.24 0.23 0.34 4.6 7.1 4.6 61.1 0.0 0.0 0.0 4.6 7.1 4.6 61.1 2.3 44.0 24.0 14.3 m4.7 51.4 32.6 27.8 50.0 50.0 50.0 0 0 0 0 0 0 0 0.04 0.24 0.23 0.09	Lane Group Flow (vph)	22	068	795	55	75	
4.6 7.1 4.6 61.1 0.0 0.0 0.0 0.0 1.2 3 44.0 24.0 14.3 10.4.7 51.4 32.6 27.8 50.0 55.0 50.0 54.0 18.2 50.0 56.0 0 0 0 0.0 0 0.0 0 0 0.0 0 0 0.0 0 0 0.0 0 0 0.0 0 0 0.0 0 0 0.0 0 0.0 0 0 0.0	v/c Ratio	0.05	0.24	0.23	0.34	0.35	
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Control Delay	4.6	7.1	4.6	61.1	16.3	
4.6 7.1 4.6 61.1 2.3 44.0 24.0 14.3 m.4.7 32.6 27.0 14.3 m.4.7 182.6 27.8 50.0 50.0 62.4 0 0 0 0 0 0.04 0.24 0.23 0.09	Queue Delay	0.0	0.0	0.0	0.0	0.0	
2.3 44.0 24.0 14.3 m4.7 51.4 25.6 27.8 50.0 50.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Total Delay	4.6	7.1	4.6	61.1	16.3	
182.4 32.6 27.8 18.0 18.2 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0	Queue Length 50th (m)	2.3	44.0	24.0	14.3	0.0	
182.4 155.7 76.0 50.0 584 3761 3523 624 0 0 0 0 0 0 0 0	Queue Length 95th (m)	m4.7	51.4	32.6	27.8	15.3	
50.0 504 3761 3523 624 0 0 0 0 0 0 0 0 0 0 0 0 0.04 0.24 0.23 0.09	Internal Link Dist (m)		182.4	155.7	0.97		
584 3761 3523 624 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 material material partitional signal signal	Turn Bay Length (m)	20.0			20.0		
0.04 0.24 0.23 0.09 0.7	Base Capacity (vph)	284	3761	3523	624	809	
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Starvation Cap Reductn	0	0	0	0	0	
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Spillback Cap Reductn	0	0	0	0	0	
0.04 0.23 0.09 arry n percentile ruleire is material hyumstream signal	Storage Cap Reductn	0	0	0	0	0	
Intersection Summary m. Volume for Offit percentile queue is materaan simal	Reduced v/c Ratio	0:04	0.24	0.23	60:0	0.12	
m. Vyliima for 05th percantila citiai ais materad by instraam cinnal	Intersection Summary						
	m Volume for 95th percen	si a la la alit	metered	hy inctra	am sinns		

HCM Signalized Intersection Capacity Analysis 2029 Future Total AM (South Parcel) 11: Britannia Rd & Rose Way

Movement EBI WBR SBI SBR Movement EBI WBR SBI SBR		^	†	ţ	4	٠	`	
25 890 785 10 55 75 75 75 1900 1900 1900 1900 1900 1900 1900 190	Movement	EB	EBT	WBT	WBR	SBL	SBR	
25 890 786 10 55 75 19 19 19 19 19 19 19 19 19 19 19 19 19	Lane Configurations	*	444	443		r	¥.	
25 890 788 10 55 75 1900 1900 1900 1900 1900 3 0 6 0 6 0 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.085 1.00 1.00 1.00 0.095 1.00 1.00 1.00 0.085 1.00 1.00 1.00 1.00 25 890 785 10 55 75 2 890 785 10 55 75 2 890 785 10 55 75 2 890 785 10 55 75 2 890 785 10 55 75 2 890 785 10 68 2 890 785 10 88 2 890 785 10 88 2 890 785 10 88 2 10 1.00 1.00 1.00 1.00 2 890 785 10 88 2 10 1.00 1.00 1.00 2 890 785 10 88 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Traffic Volume (vph)	52	890	785	9	22	75	
1900 1900 1900 1900 1900 1900 1900 1900	Future Volume (vph)	22	830	785	10	22	75	
3.0 6.0 6.0 5.0 5.0 1.00 1.08 0.080 1.00 1.00 1.00 1.08 0.080 1.00 0.00 1.00 1.00 1.00 0.05 0.36 1.00 1.00 0.95 0.29 1.00 1.00 0.95 1.00 0.29 1.00 1.00 0.95 1.00 0.23 4560 4551 1805 1615 0.20 1.00 1.00 0.95 1.00 0.25 890 785 10 55 75 0 0 0 0 0 0 6 68 0.25 890 785 0 55 75 0 0 0 0 0 0 0 68 0.26 890 785 10 55 75 0 0 0 0 0 0 0 0 68 0.27 890 785 0 55 75 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
1.00 1.08 1.00 1.00 1.00 1.00 1.00 1.00	Total Lost time (s)	3.0	0.9	0.9		2.0	2.0	
100 100 0.85 1805 4560 4551 1805 1615 0.29 100 100 0.95 1.00 25 890 785 10 55 75 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0	Lane Util. Factor	1:00	*0.80	*0.80		1.00	1.00	
0.85 1,00 0.95 1,00 0.95 1,00 0.29 1,00 0.29 1,00 0.95 1,00 0.29 1,00 0.25 1	Ĕ	1.00	1.00	1.00		9.	0.85	
1805 4560 4551 1805 1615 0.29 1.00 0.100 0.056 1.00 553 4560 4551 1805 1615 1.00 1.00 1.00 1.00 1.00 25 890 785 10 55 75 0 0 0 0 68 25 890 785 0 68 26 890 785 0 68 27 80 785 0 68 28 90 785 0 68 29 108 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.	Fit Protected	0.95	1.00	1.00		0.95	1.00	
0.22 1,00 1,00 0,95 1,00 0,25 4,500 4,551 1,00 1,00 1,00 1,00 1,00 1,00 1,00	Satd. Flow (prot)	1805	4560	4551		1805	1615	
553 4560 4551 1805 1615 1.00 1.00 1.00 1.00 25 890 785 10 55 75 0% 0% 0% 0% 0% 0% 0% pm+pt NA NA Prot Perm 2 2 8 80 785 0 5 68 1062 1062 98 0 108 108 1072 1072 99.0 118 118 1072 1072 99.0 118 118 1072 1072 99.0 118 118 1072 1072 99.0 118 118 1072 1072 99.0 118 118 1072 1072 99.0 118 108 1072 1072 99.0 118 108 1072 1072 99.0 118 108 1072 1072 99.0 118 108 1072 1072 99.0 118 108 1072 1072 99.0 118 108 1072 1072 99.0 108 1072 1072 99.0 108 1085 0.85 0.76 0.09 1096 0.29 0.39 0.09 1097 0.00 100 0.10 0.2 0.30 100 0.11 0.2 12 0.1	Fit Permitted	0.29	1.00	1.00		0.95	1.00	
1.00 1.00 1.00 1.00 1.00 1.00 25 890 785 10 55 75 75 75 75 75 75 75 75 75 75 75 75	Satd. Flow (perm)	553	4560	4551		1805	1615	
25 890 785 10 55 75 0 0 0 0 0 68 25 897 795 0 55 7 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 106.2 98.0 10.8 10.8 107.2 107.2 99.0 11.8 11.8 107.2 107.2 99.0 11.8 11.8 0.82 0.76 0.09 4.0 7.0 7.0 6.0 6.0 10.0 0.20 0.47 0.09 0.00 0.20 0.47 0.09 0.00 0.22 0.45 0.45 0.04 0.24 0.23 0.34 0.05 0.24 0.23 0.34 0.05 0.24 0.23 0.34 0.06 0.24 0.23 0.34 0.07 0.00 0.09 4.6 55.2 54.1 0.0 0.1 0.2 1.2 0.1 0.6 6.9 4.6 55.2 A A A A A A A A A A A A B E B D A A A A B S B S B S B S B S B S B S B S B S B S	Peak-hour factor, PHF	1.00	1.00	1.00	1:00	1.00	1.00	
25 890 795 0 68 0% 0% 0% 0% 0% 0% 0% 10% 0% 0% 0% 0% 0% 2 2 4 4 4 1062 1062 980 118 118 1072 1072 990 118 118 1072 1072 990 118 118 1072 1072 990 118 118 1072 1072 990 118 118 1072 1072 990 118 118 1072 1072 990 118 118 1072 1072 990 109 20 0.82 0.76 0.09 20 0.82 0.76 0.09 20 0.00 0.00 20 0.00 0.00 20 0.00 0.0	Adj. Flow (vph)	52	830	785	9	22	75	
25 890 795 0 55 7 0% 0% 0% 0% 0% 0% 0% 0% 0% 1 NA Prot Perm 5 2 6 4 6 108 1072 980 118 148 1082 0.82 0.76 0.09 0.09 30 3760 346 5.00 0.04 0.05 0.17 0.00 0.04 0.25 0.24 0.23 0.00 0.04 0.05 0.24 0.25 0.40 0.05 0.24 0.23 0.04 0.06 0.24 0.23 0.05 0.17 0.04 0.05 0.24 0.25 0.40 0.06 0.24 0.25 0.40 0.07 0.09 0.08 0.46 552 0.00 0.1 0.2 1.2 0.1 0.2 6 2.73 1.00 1.00 0.10 0.2 5 0.3 0.00 0.10 0.2 1.2 0.1 0.2 0.25 0.40 0.25 0.40 0.25 0.80 0.10 0.25 0.80 0.25 0	RTOR Reduction (vph)	0	0	0	0	0	89	
0% 0% 0% 0% pm+pt NA NA Prot Perm 2 6 4 4 4 105 106.2 98.0 10.8 10.8 10.8 107.2 107.2 107.2 99.0 11.8 11.8 0.02 0.82 0.76 0.09 0.09 0.09 4.0 7.0 7.0 6.0 6.0 6.0 3.0 3.0 3.0 3.0 3.0 3.0 5.0 3.0 3.0 3.0 3.0 3.0 5.0 3.0 3.0 3.0 3.0 3.0 5.0 3.0 3.0 3.0 3.0 3.0 3.0 5.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 5.0 4.0 3.2 4.0 5.4 5.4 4.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3	Lane Group Flow (vph)	52	830	795	0	22	7	
pm+pt NA NA Prot Perm 5 2 6 4 4 106.2 106.2 98.0 10.8 10.8 107.2 107.2 99.0 11.8 11.8 10.2 0.80 0.76 0.09 0.82 0.82 0.76 0.09 0.00 0.20 0.17 0.00 0.00 0.20 0.17 0.00 0.00 0.20 0.17 0.00 0.00 0.20 0.17 0.00 0.00 0.20 0.17 0.00 0.00 0.20 0.17 0.00 0.00 0.20 0.17 0.00 0.00 0.20 0.17 0.00 0.00 0.1 0.2 56.7 54.1 5 6 9 46 56.7 54.1 6 9 46 56.7 54.1 7 A A A B E A A A B E B D A A A B E B D A A A B S B C D Level of Service 38.3% CU Level of Service	Heavy Vehicles (%)	%0	%0	%0	%0	%0	%0	
5 2 6 4 106.2 106.2 98.0 10.8 10.8 107.2 107.2 99.0 11.8 11.8 0.82 0.76 0.09 0.09 3.0 3.0 3.0 3.0 3.0 5.06 3760 3465 163 146 0.00 0.02 0.17 0.03 0.04 0.05 0.24 0.23 0.34 0.05 2.1 2.5 4.5 55.4 54.0 0.00 0.1 0.2 1.2 0.1 5.6 2.73 1.00 1.00 1.00 0.00 0.1 0.2 1.2 0.1 5.6 6.9 4.6 56.7 54.1 A A A A E E A A A A A B A B E B D COMMISSION Service 9.3 HCM 2000 Level of Service 130.0 Sum of lost time (s) zation 38.3% CUL Level of Service	Turn Type	pm+pt	AN	ΑN		Prot	Perm	
2 106.2 98.0 10.8 10.8 10.8 10.1 106.2 106.2 98.0 10.8 10.8 10.8 10.8 10.8 10.8 10.8 1	Protected Phases	2	2	9		4		
106.2 106.2 98.0 10.8 10.8 10.8 10.7.2 107.2 99.0 11.8 11.8 11.8 10.2 99.0 11.8 11.8 11.8 11.8 10.2 99.0 11.8 11.8 11.8 11.8 11.8 11.8 11.8 11	Permitted Phases	2					4	
107.2 107.2 99.0 11.8 11.8 10.8 0.82 0.82 0.76 0.09 0.09 0.09 0.09 0.09 0.09 0.09 0.0	Actuated Green, G (s)	106.2	106.2	98.0		10.8	10.8	
0.82 0.82 0.76 0.09 0.09 3.0 3.0 3.0 3.0 5.06 3760 3465 163 146 0.00 0.020 0.17 0.03 0.04 0.05 2.1 2.5 4.5 55.4 54.0 0.0 0.1 0.2 1.2 0.1 0.0 0.1 0.2 1.2 0.1 0.0 0.1 0.2 1.2 0.1 0.0 0.1 0.2 1.2 0.1 0.0 0.1 0.2 1.2 0.1 0.0 0.1 0.2 1.2 0.1 0.0 0.1 0.2 1.2 0.1 0.0 0.1 0.2 1.2 0.1 0.0 0.1 0.2 1.2 0.1 0.25 Service ascity ratio 0.25 Cation 1.30.0 Sum of lost time (s) cation 38.3% CUI Level of Service	Effective Green, g (s)	107.2	107.2	99.0		11.8	11.8	
40 70 70 60 60 60 60 60 60 30 30 30 30 30 30 30 30 30 30 30 30 60 60 60 60 60 60 60 60 60 60 60 60 60	Actuated g/C Ratio	0.82	0.82	92.0		0.0	60:0	
30 30 30 30 30 30 6 506 500 500 500 500 500 500 500 500	Clearance Time (s)	4.0	7.0	7.0		0.9	0.9	
506 3760 3465 163 146 0.00 c0.20 0.17 c0.03 0.05 0.24 0.23 0.34 0.05 2.1 2.5 4.5 55.4 54.0 2.6 2.73 1.00 1.00 0.0 0.2 1.2 0.1 5.6 6.9 4.6 56.7 54.1 A A A E D 6.9 4.6 56.2 A A A E D 8.9 4.6 55.2 A A A A E D 8.9 4.6 55.2 A A A A E D 8.9 4.6 55.2 A A A A E D 8.9 4.6 55.2 A A A A E D 8.9 4.6 55.2 A A A A B E D 8.9 4.6 55.2 A A A A B E D 8.9 4.6 55.2 A A A A B E D 8.9 4.6 55.2 A A A A B E D 8.9 4.6 55.2 A A A A B E D 8.9 4.6 55.2 A A A A B E D 8.9 4.6 55.2 A A A A B E D 9.9 4.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5	Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	
0.00 c0.20 0.17 c0.03 0.00 0.04 0.04 0.23 0.34 0.00 0.05 0.24 0.23 0.34 0.00 0.05 0.24 0.25 4.5 55.4 54.0 1.00 1.00 0.0 0.1 0.2 1.2 0.1 0.2 0.2 0.1 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2	Lane Grp Cap (vph)	206	3760	3465		163	146	
0.04 0.02 0.00 0.00 0.00 0.00 0.00 0.00	v/s Ratio Prot	0.00	c0.20	0.17		c0.03		
0.05 0.24 0.23 0.34 0.05 2.1 2.5 4.5 5.54 54.0 2.65 2.73 1.00 1.00 1.00 0.0 0.1 0.2 1.2 0.1 5.6 6.9 4.6 56.7 54.1 A A A E D 6.9 4.6 55.2 A A A E 6.9 4.6 55.2 A A A E C D C D C D C D C D C D C D C D C D C D	v/s Ratio Perm	0.0					0.00	
2.1 2.5 4.5 55.4 54.0 2.66 2.73 1.00 1.00 0.0 0.0 1.02 1.2 0.1 5.6 6.9 4.6 56.7 54.1 A A A E D 6.9 4.6 56.2 A A A E 7.0 56.2 A A A E 8.3 HCM 2000 Level of Service 130.0 Sum of lost time (s) 2.25 Service 130.1 Sum of lost time (s) 2.25 Service 145.1 Sum of lost time (s) 2.25 Service 15.27 Sum of lost time (s) 2.28 Service 16.29 Service 17.20 Sum of lost time (s) 2.29 Service 18.30 Service	v/c Ratio	0.02	0.24	0.23		0.34	0.05	
2.65 2.73 1.00 1.00 1.00 0.0 0.0 0.1 0.2 1.2 0.1 0.1 0.2 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1	Uniform Delay, d1	2.1	2.5	4.5		55.4	54.0	
0.0 0.1 0.2 1.2 0.1 5.6 6.9 4.6 56.7 54.1 A A A E D 6.9 4.6 55.2 A A A E 5.5 E A A B E 0.25 A A C 13.0 Sum of lost time (s) 2 zation 38.3% CU Level of Service	Progression Factor	2.65	2.73	1.00		1.00	1.00	
5.6 6.9 4.6 56.7 54.1 A A A B E D 6.9 4.6 55.2 A A A B E C 5.2 0.25 A A A B E D 6.9 4.6 55.2 A A B E D 6.9 4.6 55.2 A A B E D 7.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1	Incremental Delay, d2	0:0	0.1	0.2		1.2	0.1	
A A A E D 6.9 4.6 55.2 A A A E 8.3 HCM 2000 Level of Service 9.3 HCM 2000 Level of Service 130.0 Sum of lost time (s) ration 38.3% ICU Level of Service	Delay (s)	5.6	6.9	4.6		26.7	54.1	
6.9 4.6 55.2 A A E 9.3 HCM 2000 Level of Service acity ratio 0.25 Sum of lost time (s) ration 38.3% CU Level of Service	Level of Service	V	V	∢		ш	۵	
A A E 9.3 HCM 2000 Level of Service 9.3 HCM 2000 Level of Service 13.0 Sum of lost time (s) 2ation 38.3% ICU Level of Service 15	Approach Delay (s)		6.9	4.6		55.2		
9.3 HCM 2000 Level of Service 0.25 Sum of lost time (s) 2ation 38.3% ICU Level of Service 15	Approach LOS		¥	⋖		ш		
9.3 HCM 2000 Level of Service 0.26 Sum of lost time (s) zation 38.3% ICU Level of Service 15	Intersection Summary							
Ascity ratio 0.25 130.0 Sum of lost time (s) zation 38.3% ICU Level of Service 15 15	HCM 2000 Control Delay			9.3	Ĭ	SM 2000	evel of Service	
130.0 Sum of lost time (s) zation 38.3% IOU Level of Service 15	HCM 2000 Volume to Capa	city ratio		0.25				
ilization 38.3% 15	Actuated Cycle Length (s)			130.0	જ	ım of lost	time (s)	14.0
Analysis Period (min) 15 c. Ortical Lane Group	Intersection Capacity Utiliza	tion		38.3%	೦	U Level o	Service	A
c Critical Lane Group	Analysis Period (min)			15				
	c Critical Lane Group							

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BA Group - NHY
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Timings 2029 Future Total PM (South Parcel)

1: Regional Rd 25 & Louis St Laurent Ave 01-12-2024

ane Configurations	205 375 345 545 210 875 435 95 845 19 875 435 95 845 19 875 345 345 545 210 875 435 95 845 19 875 435 95 845 19 875 435 95 845 19 875 435 95 845 19 875 435 95 845 19 875 435 95 845 19 875 435 95 845 19 875 435 95 845 19 875 435 95 845 19 875 435 95 845 19 875 435 95 845 19 875 435 95 845 19 875 435 95 845 19 875 95 19 875 95 19 875 95 19 875 95 10 87	206 375 345 545 210 875 435 95 845 19 875 435 95 845 19 875 345 545 210 875 435 95 845 19 875 435 95 845 19 875 435 95 845 19 875 435 95 845 19 875 435 95 845 19 875 435 95 845 19 875 435 95 845 19 875 435 95 845 19 875 435 95 845 19 875 435 95 845 19 875 435 95 845 19 875 435 95 845 19 875 435 95 845 19 875 435 95 845 19 875 845 95 845 19 875 845 95 845 95 845 95 845 95 845 95 845 95 845 95 845 95 845 95 845 95 845 95 845 95 845 95 845 95 845 95 945 95 945 945 945 945 945 945 945	ons (ph) (ph) ph ph s			345 345 345 3 3	4+	k	1	١	ŀ	1	×	
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220 300 320 400 220 680 680 100 560 157% 214% 229% 286% 157% 486% 486% 17% 4800% 470 400% 420 10 30 30 10 30 10 30 30 10 30 10 30 30 10 30	15.7% 21.4% 22.9% 28.6% 15.7% 48.6% 48.6% 71.0% 56.0 16.0 56.0 16.7% 48.6% 21.0% 22.0 68.0 16.0 56.0 16.0% 21.0% 22.0 68.0 16.0 16.0% 21.0	30.0 32.0 40.0 22.0 680 680 100 560 41.4 23.0 4.2 3.0				14.0	30.0	9.0	32.2	32.2	9.0	32.2	32.2	
157% 214% 229% 286% 157% 486% 486% 71% 400% 49 30 4.0 30 4.0 30 4.2 4.2 30 4.2 30 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.	15.7% 21.4% 22.9% 28.6% 15.7% 48.6% 41.6% 71% 40.0% 4 3.0 4.0 3.0 4.0 3.0 4.2 4.2 3.0 4.2 3.0 4.0 3.0 4.0 3.0 4.2 4.2 3.0 4.2 3.0 6.0 2.0 6.0 3.0 6.2 6.2 3.0 6.2 1.6d 1.8g 1.ead	21.4% 22.9% 28.6% 15.7% 48.6% 71% 40.0% 4 4 3.0 4.0 3.0 4.2 4.2 3.0 4.2 4.2 3.0 4.2 4.2 3.0 4.2 4.2 3.0 4.2 4.2 3.0 4.2 4.2 4.2 4.2 4.2 4.2 4.2 4.2 4.2 4.2				32.0	40.0	22.0	68.0	68.0	10.0	26.0	26.0	
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10 -1.0 -1.0 -1.0 -1.0 -1.0 -1.0 -1.0 -1	10 -10 -10 -10 -10 -10 -10 -10 -10 -10 -	-10 -1.0 -1.0 -1.0 -1.0 -1.0 -1.0 -1.0 -		-1.0		0.0	3.0	1:0	3.0	3.0	1.0	3.0	3.0	
3.0 6.0 2.0 6.0 3.0 6.2 6.2 3.0 6.2 1464 Lag	3.0 6.0 2.0 6.0 3.0 6.2 6.2 3.0 6.2 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	Lag Lead Lag				-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	
Lead	Lead	Lag Lead Lag Lead Lag Lead Lead Lag Yes		3.0		5.0	0.9	3.0	6.2	6.2	3.0	6.2	6.2	
7 Ves Yes Yes Yes Yes Yes Yes Yes Yes Yes Y	7 Ves Yes Yes Yes Yes Yes Yes Yes Yes Yes Y	Yes Yes <td></td> <td>Lead</td> <td></td> <td>Lead</td> <td>Lag</td> <td>Lead</td> <td>Lag</td> <td>Lag</td> <td>Lead</td> <td>Lag</td> <td>Lag</td> <td></td>		Lead		Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag	
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435 237 549 310 800 659 659 705 593 203 031 039 022 057 047 047 047 047 047 047 048 069 082 083 077 057 056 046 030 057 047 047 047 047 047 047 047 047 047 04	43.5 23.7 54.9 31.0 80.0 65.9 65.9 70.5 59.3 0.3 0.3 0.2 0.5 7.0 0.5 0.0 0.3 0.2 0.5 0.4 0.4 0.4 0.5 0.8 0.8 0.8 0.8 0.8 0.8 0.8 0.8 0.8 0.8	23.7 54.9 31.0 80.0 65.9 65.9 705 59.3 0.17 0.39 0.22 0.57 0.47 0.47 0.47 0.65 0.46 0.30 0.57 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.4		None		None	None	None	C-Max	C-Max	None	C-Max	C-Max	
031 0.17 0.39 0.22 0.57 0.47 0.47 0.50 0.42 0.69 0.82 0.83 0.77 0.57 0.55 0.46 0.30 0.57 0.47 0.50 0.42 0.50 0.00 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	031 0.17 0.39 0.22 0.57 0.47 0.47 0.50 0.42 0.69 0.82 0.82 0.83 0.77 0.57 0.55 0.46 0.30 0.57 0.47 0.47 0.42 0.30 0.57 0.47 0.42 0.30 0.57 0.42 0.59 0.40 0.00 0.00 0.00 0.00 0.00 0.00 0.0	017 039 022 057 047 047 050 042 082 083 077 057 057 048 050 042 082 083 077 057 055 046 030 057 057 050 00 057 051 052 048 051 052 048 051 052 052 052 052 052 052 052 052 052 052		43.5		54.9	31.0	80.0	62.9	62.9	20.2	59.3	59.3	
0.69 0.82 0.83 0.77 0.57 0.55 0.46 0.30 0.57 0.57 0.55 0.46 0.30 0.57 0.57 0.55 0.46 0.30 0.57 0.57 0.57 0.57 0.57 0.57 0.57 0.5	0.69 0.82 0.83 0.77 0.57 0.55 0.46 0.30 0.57 4.7 0.57 0.55 0.46 0.30 0.57 0.57 0.55 0.46 0.30 0.57 0.57 0.55 0.46 0.30 0.57 0.57 0.57 0.57 0.55 0.46 0.30 0.57 0.57 0.57 0.57 0.57 0.57 0.57 0.5	082 083 077 057 055 046 030 057 (65.1 50.9 57.4 21.9 28.8 5.1 17.9 34.3 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0		0.31		0.39	0.22	0.57	0.47	0.47	0.50	0.42	0.42	
42.7 65.1 50.9 57.4 21.9 28.8 5.1 17.9 34.3 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	42.7 65.1 50.9 57.4 21.9 28.8 5.1 17.9 34.3 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	65.1 50.9 57.4 21.9 28.8 5.1 17.9 34.3 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0		69.0		0.83	0.77	0.57	0.55	0.46	0.30	0.57	0.25	
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	00 00 00 00 00 00 00 00 00 00 00 00 00	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0		42.7		50.9	57.4	21.9	28.8	5.1	17.9	34.3	4.7	
42.7 65.1 50.9 57.4 21.9 28.8 5.1 17.9 34.3 D E D E C A B C 58.5 55.0 21.1 27.8 E E C C O	42.7 65.1 50.9 57.4 21.9 28.8 5.1 17.9 34.3 D E D E C C A B C C S S 5.0 E E E C C C C C C C C C C C C C C C C C	65.1 50.9 57.4 21.9 28.8 5.1 17.9 34.3 E D E C C A B C C S S S 5.0 21.1 27.8 E E C C I A B C C C A B C C C A B C C C C C C C C	Jelay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0:0	0:0	
D E C C A B 58.5 55.0 21.1 E E C C A B mary	D E D E C C A B 58.5 55.0 21.1 E E C C A B 58.5 55.0 21.1 E E C C C A B C C C C A B C C C C C C C C C	8.5 55.0 2.1.1 A B 56.0 2.1.1 E E C C A B N MBTL and 6.SBTL, Start of Green Intersection LOS: D ICU Level of Service E	alay	42.7	65.1	50.9	57.4	21.9	28.8	5.1	17.9	34.3	4.7	
58.5 55.0 21.1 E E C many	S8.5 S5.0 21.1 E E C C C Dobbsee 2/NBTL and 6/SBTL. Shart of Green	58.5 55.0 21.1 E E C C NBTL and 6.SBTL, Start of Green Intersection LOS: D ICU Level of Service E		۵	ш	_	ш	ပ	ပ	∢	Ф	ပ	∢	
h.LOS E E C C C Montanary another 140	h.LOS E E C C tion Summary noth: 140 1 O/cle Leath: 140 (10%) Referenced to phase 2 NBTL and 6:SBTL. Shart of Green	E E E NBTL and 6:SBTL, Start o	th Delay		58.5		55.0		21.1			27.8		
ion Summary	ion Summary angth: 140 A Cycle Lendth: 140 (10%) Referenced to phase 2 NBTL and 6:SBTL. Shart of Green	NBTL and 6:SBTL, Start o	SOTH		ш		ш		O			O		
anoth: 140	angh: 140 1 Oycle Lengh: 140 (10%), Referenced to phase 2:NBTL and 6:SBTL. Start of Green	NBTL and 6:SBTL, Start o	tion Summary											
	Gover Length: 140 (10%) Referenced to phase 2 NBTL and 6:SBTL. Start of Green	NBTL and 6:SBTL, Start o	enath: 140											
Oycle: 90			Type: Actuated-Coordin	ated										
ylei: 90 type: Actualed-Coordinated	ype: Actuated-Coordinated		n v/c Ratio: 0.83											
ycie: 90 Type: Actualed-Coordinated n v/c Ratio: 0.83	Type: Actuated-Coordinated n v/c Ratio: 0.83	_	ion Signal Delay: 36.5				Ξ	tersection	LOS: D					
	Ī		ion Capacity Utilization	%0.98			೨	C Level c	of Service	ш				

Britannia & RR25 BA Group - NHY

2029 Future Total PM (South Parcel) 01-12-2024 Queues 1: Regional Rd 25 & Louis St Laurent Ave

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ane Group	EBL	EBT	WBL	WBT	퓜	NBT	NBR	SBL	SBT	SBR	
ane Group Flow (vph)	205	495	345	610	210	875	435	92	842	195	
/c Ratio	69.0	0.82	0.83	0.77	0.57	0.55	0.46	0.30	0.57	0.25	
Sontrol Delay	42.7	65.1	6.03	57.4	21.9	28.8	5.1	17.9	34.3	4.7	
lueue Delay	0:0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Fotal Delay	42.7	65.1	6.03	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	8.86	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	
ntemal Link Dist (m)		126.1		117.1		481.0			113.5		
urn Bay Length (m)	90.0		35.0		65.0		65.0	80.0		0.06	
sase Capacity (vph)	324	979	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	
educed 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.

Synchro 11 Report Page 2

Britannia & RR25 BA Group - NHY

HCM Signalized Intersection Capacity Analysis 1: Regional Rd 25 & Louis St Laurent Ave

2029 Future Total PM (South Parcel) 01-12-2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBF
Lane Configurations	*	₩.		<i>y</i> _	₩		<i>y</i> _	#	*	*	#	_
Traffic Volume (vph)	202	375	120	345	545	92	210	875	435	92	845	195
Future Volume (vph)	202	375	120	345	542	65	210	875	435	92	842	195
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	0.9		5.0	0.9		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	1.0
Frpb, ped/bikes	1.00	0.99		1:00	1.00		1.00	1.00	0.98	1.00	1.00	0.0
Flpb, ped/bikes	1:00	1.00		1:00	1.00		1.00	1.00	1.00	1:00	1:00	1.0
き	1:00	96.0		1:00	0.98		1:00	1.00	0.85	1:0	1.00	0
Fit Protected	0.95	1.00		1:00	1.00		0.95	1.00	1.00	0.95	9:	9:
Satd. Flow (prot)	1769	3435		1899	3537		1787	3406	1567	1804	84.7	158
Fit Permitted	0.24	1.00		0.18	1.00 7535		17.0	00.1	1.00	0.20	0.F	3.5
Dook hour factor DUE	£ 5	245	00	65	200	00	100	2400	200	\$ 5	5 5	1002
Adi Flow (vnh)	205	375	120	345	545	5.5	210	875	435	9. 8	845	3. 5.
RTOR Reduction (vph)	0	22	0	0	7	0	0	0	210	0	0	112
Lane Group Flow (vph)	202	473	0	345	603	0	210	875	225	92	845	80
Confl. Peds. (#/hr)	S		ည	2		2	2		2	2		
Heavy Vehides (%)	5%	1%	%0	%0	%0	2%	1%	%9	1%	%0	4%	%0
Turn Type	pm+pt	NA		pm+pt	¥		pm+pt	ΑM	Perm	pm+pt	NA	Perm
Protected Phases	7	4		က	∞		2	2		-	9	
Permitted Phases	4			∞			2		2	9		
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		20.9	31.1		6.97	62.9	62.9	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	0.45	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
Venide 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 (vpn)	/87	281		405	782		105 201	1603	/3/	208	1470	9
We Datio Dorm	0.03	5		0.00	3		00.00	0.20	0.11	0.02	47.0	20.0
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	26.0		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	9.8		15.7	4.5		2.4	1.3	- -	9.0	1.6	0.4
Delay (s)	48.7	64.6		21.8	55.6		21.4	27.7	24.0	21.2	32.4	24.9
Level of Service	٥	ш		۵	ш		ပ	O	O	ပ	O	J
Approach Delay (s)		0.09			54.2			55.8			30.5	
Approach LOS		ш			۵			O			ပ	
Intersection Summary												
HCM 2000 Control Delay	ojio di		38.8	Ĭ	HCM 2000 Level of Service	Level of	Service		Ω			
HCM 2000 Volume to Capacity ratio	acity ratio		0.70	ć		17			9			
Actuated Cycle Length (s)			140.0	ಶ <u>s</u>	Sum of lost time (s)	time (s)			18.2			
Intersection Capacity Utilization	ation		86.0%	2	U Level o	of Service			ш			
Analysis Period (min)			2									

Britannia & RR25 BA Group - NHY

2029 Future Total PM (South Parcel) 01-12-2024 Timings 2: Regional Rd 25 & Whitlock Ave

•	SBR	*	135	135	Perm		9	9		20.0	35.5		9		2.3		5.5	Lag	Yes	C-Max	91.1	0.70	0.12	4.1	0.0	4.1	⋖												
→	SBT	‡	1055	1055	ΑN	9		9		20.0	35.5	81.0	62.3%	4.2	2.3	-1.0	5.5	Lag	Yes	C-Max	91.1	0.70	0.44	9.7	0.0	9.7	⋖	8.8	∢										
۶	SBL	*	09	09	pm+pt	-	9	-		7.0	11.0	11.0	8.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	101.7	0.78	0.21	4.9	0.0	4.9	⋖												
•	NBR	*	9	4	Perm		2	2		20.0	35.5	81.0	62.3%	4.2	2.3	-1.0	5.5	Lag	Yes	C-Max	93.5	0.72	0.03	1.2	0.0	1.2	⋖												
←	NBT	‡	1520	1520	ΑN	2		2		20.0	35.5	81.0	62.3%	4.2	2.3	-1.0	5.5	Lag	Yes	C-Max	93.5	0.72	0.61	7.0	0.0	7.0	⋖	9.9	∢									۵	
•	NBL	<i>y</i> -	6	6	pm+pt	2	2	2		7.0	11.0		8.5%				3.0	Lead	Yes	None	102.8	0.79	0.21	4.	0.0	1.8	⋖										LOS: B	of Service	
4	WBR	*-	75	75	Perm		∞	80		10.0	37.5	38.0	29.5%	3.3	3.2	-1.0	5.5			None	16.6	0.13	0.29	13.0	0.0	13.0	ш						of Green				Intersection LOS: B	ICU Level of Service D	
ţ	WBT	*	9	4	ΑN	∞		80		10.0	37.5	38.0	29.5%	3.3	3.2	-1.0	5.5			None	16.6	0.13	0.17	20.0	0.0	20.0	_	30.2	O				rl, Start				드	O	
>	WBL	*	52	52	Perm		∞	∞		10.0	37.5	38.0	29.5%	3.3	3.2	-1.0	5.5			None	16.6	0.13	0.15	50.2	0.0	50.2	_						and 6:SB						
†	EBT	æ,	4	49	¥	4		4		10.0	37.5	38.0	29.2%	3.3	3.2	-1.0	5.5			None	16.6	0.13	0.32	31.8	0.0	31.8	ပ	52.0	۵				2:NBTL						
1	EBL	*	105	105	Perm		4	4		10.0	37.5	38.0	29.2%	3.3	3.2	-1.0	5.5			None	16.6	0.13	0.60	67.4	0.0	67.4	ш						to phase		linated		_	on 75.1%	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	ros	Approach Delay	Approach LOS	Intersection Summary	Cycle Lenath: 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 Capacity Utilization 75.1% Analysis Period (min) 15	>

Splits and Phases: 2: Regional Rd 25 & Whitlock Ave



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2029 Future Total PM (South Parcel) 01-12-2024 Queues 2: Regional Rd 25 & Whitlock Ave

Y → ≯ ≮ ← ∀ ↓ ↓ ↓ ↑	EBT WBL WBT WBR NBL NBT NBR SBL SBT SBR	25 40 75 90 1520 40 60 1055	0.15 0.17 0.29 0.21 0.61 0.03 0.21 0.44	50.2 50.0 13.0 1.8 7.0 1.2 4.9 9.7	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	50.2 50.0 13.0 1.8 7.0 1.2 4.9 9.7	10.6 6.1 9.8 0.0 1.4 53.7 0.3 2.6 57.7 5.2	14.4 20.3 14.0 m3.0 112.1 m1.7 6.9 87.3	68.1	65.0 65.0 100.0 25.0 100.0 25.0	282 2386	0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0	010 000 000 011 001 001
•	EBL	105	09:0	67.4	0.0	67.4	27.2	45.1		35.0	34	0	0	0	20
	Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Queue Delay	Total Delay	Queue Length 50th (m)	Queue Length 95th (m)	Internal Link Dist (m)	Turn Bay Length (m)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Doding of the Date

Intersection Summary molecular of young for 95th percentile queue is metered by upstream signal.

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HCM Signalized Intersection Capacity Analysis 2029 Future Total PM (South Parcel) 2: Regional Rd 25 & Whitlock Ave 01-12-2024

	4	†	<i>></i>	\	ţ	✓	•	•	•	۶	→	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	2		<u>, </u>	+	*	<i>y</i> -	ŧ	*-	*	‡	*-
Traffic Volume (vph)	105	4	4	52	40	75	8	1520	40	09	1055	135
Future Volume (vph)	105	40	40	52	40	75	6	1520	40	09	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	1.0	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
Fit 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	4	4	52	4	75	6	1520	40	09	1055	135
RTOR Reduction (vph)	0	35	0	0	0	92	0	0	=	0	0	20
Lane Group Flow (vph)	105	48	0	52	4	9	6	1520	59	9	1055	115
Confl. Peds. (#/hr)	2		2	2		2			5	2		
Heavy Vehicles (%)	1%	2%	%0	%0	%0	3%	1%	2%	%0	5%	%9	%0
Turn Type	Perm	ΑN		Perm	ΑN	Perm	pm+pt	ΑN	Perm	pm+pt	₹	Perm
Protected Phases		4			∞		വ	7		-	9	
Permitted Phases	4			œ		∞	7		2	9		9
Actuated Green, G (s)	15.6	15.6		15.6	15.6	15.6	99.1	91.7	91.7	95.7	0.06	0.06
Effective Green, g (s)	16.6	16.6		16.6	16.6	16.6	101.1	92.7	92.7	7.76	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	80.09			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	9.9	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	2.8	0.5		0.4	0.3	0.1	0.2	0.9	0.0	0.5	9.0	0.5
Delay (s)	59.4	51.4		20.8	50.9	49.9	1.4	6.5	8.2	7.1	9.1	6.5
Level of Service	ш	۵		_	۵	۵	⋖	⋖	⋖	⋖	⋖	⋖
Approach Delay (s)		55.9			50.3			6.3			8.7	
Approach LOS		ш			۵			∢			∢	
Intersection Summary												
HCM 2000 Control Delay			12.0	오	HCM 2000 Level of Service	Level of	Service		В			
HCM 2000 Volume to Capacity ratio	ty ratio		09:0									
Actuated Cycle Length (s)			130.0	S	Sum of lost time (s)	time (s)			14.0			
Intersection Capacity Utilization	u		75.1%	☲	ICU Level of Service	f Service			□			
Analysis Period (min)			15									

Critical Lane Group

Britannia & RR25 BA Group - NHY

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Timings 2029 Future Total PM (South Parcel) 5: Regional Rd 25 & Etheridge Ave/Collector Road 01-12-2024

	L		2	5	_	9		9		0	4	0	vo.	2	2	0	₹†		S	×	æ	0	7	3	0	3	—	~	_										
-	SBT	*	88	88	₹	_				20.0	38.4	70.0	53.8%	4.	2.2	-1.0	5.4	Γa	Yes	C-Max	82.8	99.0	0.47	5.3	0.0	5	∢	5.3	1										
۶	SBL	*	22	22	pm+pt	~	9	-		7.0	11.0	11.0	8.5%	3.0	1:0	-1.0	3.0	Lead	Yes	None	96.5	0.74	0.22	6.1	0:0	6.1	⋖										٥	ב	
←	NBT	₩	1500	1500	≨	2		2		20.0	38.4	70.0	23.8%	4.2	2.2	-1.0	5.4	Lag	Yes	C-Max	88.9	0.68	99.0	7.8	0.0	7.8	∢	7.5	∢								Intersection LOS: A	oel vice	
•	NBL	*	130	130	pm+pt	2	2	2		7.0	11.0		8.5%							_	8.86				0.0	3.7	∢						t of Greer				Intersection LOS: A	o revel	
ţ	WBT	æ	0	0	Ϋ́	∞		∞		10.0	36.2	37.0	28.5%	3.3	2.9	-1.0	5.2	Lag	Yes	None	11.8	0.09	0.13	6.0	0.0	0.9	∢	31.7	O				JL, Star					2	
>	WBL	*	40	40	Perm		∞	∞		10.0	36.2	37.0	28.5%	3.3	5.9	-1.0	5.2	Lag	Yes	None	11.8	0.09	0.33	62.5	0.0	62.5	ш						and 6:SB						
†	EBT	æ,	0	0	ΑN	4		4		10.0	36.2	49.0	37.7%	3.3	5.9	-1.0	5.2			None	21.4	0.16	0.16	0.8	0.0	0.8	∢	31.7	ပ				e 2:NBTL						
•	EBL	*	110	110	pm+pt	7	4	7		7.0	11.0	12.0	9.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	23.6	0.18	0.45	51.4	0.0	51.4	٥						ed to phas		dinated		on 7.4 20/	011 / 4.3%	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	ros	Approach Delay	Approach LOS	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	Intel section Capacity Officati	Analysis Period (min) 15

Splits and Phases: 5: Regional Rd 25 & Etheridge Ave/Collector Road



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Queues 2029 Future Total PM (South Parcel) 5: Regional Rd 25 & Etheridge Ave/Collector Road 01-12-2024

-	SBT	1065	0.47	5.3	0.0	5.3	75.5	42.7	6.969		2250	0	0	0	0.47		
١	SBL		0.22					5.4	99	0.07	252 2	0	0	0	0.22 (
←	NBT	1565	99:0	7.8	0.0	7.8	26.8	78.2	292.1		2364	0	0	0	99.0		
•	NBL	130	0.32	3.7	0.0	3.7	3.5	m7.4		70.0	408	0	0	0	0.32		
ţ	WBT	40	0.13	6.0	0.0	6.0	0.0	0.0	63.5		525	0	0	0	0.08		
>	WBL	40	0.33	62.5	0.0	62.5	10.4	22.4		40.0	330	0	0	0	0.12		
†	EBT	70	0.16	0.8	0.0	0.8	0.0	0.0	53.9		229	0	0	0	0.10		
^	EBL	110	0.45	51.4	0.0	51.4	25.8	42.8		40.0	242	0	0	0	0.45		
	Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Queue Delay	Total Delay	Queue Length 50th (m)	Queue Length 95th (m)	Internal Link Dist (m)	Turn Bay Length (m)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio	Informaction Cummons	mersection summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis 5: Regional Rd 25 & Etheridge Ave/Collector Road

is 2029 Future Total PM (South Parcel)

	4	†	<u> </u>	>	ţ	4	•	←	•	٠	→	•
Movement	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	£,		r	Ŷ,		r	₽ ₽		r	₩	
Traffic Volume (vph)	110	0	20	40	0	40	130	1500	9	22	882	180
Future Volume (vph)	110	0	70	40	0	40	130	1500	65	22	882	180
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.2		2.5	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	
T'H	1.00	0.85		1.00	0.85		1.00	0.99		1:00	0.97	
Fit 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	20	40	0	40	130	1500	92	22	882	180
RTOR Reduction (vph)	0	28	0	0	37	0	0	7	0	0	တ	0
Lane Group Flow (vph)	110	12	0	40	က	0	130	1563	0	22	1056	0
Heavy Vehides (%)	3%	%0	%0	%0	%0	%0	%0	4%	%0	%0	4%	2%
Turn Type	pm+pt	Ν		Perm	M		pm+pt	M		pm+pt	NA	
Protected Phases	7	4			∞		2	2		~	9	
Permitted Phases	4			∞			5			9		
Actuated Green, G (s)	21.6	21.6		8.8	8.8		94.0	85.9		9.68	83.7	
Effective Green, g (s)	22.6	22.6		8.6	8.6		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	
Vehide 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		339	2309		228	2211	
v/s Ratio Prot	c0.04	0.01			0.00		c0.02	c0.45		0.01	0.31	
√s Ratio Perm	c0.05			0.03			0.22			0.16		
v/c Ratio	0.47	0.04		0.40	0.02		0.33	99.0		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		29.8	22.8		3.7	9.7		10.1	5.3	
Level of Service	Δ	Δ		ш	ш		⋖	⋖		Ф	⋖	
Approach Delay (s)		47.3			27.8			7.3			5.5	
Approach LOS		Ω			ш			⋖			∢	
Intersection Summary												
HCM 2000 Control Delay			10.3	Ĭ	3M 2000	HCM 2000 Level of Service	Service		В			
HCM 2000 Volume to Capacity ratio	city ratio		0.64									
Actuated Cycle Length (s)			130.0	ง	Sum of lost time (s)	time (s)			16.6			
Intersection Capacity Utilization	tion		74.3%	೦	U Level o	ICU Level of Service			_			
Analysis Period (min)			15									
c Critical Lane Group												

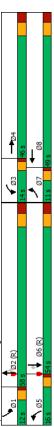
Britannia & RR25
BA Group - NHY
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Britannia & RR25 BA Group - NHY

2029 Future Total PM (South Parcel) 01-12-2024 Timings 7: Regional Rd 25 & Britannia Rd

	4	†	>	ţ	•	—	•	۶	→	*	
Lane Group	EBL	EBT	WBL	WBT	图	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	K	4413	£	4413	K	*	R.	*	*	R.	
Traffic Volume (vph)	45	305	285	470	235	1320	445	145	800	20	
Future Volume (vph)	45	302	285	470	235	1320	445	145	800	20	
Turn Type	Prot	¥	Prot	¥	Prot	Ä	Perm	Prot	¥	Perm	
Protected Phases	7	4	က	∞	2	2		-	9		
Permitted Phases							2			9	
Detector Phase	7	4	က	∞	2	2	2	-	9	9	
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		12.0	54.0		
Total Split (%)	8.5%	35.4%	10.8%	37.7%	12.3%	44.6%		9.5%	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		
All-Red Time (s)	1.0	3.3	1.0	3.3	1.0	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		
Total Lost Time (s)	3.0	6.5	3.0	6.5	3.0	6.7		3.0	6.7	6.7	
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag		Lead	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	
Recall Mode	None	None	None	None	None	C-Max		None	C-Max	C-Max	
Act Effct Green (s)	8.0	24.0	11.0	29.2	14.9	4.1	4.1	11.8	6.09	6.09	
Actuated g/C Ratio	90:0	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	90:0	
Control Delay	6.09	45.1	113.3	38.3	60.3	32.1	8.9	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	6.09	45.1	113.3	38.3	60.3	32.1	9.9	71.4	18.0	0.1	
NOS	ш	_	ш	_	ш	O	⋖	ш	Ω	∢	
Approach Delay		46.9		28.0		29.8			24.9		
Approach LOS		۵		ш		O			ပ		
Intersection Summary											
Cycle Length: 130											
Actuated Cycle Length: 130											
Offset 104 (80%), Referenced to phase 2:NBT and 6:SBT, Start of Green	to phas	e 2:NBT	and 6:SB	T, Start o	Green						
Natural Cycle: 120											
Control Type: Actuated-Coordinated	inated										
Maximum v/c Ratio: 0.93											
Intersection Signal Delay: 37.0	_			드	tersectio	Intersection LOS: D					
Intersection Capacity Utilization 82.3%	in 82.3%			o	U Level	CU Level of Service E	ΘЕ				
Analysis Period (min) 15											

Splits and Phases: 7: Regional Rd 25 & Britannia Rd



Synchro 11 Report Page 10 Britannia & RR25 BA Group - NHY

Queues 7: Regional Rd 25 & Britannia Rd

2029 Future Total PM (South Parcel) 01-12-2024

•	SBR	20	90.0	0.1	0.0	0.1	0.0	0.0		90.0	812	0	0	0	90.0
→	SBT	800	0.49	18.0	0.0	18.0	41.6	49.6	292.1		1626	0	0	0	0.49
۶	SBL	145	0.46	71.4	0:0	71.4	20.5	32.5		90.0	315	0	0	0	0.46
•	NBR	445	0.46	8.9	0:0	8.9	12.4	43.0		90.0	362	0	0	0	0.46
←	NBT	1320	92.0	32.1	0.0	32.1	151.5	#222.5	165.3		1727	0	0	0	92.0
•	NBL					60.3				90.0	412	0	0	0	0.57
ţ	WBT	800	0.75	38.3	0.0	38.3	44.2	47.3	190.1		1481	0	0	0	0.54
>	WBL	285	0.93	113.3	0.0	113.3	42.2	8.69#		120.0	302	0	0	0	0.93
†	EBT	345	0.41	45.1	0.0	45.1	32.6	41.6	377.9		1372	0	0	0	0.25
•	EBL	45	0.22	6.09	0.0	6.09	0.9	12.7		0.09	203	0	0	0	0.22
	Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Queue Delay	Total Delay	Queue Length 50th (m)	Queue Length 95th (m)	Internal Link Dist (m)	Turn Bay Length (m)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio

Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Synchro 11 Report Page 11 Britannia & RR25 BA Group - NHY

HCM Signalized Intersection Capacity Analysis 2029 Future Total PM (South Parcel) 7: Regional Rd 25 & Britannia Rd 01-12-2024

Movement EBI EBI WBI		•	†	/	>	ţ	4	•	←	•	۶	→	•
1900 1900	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
1900 1900	Lane Configurations	¥.	₩₽		£	₩₽		£	‡	K _	£	₩	*-
100 100	Traffic Volume (vph)	42	302	9	282	470	330	235	1320	445	145	800	20
1900 1900	Future Volume (vph)	42	302	9	582	470	330	532	1320	442	145	000	20
6.5 3.0 6.5 3.0 6.7 3.0 1.00 <	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
100 0.39	Total Lost time (s)	3.0	6.5		3.0	6.5		3.0	6.7	6.7	3.0	6.7	6.7
100 0.98 1.00 0.94 1.00 0.85 1.00 0.	Lane Util. Factor	0.97	*0.80		0.97	*0.80		0.97	0.95	1:00	0.97	0.95	1.00
4481 3614 4235 3502 3502 1500 100 0.95 1100 1 100	T'H	1.00	0.98		9.1	9. 8.		9.	1.00	0.85	1.00	1.00	0.85
4481 3614 4235 3502 3565 1583 3467 3471 1,00 1,	Fit Protected	0.95	1.00		1.00	1.00		0.95	1.00	1.00	0.95	1.00	1.00
4481 3644 4235 3605 1500 10	Satd. Flow (prot)	3303	4481		3614	4235		3502	3505	1583	3467	3471	1615
4481 3614 4235 3502 3505 1583 3467 3471 1 100 100 1100 1100 1100 1100 100	FIt Permitted	0.95	1.00		1.00	1.00		0.95	1.00	1.00	0.95	1.00	1.00
100 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Satd. Flow (perm)	3303	4481		3614	4235		3502	3505	1583	3467	3471	1615
305 40 285 470 330 235 1320 445 145 800 0 1 2 0 0 0 184 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	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
12 0 0 112 0 0 184 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Adj. Flow (vph)	42	302	4	282	470	330	235	1320	445	145	800	20
333 0 285 688 0 225 1320 251 145 800 1 0 0 0 0 0 0 28	RTOR Reduction (vph)	0	12	0	0	112	0	0	0	184	0	0	27
0% 0% 0% 2% 1% 0% 3% 2% 1% 4% 1 NA Prot NA Prot NA Perm Prot NA 4 3 8 5 2 1 6 23.8 100 28.2 139 62.2 62.2 10.8 59.1 5 24.8 11.0 29.2 14.9 63.2 63.2 11.8 60.1 6 24.8 11.0 29.2 14.9 63.2 63.2 11.8 60.1 6 24.8 11.0 29.2 14.9 7.7 7.7 4.0 7.7 7.5 4.0 7.5 4.0 7.7 7.7 4.0 7.7 8.4 3.0	Lane Group Flow (vph)	42	333	0	285	989	0	235	1320	261	145	800	23
1 NA Prot NA Prot NA Prot NA 23.8 10.0 28.2 13.9 62.2 62.2 10.8 59.1 24.8 11.0 29.2 14.9 66.3 63.2 62.2 10.8 59.1 3.0 <td< td=""><td>Heavy Vehicles (%)</td><td>%9</td><td>%0</td><td>%0</td><td>5%</td><td>%</td><td>1%</td><td>%0</td><td>3%</td><td>7%</td><td>1%</td><td>4%</td><td>%0</td></td<>	Heavy Vehicles (%)	%9	%0	%0	5%	%	1%	%0	3%	7%	1%	4%	%0
4 3 8 5 2 1 6 238 100 282 139 622 632 632 691 691 248 110 292 14.9 63.2 63.2 11.8 69.1 0.019 0.08 0.22 0.11 0.49 0.49 0.09 0.46 7.5 4.0 7.5 4.0 7.7 7.7 4.0 7.7 1.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 1.0 2.0 3.0 <t< td=""><td>Turn Type</td><td>Prot</td><td>Α</td><td></td><td>Prot</td><td>A</td><td></td><td>Prot</td><td>A</td><td>Perm</td><td>Prot</td><td>¥</td><td>Perm</td></t<>	Turn Type	Prot	Α		Prot	A		Prot	A	Perm	Prot	¥	Perm
248 100 282 139 62.2 62.2 10.8 59.1 24.6 10.8 10.0 28.2 11.9 60.1 60.1 60.1 60.1 60.1 60.1 60.1 60.1	Protected Phases	7	4		က	∞		2	7		_	9	
238 100 282 139 872 872 108 891 248 110 292 143 622 622 118 601 7.5 40 7.5 40 7.7 7.7 4.0 7.7 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 1.0 7.7 4.0 7.7 7.7 4.0 7.7 1.0 3.0 <t< td=""><td>Permitted Phases</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>2</td><td></td><td></td><td>9</td></t<>	Permitted Phases									2			9
3.48 110 292 14.9 63.2 63.2 118 60.1 5 0.19 0.08 0.22 0.11 0.49 0.49 0.49 0.49 0.49 0.49 0.49 0.49 0.49 0.49 0.49 0.49 0.49 0.49 0.49 0.46 0.49 0.4	Actuated Green, G (s)	9.9	23.8		10.0	28.2		13.9	62.2	62.2	10.8	59.1	59.1
9 0.19 0.08 0.22 0.11 0.49 0.49 0.09 0.46 0.15 0.19 0.08 0.22 0.11 0.49 0.49 0.09 0.46 0.15 0.10 0.10 0.10 0.10 0.10 0.10 0.10	Effective Green, g (s)	9.9	24.8		11.0	29.2		14.9	63.2	63.2	11.8	60.1	60.1
7.5 4.0 7.5 4.0 7.7 7.7 4.0 7.7 8.34 3.0	Actuated g/C Ratio	0.02	0.19		0.08	0.22		0.11	0.49	0.49	0.09	0.46	0.46
30 30 30 30 30 30 30 30	Clearance Time (s)	4.0	7.5		4.0	7.5		4.0	7.7	7.7	4.0	7.7	7.7
854 305 951 401 1703 769 314 1604 0.07 0.08 0.016 0.07 0.038 0.04 0.23 0.39 0.93 0.72 0.59 0.78 0.34 0.46 0.50 0.39 0.93 0.72 0.59 0.78 0.34 0.46 0.50 0.3 3.8 0.72 2.75 20.5 56.1 24.4 0.4 0.5 3.8 1.00 1.00 1.00 1.00 0.3 3.8 1.00 1.00 1.00 1.00 0.4 0.5 1.2 0.5 0.66 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.7 0.7 0.5 0.79 0.70 0.70 0.70 0.79 0.70 0.70 0.70 0.79 0.70 0.70 0.70 0.79 0.70 0.70 0.70 0.79 0.70 0.70 0.70 0.79 0.70 0.70 0.70 0.79 0.70 0.70 0.70 0.79 0.70 0.70 0.70 0.79 0.70 0.70 0.70 0.79 0.70 0.70 0.70 0.79 0.70 0.70 0.70 0.70 0.70 0.70	Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
1 0.07	Lane Grp Cap (vph)	167	854		302	951		401	1703	269	314	1604	746
1 0.39 0.93 0.72 0.59 0.78 0.14 0.46 0.50 0.50 0.78 0.34 0.46 0.50 0.50 0.78 0.34 0.46 0.50 0.50 0.78 0.34 0.46 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.5	v/s Ratio Prot	0.01	0.07		c0.08	c0.16		c0.02	c0.38		0.04	0.23	
7 0.39 0.93 0.72 0.59 0.78 0.34 0.46 0.50 1 1.00 1.33 0.88 1.00 1.00 1.20 0.66 2 0.3 33.8 2.7 2.2 3.5 1.2 1.0 1.0 2 46.3 112.5 43.7 56.8 31.1 21.7 88.4 17.1 2 D F 61.8 2.0 C E B 61.8 3 0.0 HCM 2000 Level of Service D C C C C C C C C C C C C C C C C C C	v/s Ratio Perm									0.16			0.01
1 460 59.1 46.7 54.6 27.5 20.5 56.1 24.4 1.00 1.00 1.00 1.20 0.66 0.68 0.3 33.8 2.7 2.2 3.5 1.2 1.0 1.0 1.00 1.00 1.00 1.20 0.66 1.20 0.	v/c Ratio	0.27	0.39		0.93	0.72		0.59	0.78	0.34	0.46	0.50	0.03
100 133 0.88 1.00 1.00 1.20 0.66 1.00 0.3 33.8 2.7 2.2 3.5 1.2 1.0 1.0 1.0 1.00 1.00 1.00 1.00 1.0	Uniform Delay, d1	59.4	46.0		59.1	46.7		54.6	27.5	20.5	26.1	24.4	19.1
9 0.3 33.8 2.7 2.2 3.5 1.2 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	Progression Factor	1.00	1.00		1.33	0.88		1.00	1.00	1.00	1.20	99.0	1.00
## 463 112.5 43.7 56.8 31.1 21.7 68.4 17.1 17.1 17.1 17.1 17.1 17.1 17.1 17	Incremental Delay, d2	0.9	0.3		33.8	2.7		2.2	3.5	1.2	1.0	1.0	0.1
47.9 F D E C C E 47.9 61.8 32.0 D E C 39.0 HCM 2000 Level of Service D 0.79 Sum of lost time (s) 19.2 82.3% (CU Level of Service E 15	Delay (s)	60.3	46.3		112.5	43.7		26.8	31.1	21.7	68.4	17.1	19.1
47.9 61.8 32.0 D	Level of Service	ш	□		ш	□		ш	ပ	ပ	ш	В	Ф
39.0 HCM 2000 Level of Service D 0.79 13.00 Sum of lost time (s) 19.2 82.3% ICU Level of Service E 15	Approach Delay (s)		47.9			61.8			32.0			24.7	
39.0 HCM 2000 Level of Service 0.79 130.0 Sum of lost time (s) 82.3% ICU Level of Service 15	Approach LOS		Ω			ш			ပ			ပ	
39.0 HCM 2000 Level of Service 0.79 130.0 Sum of lost time (s) 82.3% ICU Level of Service 15	Intersection Summary												
0.79 130.0 Sum of lost time (s) 82.3% ICU Level of Service 15	HCM 2000 Control Delay			39.0	¥	3M 2000	Level of S	service		۵			
130 Sum of lost time (s) cation 82.3% ICU Level of Service 15	HCM 2000 Volume to Capaci	ity ratio		0.79									
Utilization 82.3% 15 Ip	Actuated Cycle Length (s)			130.0	જ	ım of lost	time (s)			19.2			
15 p	Intersection Capacity Utilization	ou		82.3%	೦	U Level o	of Service			ш			
c Critical Lane Group	Analysis Period (min)			15									
	c Critical Lane Group												

Britannia & RR25 BA Group - NHY Page 12

HCM Unsignalized Intersection Capacity Analysis 8: Site Dwy (South) & Etheridge Ave

2029 Future Total PM (South Parcel)

																																								Þ	
•	NBR		80	80			1.00	80										105			105	6.2		3.3	92	922														Service	
•	NBL	>	10	10	Stop	%0	1.00	10									0.98	220			231	6.4		3.5	86	457														ICU Level of Service	
ţ	WBT	₩	175	175	Free	%0	1.00	175						None		78																								೦	
>	WBL		135	135			1.00	135										110			110	4.1		2.2	91	1493	NB 1	06	10	8	825	0.11	2.8	9.7	∢	9.7	⋖		4.0	35.5%	15
<i>></i>	EBR		10	9			1.00	10																			WB 1	310	135	0	1493	0.09	2.4	3.8	∢	3.8					
†	EBT	æ	100	9	Free	%0	1.00	100						None													EB 1	110	0	9	1700	90:0	0.0	0.0		0.0				Б	
	Movement	Lane Configurations	Traffic Volume (veh/h)	Future Volume (Veh/h)	Sign Control	Grade	Peak Hour Factor	Hourly flow rate (vph)	Pedestrians	Lane Width (m)	Walking Speed (m/s)	Percent Blockage	Right turn flare (veh)	Median type	Median storage veh)	Upstream signal (m)	pX, platoon unblocked	vC, conflicting volume	vC1, stage 1 conf vol	vC2, stage 2 conf vol	vCu, unblocked vol	tC, single (s)	tC, 2 stage (s)	tF(s)	p0 queue free %	cM capacity (veh/h)	Direction, Lane #	Volume Total	Volume Left	Volume Right	cSH	Volume to Capacity	Queue Length 95th (m)	Control Delay (s)	Lane LOS	Approach Delay (s)	Approach LOS	Intersection Summary	Average Delay	Intersection Capacity Utilization	Analysis Period (min)

Timings 2029 Future Total PM (South Parcel) 10: Britannia Rd & Farmstead Dr 01-12-2024

																																						A
•	SBR	R _	15	15	Perm		œ	œ		10.0	15.3	41.0	39.0%	3.3	2.0	-1.0	4.3			None	11.4	0.11	90:08	19.9	0.0	19.9	В						eeu				Intersection LOS: A	ICU Level of Service A
٠	SBL	*	22	22	Prot	∞		œ		10.0	15.3				2.0		4.3			None	11.4	0.11	0.29	47.2	0.0	47.2	_	41.4	۵				Start of Gr				Inte	ਹੁ
ţ	WBT	4413	675	675	¥	9		9		20.0	29.4	53.0	20.5%	4.2	2.2	-1.0	5.4	Lag	Yes	C-Max	83.6	0.80	0.21	4.0	0.0	4.0	⋖	4.0	∢				d 6:WBT,					
†	EBT	444	335	332	Ϋ́	2		7		20.0	29.4	64.0	61.0%	4.2	2.2	-1.0	5.4			C-Max	88.0	0.84	0.09	2.1	0.0	2.1	∢	2.1	∢				EBTL an					
4	EBL	*	8	20	pm+pt	2	2	2		7.0	11.0	11.0	10.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	89.3	0.85	0.03	1.9	0.0	1.9	A						to phase 2		ordinated		2.7	ation 33.1%
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	SOT	Approach Delay	Approach LOS	Intersection Summary	Cycle Lenath: 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 Capacity Utilization 33.1% Analysis Period (min) 15

Splits and Phases: 10: Britannia Rd & Farmstead Dr

Color (R)

Col

Britannia & RR25
BA Group - NHY
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Queues

10: Britannia Rd & Farmstead Dr

10: Britannia Rd & Farmstead Dr

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Lane Group	EBL	EBT	WBT	SBL	SBR	
Lane Group Flow (vph)	8	335	755	22	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)	9.0	4.9	12.0	1.1	0.0	
Queue Length 95th (m)	<u>6</u> .	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)	287	3822	3545	909	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						

HCM Signalized Intersection Capacity Analysis 2029 Future Total PM (South Parcel) 10: Britannia Rd & Farmstead Dr

Movement	EB	EBT	WBT	WBR	SBL	SBR	
Lane Configurations	*	444	4413		r	ĸ.	
Traffic Volume (vph)	8	335	675	8	22	12.	
Future Volume (vph)	20	335	675	8	22	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	
Fit	1.00	1.00	0.98		1.00	0.85	
Fit 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)	281	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	8	22	15	
RTOR Reduction (vph)	0	0	2	0	0	14	
Lane Group Flow (vph)	20	332	750	0	22	_	
Heavy Vehicles (%)	%0	%0	1%	%0	4%	%0	
Turn Type	pm+pt	NA	N		Prot	Perm	
Protected Phases	S	2	9		∞		
Permitted Phases	2					œ	
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		0.0	60.0	
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 Gro Cap (vph)	519	3730	3350		155	144	
v/s Ratio Prot	0.00	c0.02	c0.17		c0.03		
v/s Ratio Perm	0.03					0.00	
v/c Ratio	0.04	0.0	0.22		0.35	0.01	
Uniform Delay, d1	1 .	1.9	3.8		44.9	43.6	
Progression Factor	1.00	1.00	1.00		1.00	1.00	
ncremental 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	∢	∢	∢		۵	۵	
Approach Delay (s)		1.9	4.0		45.8		
Approach LOS		∢	⋖		۵		
Intersection Summary							
HCM 2000 Control Delay			5.8	H	M 2000 L	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	city ratio		0.23				
Actuated Cycle Length (s)			105.0	Su	Sum of lost time (s)	ime (s)	12.7
Intersection Capacity Utilization	tion		33.1%	ਹ	ICU Level of Service	Service	A
Analysis Period (min)			15				
Critical Lane Group							

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Timings 11: Britannia Rd & Rose Way

2029 Future Total PM (South Parcel) 01-12-2024

•	SBR	W	20	20	Perm		4	4		10.0	43.0	50.0	38.5%	3.0	3.0	-1.0	5.0			None	11.0	80:0	0.27	18.8	0.0	18.8	В						Green				Intersection LOS: A	CU Level of Service A	
۶	SBL	je-	30	30	Prot	4		4		10.0	43.0			3.0	3.0	-1.0	2.0			None	11.0	0.08	0.20	28.7	0.0	28.7	ш	33.8	ပ				T, Start of				Inte	ਹ	
ţ	WBT	4413	1035	1035	¥	9		9		20.0	29.0	65.0	20.0%	4.0	3.0	-1.0	0.9	Lag	Yes	C-Max	103.5	0.80	0.30	4.9	0.0	4.9	∢	4.9	∢				and 6:WB						
†	EBT	444	815	815	¥	2		2		20.0	29.0	80.0	61.5%	4.0	3.0	-1.0	0.9			C-Max	112.4	0.86	0.21	1.3	0.0	1.3	∢	د .	∢				2:EBTL						
1	EBF	je.	8	88	pm+pt	2	2	2		7.0	11.0	15.0	11.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	114.2	0.88	0.19	2.1	0.0	2.1	A					30	nced to phase		oordinated		: 4.5	ization 48.0%	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	ros	Approach Delay	Approach LOS	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 Capacity Utilization 48.0%	Analysis Period (min) 15

HSs | No C(R)

HSs | No C(R)

Britannia & RR25

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Queues 2029 Future Total PM (South Parcel) 11: Britannia Rd & Rose Way 01-12-2024

ייי ביייי שווייים איים		4				
	1	†	ţ	٠	<i>*</i>	
Lane Group	EBL	EBT	WBT	SBL	SBR	
Lane Group Flow (vph)	8	815	1095	ၕ	90	
v/c Ratio	0.19	0.21	0.30	0.20	0.27	
Control Delay	2.1	1.3	4.9	28.7	18.8	
Queue Delay	0:0	0:0	0.0	0.0	0.0	
Total Delay	2.1	1.3	4.9	28.7	18.8	
Queue Length 50th (m)	1.2	8.9	35.7	7.7	0.0	
Queue Length 95th (m)	3.3	14.0	45.9	18.0	13.0	
Internal Link Dist (m)		190.1	148.0	97.6		
Turn Bay Length (m)	20.0			20.0		
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	0.02	0.08	
Intercontion Cummery						
IIIIersection Summary						

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HCM Signalized Intersection Capacity Analysis 11: Britannia Rd & Rose Way

2029 Future Total PM (South Parcel)

Movement EBI EBI WBT WBR SBI SBR Land Configurations		^	†	Ļ	1	٠	•	
figurations	Movement	EB	EBT	WBT	WBR	SBL	SBR	
time (aph) 80 815 1035 60 30 50 time (aph) 80 815 1035 60 30 50 (vphp) 1900 1900 1900 1900 1900 1900 fine (s) 3.0 6.0 6.0 5.0 5.0 5.0 fed 1.00 1.00 1.00 1.00 1.00 1.00 fed 0.035 1.00 1.00 1.00 1.00 1.00 (pxx) 1.00 1.00 1.00 1.00 1.00	Lane Configurations	*	444	4413		*	8	
lume (vph) 80 815 1035 60 30 50 frequency 1900 1900 1900 1900 1900 frequency 3.0 6.0 190 1900 1900 fred 1.00 1.00 1.00 1.00 1.00 1.00 ed 0.95 1.00 1.00 1.00 1.00 1.00 1.00 ed 0.95 1.00	Traffic Volume (vph)	8	815	1035	09	30	20	
free (s) 30 6.0 6.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5	Future Volume (vph)	8	815	1035	09	30	20	
time (s) 3.0 6.0 6.0 5.0 5.0 Fector 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Factor 1.00 '0.88 '0.88 1.00 1.00 ted (0.95 1.00 1.00 0.95 1.00 0.85 1.00 v(prot) 1805 4560 4523 1805 1615 ted (0.35 1.00 1.00 0.95 1.00 0.85 1.00 (vpm) 376 4560 4523 1805 1615 factor, PHF 1.00 1.00 1.00 1.00 1.00 1.00 1.00 (vpm) 376 4560 4523 1805 1615 factor, PHF 1.00 1.00 1.00 1.00 1.00 1.00 1.00 v(pm) 80 815 1035 60 30 50 double (vph) 80 815 1035 0 30 30 shides (%) 0% 0% 0% 0% 0% 0% 0% shines (%) 1.00 1.00 1.00 1.00 1.00 1.00 Sheas (%) 1.00 1.00 1.00 1.00 1.00 1.00 Sheas (%) 1.00 1.00 1.00 1.00 1.00 Cap (vph) 380 386 3.493 1.02 Cap (vph) 380 386 3.493 1.02 Cap (vph) 380 388 3.493 1.00 Cap (vph) 380 380 3.60 Cap (vph) 380 380 3.60 Cap (vph) 380 3.80 Cap (vph) 380 380 3.40 Cap (vph) 380 380 380 Cap (vph) 380 Cap (vph) 480 Cap (vph) 480 Cap (vph) 48	Total Lost time (s)	3.0	0.9	0.9		2.0	5.0	
ted (100 0.99 1.00 0.85 v (pox) 100 1.00 1.00 0.85 v (pox) 1805 4.500 1.00 0.95 1.00 v (pox) 1805 4.500 1.00 0.95 1.00 v (pox) 1805 4.500 1.00 0.95 1.00 v (pox) 37 4.560 4.523 1805 1615 v (pox) 37 4.560 4.523 1805 1615 v (pox) 80 815 1035 60 30 50 duction (vph) 80 815 1035 60 30 30 shides (%) 0% 0% 0% 0% 0% 0% 0% shides (%) 0% 0% 0% 0% 0% 0% shides (%) 1000 1.00 1.00 1.00 shides (%) 1.00 1.00 1.00 shides (%) 1.00 1.00 1.00 shides (%)	Lane Util. Factor	1.00	*0.80	*0.80		1.00	1.00	
led (1965 100 100 695 100 (1964 100) (1967 1	퍒	1.00	1.00	0.99		1.00	0.85	
v (prot) 1805 4560 4523 1805 1615 v (pem) 202 1.00 1.00 1.00 1.00 v (pem) 376 4560 4523 1805 1615 r (pem) 376 4560 4523 1805 160 v (phy) 80 815 1035 60 100 p (pow) 80 815 1035 60 100 p (pow) 815 1035 60 60 47 p (pow) 98 815 100 90 47 p (pow) 98 815 80 80 80 p (pow) 90 90 90 90 90 p (pow) 90 90 90 90 90 p (pow) 90 90 90 90 90 p (pow) 90 90 90 90 90 90 p (pow) 100 100 100	Fit Protected	0.95	1.00	1.00		0.95	1.00	
led (200 100 100 095 100 (vpm) 376 4560 4523 100 (vpm) 376 4560 4523 100 (vpm) 376 4560 4523 100 100 (vpm) 376 4560 4523 100 100 100 100 100 100 100 100 100 10	Satd. Flow (prot)	1805	4560	4523		1805	1615	
V(perm) 376 4560 4523 1805 1615 (redr), PHF 1.00 1.00 1.00 1.00 1.00 1.00 (redr), PHF 1.00 1.00 1.00 1.00 1.00 1.00 (redr), PHF 1.00 1.00 1.00 1.00 1.00 1.00 auction (vph) 80 815 1.03 0 47 0 47 ph (vph) 80 815 1.03 0 0 0 47 0 Phases 2 0 0 0 0 0 0 47 4 <t< td=""><td>Flt Permitted</td><td>0.20</td><td>1.00</td><td>1.00</td><td></td><td>0.95</td><td>1.00</td><td></td></t<>	Flt Permitted	0.20	1.00	1.00		0.95	1.00	
r factor, PHF 1.00 1.00 1.00 1.00 1.00 0 0.00 0 0.0	Satd. Flow (perm)	376	4560	4523		1805	1615	
(vph) 80 815 1035 60 30 50 docton (vph) 0 0 2 0 0 47 dp Flow (vph) 80 815 103 0 47 dp Flow (vph) 80 815 0 0 47 dp Flow (vph) 90 90 0 0 0 47 dp Flases pm+pt NA NA Prof Perm 4 4 phases 2 6 4 <td>Peak-hour factor, PHF</td> <td>1.00</td> <td>1.00</td> <td>1.00</td> <td>1.00</td> <td>1.00</td> <td>1.00</td> <td></td>	Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	
tuction (vph) 0 0 2 0 47 tuction (vph) 8 0 815 1093 0 30 3 tuction (vph) 8 0 815 1093 0 30 3 Thress 5 2 6 4 Pm Phases 5 2 6 4 Pm Phases 5 2 6 4 Pm Phases 2 4 Pm Phases 6 99.4 8.0 8.0 Green, G(s) 109.0 109.0 99.4 8.0 8.0 Green, G(s) 109.0 109.0 99.4 8.0 8.0 Green, G(s) 100 100.1 99.4 8.0 8.0 Green, G(s) 100 100.4 9.0 9.0 Green, G(s) 100 100.4 9.0 Green, G(s) 100 100.4 9.0 Green, G(s) 100 100 100 Green, G(s) 100 100 Green, G(Adj. Flow (vph)	8	815	1035	09	30	20	
up Flow (vph) 80 815 1093 0 30 33 hiddes (%) 0% 0% 0% 0% 0% 0% 0% pm+pt NA NA Prot Perm Phases 2 6 4 4 Phases 2 6 6 6 Phases 2 6 6 6 Phases 2 6 6 6 6 Phases 2 6 6 6 6 Phases 3 100 100 90 90 90 Scener, (s) 100 100 100 90 90 90 Acree 6 6 6 6 6 6 6 Acree 7 7 7 6 6 6 6 Acree 6 6 6 6 6 6 6 Acree 7 7 </td <td>RTOR Reduction (vph)</td> <td>0</td> <td>0</td> <td>2</td> <td>0</td> <td>0</td> <td>47</td> <td></td>	RTOR Reduction (vph)	0	0	2	0	0	47	
hides (%) 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0%	Lane Group Flow (vph)	8	815	1093	0	30	က	
Protest	Heavy Vehides (%)	%0	%0	%0	%0	%0	%0	
Phases 5 2 6 4 Phases 2 6 4 Phases 2 6 4 Phases 2 6 Phase	Turn Type	bm+pt	Ϋ́	Ϋ́		Prot	Perm	
Phases 2 4 Phases 2 4 Phases 2 4 Phases 2 5 Phase 3 6 9 4 8 0 8 0 Phase 4 Phase 5 6 9 4 8 0 8 0 Phase 6 9 9 4 8 0 8 0 Phase 6 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	Protected Phases	S	7	9		4		
Green, G (s) 1090 1090 994 80 80 Green, G (s) 1100 1100 100 40 90 90 gCR Ratio 0.85 0.77 0.07 0.07 0.07 Attension (s) 3.0 3.0 3.0 3.0 3.0 3.0 Attension (s) 3.0 3.0 3.0 3.0 3.0 3.0 3.0 Application 3.0 3.0 3.0 3.0 3.0 3.0 3.0 Cap (vph) 3.90 3858 3493 124 111 Perm 0.16 0.1 0.24 0.03 Cap (vph) 3.90 3858 3493 124 111 Perm 0.1 0.2 0.3 0.00 0.00 Attention 0.1 0.2 0.0 0.0 0.0 0.0 Attention 0.2 0.1 0.2 0.1 0.2 1.0 0.1 Attention	Permitted Phases	2					4	
Steen, g(s) 110.0 110.0 100.4 9.0 9.0 Steen, g(s) 110.0 110.0 100.4 9.0 9.0 Steen, g(s) 110.0 110.0 100.7 Steen (s) 3.0 3.0 3.0 3.0 Cap (vph) 3.90 3.88 3.493 1.24 111 Cap (vph) 3.90 3.88 3.493 1.24 111 Cap (vph) 3.90 3.88 3.493 1.24 1.11 Parm	Actuated Green, G (s)	109.0	109.0	99.4		8.0	8.0	
yiC Ratio 0.85 0.85 0.77 0.07 0.07 0.07 0.07 0.07 0.07 0.0	Effective Green, g (s)	110.0	110.0	100.4		9.0	0.6	
Time (s) 4.0 7.0 6.0 6.0 Atension (s) 3.0	Actuated g/C Ratio	0.85	0.85	0.77		0.07	0.07	
Cap (vph) 30 3.	Clearance Time (s)	4.0	7.0	7.0		0.9	0.9	
Cap (vph) 380 3858 3433 124 111 Pott 0.01 c0.18 c0.24 c0.02 Perm 0.11 0.21 0.31 0.00 Perm 0.21 0.21 0.31 0.24 0.03 Perm 0.21 0.21 0.31 0.24 0.03 In Factor 0.83 0.59 1.00 1.00 1.00 In Sactor 0.2 0.1 0.2 1.0 0.1 0.0 In Sactor 1.8 1.2 4.7 58.3 56.5 E	Vehide Extension (s)	3.0	3.0	3.0		3.0	3.0	
Prot 0.01 c0.18 c0.24 c0.02 Perm 0.16 0.16 0.16 0.02 0.16 0.21 0.31 0.24 0.03 Los of the control of the control Delay (s) 1.00 0.1 Los of the control Delay 1.00 0.00 Cycle Length (s) 1.00 0.00 Los of the control Delay 1.00 Los of the	Lane Grp Cap (vph)	330	3858	3493		124	111	
Perm 0.16 0.00 1.21 0.21 0.31 0.24 0.03 Pelay, d1 18 1.9 4.4 57.3 56.4 On Factor 0.83 0.59 1.00 1.00 1.00 Isl Delay, d2 0.1 0.2 1.0 1.0 Isl 1.2 4.7 58.3 56.5 Evide A A A E E Delay (s) 1.3 4.7 57.2 LOS A A A E Delay (s) 1.3 4.7 57.2 LOS A A A E Ocorator Delay 5.2 HCM 2000 Level of Service O'Volume to Capacity ratio 0.30 Sum of lost time (s) on Capacity Utilization 15.0 Sum of lost time (s) on Capacity (s) 130.0 Sum of lost time (s) on Capacity (s) 130.0 Sum of lost time (s) on Capacity (m) 15.0 Sum of lost time (s) on Capacity (m) 15.0 Sum of lost time (s)	v/s Ratio Prot	0.01	c0.18	c0.24		c0.02		
12	v/s Ratio Perm	0.16					0.00	
1.8 1.9 4.4 57.3 56.4 0.83 0.59 1.00 1.00 0.2 0.1 0.2 1.0 0.1 1.8 1.2 4.7 58.3 56.5 A A A E E E 1.3 4.7 57.2 A A A E 5.2 HCM 2000 Level of Service activ ratio 0.30 Sum of lost time (s) 13.0 Sum of lost time (s) 13.0 Sum of lost time (s) 14.0% ICU Level of Service	v/c Ratio	0.21	0.21	0.31		0.24	0.03	
0.83 0.59 1.00 1.00 1.00 0.2 0.1 0.2 0.1 0.2 0.1 0.2 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1	Uniform Delay, d1	— 8:	0. 6.	4.4		57.3	56.4	
0.2 0.1 0.2 1.0 0.1 1.8 1.2 4.7 58.3 56.5 A A A E E 1.3 4.7 57.2 A A E 5.2 HCM 2000 Level of Service 130.0 Sum of lost time (s) 2ation 48.9% ICU Level of Service	Progression Factor	0.83	0.59	1.00		1.00	1.00	
1.8 1.2 4.7 58.3 56.5 A A A E E T.3 4.7 57.2 A A A E E E E E E E E E T.3 4.7 57.2 A B E E E E T.3 4.7 57.2 A B E T.3 4.7 57.2 B T.3 4.7 57.2 A B E T.3 4.7 57.2 B T.3 4.7	Incremental Delay, d2	0.2	0.1	0.2		1.0	0.1	
A A A E E 1.3 4.7 57.2 A A A E 5.2 HCM 2000 Level of Service 5.2 HCM 2000 Level of Service 130.0 Sum of lost time (s) ration 48.0% ICU Level of Service 15	Delay (s)	- 8.	1.2	4.7		58.3	56.5	
1.3 4.7 57.2 A A E 5.2 HCM 2000 Level of Service and 130.0 Sum of lost time (s) 2.2 A CU Level of Service and 130.0 Sum of lost time (s) 2.3 A CU Level of Service and 150.0 Sum of lost time (s)	Level of Service	A	⋖	V		ш	ш	
A A E 5.2 HCM 2000 Level of Service 5.2 HCM 2000 Level of Service 6.3 8.0 m of lost time (s) 7.2 action 48.0% ICU Level of Service 7.5 15 15 15 15 15 15 15 15 15 15 15 15 15	Approach Delay (s)		 	4.7		57.2		
5.2 HCM 2000 Level of Service 0.30 0.30 Sum of lost time (s) 2ation 48.0% ICU Level of Service 15	Approach LOS		⋖	∢		ш		
5.2 HCM 2000 Level of Service 0.30 0.30 130.0 Sum of lost time (s) zation 48.0% 15 ICU Level of Service	Intersection Summary							
0.30 0.30 130.0 Sum of lost time (s) zation 48.0% ICU Level of Service 15 15	HCM 2000 Control Delay			5.2	윈	:M 2000 I	evel of Service	A
130.0 Sum of lost time (s) zation 48.0% ICU Level of Service 15	HCM 2000 Volume to Capac	city ratio		0.30				
Utilization 48.0% 15	Actuated Cycle Length (s)			130.0	Su	m of lost	ime (s)	14.0
15	Intersection Capacity Utilizat	tion		48.0%	⊴	J Level o	Service	A
c Critical Lane Group	Analysis Period (min)			15				
	c Critical Lane Group							

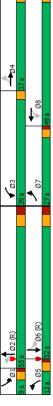
Timings 1: Regional Rd 25 & Louis St Laurent Ave

2032 Future Total AM 01-12-2024

→	SBT	4413	940	940	¥	9		9		20.0	32.2	52.0	37.1%	4.2	3.0	-1.0	6.2	Lag	Yes	C-Max	47.6	0.34	0.72	43.8	0:0	43.8	Ω	43.4	O										
٠	SBL	×	65	92	pm+pt	-	9	-		2.0	9.0		6.4%	3.0	1.0	-1.0	3.0	Lead	Yes		22.0	0.41	0.50	36.6	0:0	36.6	Ω											ш	
←	NBT	4413	965	965	₹	7		2		20.0	32.2	55.0	39.3%	4.2	3.0	-1.0	6.2	Lag	Yes	C-Max	52.3	0.37	0.82	43.8	0.0	43.8	Ω	43.4	٥								LOS: D	CU Level of Service F	
•	NBL	*	115	115	pm+pt	2	2	2		2.0	9.0	12.0	8.6%	3.0	1.0	-1.0	3.0	Lead	Yes	None	62.7	0.45	0.62	39.1	0.0	39.1	□						Green				Intersection LOS: D	CU Level o	
ţ	WBT	₩	260	260	Ϋ́	∞		∞		10.0	30.0		32.0%				0.9		Yes	None	46.6	0.33	0.57	40.2	0.0	40.2	Ω	9.09	٥				, Start of				드	⊆	
/	WBL	*	495	495	pm+pt	က	∞	က		10.0	14.0	39.0	27.9%	3.0	0.0	-1.0	2.0	Lead	Yes	None	72.3	0.52	0.93	64.3	0.0	64.3	ш						d 6:SBTL						
†	EBT	₩	535	535	A A	4		4		10.0	30.0		26.4%		3.0			Lag	Yes	None	30.9	0.22	0.93	70.3	0.0	70.3	ш	59.2	ш				:NBTL an						
1	田田	*	270	270	pm+pt	7	4	7		5.0	0.6	27.0	19.3%	3.0	1.0	-1.0	3.0	Lead	Yes	None	52.7	0.38	0.65	29.5	0.0	29.5	ပ					9	to phase 2		oordinated		48.5	zation 95.5%	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	SOT	Approach Delay	Approach LOS	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 Capacity Utilization 95.5%	Analysis Period (min) 15

2032 (Full Build) Future Total Traffic Conditions – NO RIRO Accesses

Splits and Phases: 1: Regional Rd 25 & Louis St Laurent Ave



Synchro 11 Report Page 1 Britannia & RR25 BA Group - NHY

2032 Future Total AM 01-12-2024 Queues 1: Regional Rd 25 & Louis St Laurent Ave

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Lane Group	EBF	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	248	1149	182	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	
Infersection Summany									

⁹⁵th percentile volume exceeds capacity, queue may be longer Queue shown is maximum after two cycles.

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Britannia & RR25 BA Group - NHY

HCM Signalized Intersection Capacity Analysis 1: Regional Rd 25 & Louis St Laurent Ave

2032 Future Total AM 01-12-2024

• 0.72 40.4 1.00 3.1 43.5 D D D 46.5 47.5 0.34 7.2 3.0 1432 0.24 % ¥ 1028 65 65 65 3.0 1.00 1.00 1.00 0.95 0.08 0.08 0.08 65 50.5 52.5 0.38 4.0 3.0 1.12 0.02 0.02 0.19 0.58 31.9 1.00 1.00 2% 340 340 0 3% 18.2 0.83 40.4 1.00 5.5 45.9 D A5.0 50.4 51.4 0.37 7.2 3.0 1518 co.31 % ₹ 58.3 59.4 0.42 4.0 3.0 180 0.23 0.64 0.64 1.00 1.00 7.2 35.5 %9 HCM 2000 Level of Service Sum of lost time (s) ICU Level of Service 95 0 0 5 7% 95 0.57 38.4 1.00 0.6 39.0 D 51.2 46.6 0.33 7.0 3.0 3.0 1140 0.19 % ₹ 67.4 68.4 0.49 3.0 3.0 524 0.22 0.22 0.94 41.3 1.00 26.0 67.3 2% 49.8 0.89 140.0 95.5% 1.00 0 % 190 190 1900 30.0 31.0 0.22 7.0 3.0 754 c0.21 ↑↑ 535 535 535 536 6.0 0.95 1.00 0.96 1.00 % NA 4 0.93 53.4 11.00 17.4 70.8 E 62.1 47.8 49.8 0.36 4.0 3.0 4.0 0.09 0.09 0.068 34.3 1.00 4.5 2% HCM 2000 Control Delay HCM 2000 Volume to Capacity ratio ntersection Capacity Utilization Actuated Cycle Length (s) Traffic Volume (vph)
Traffic Volume (vph)
Meal Four Volume (vph)
Meal Fow (vpha)
Total Lost time (s)
Lane Vull Factor
Fig. ped/bikes
Fig. ped Permitted Phases
Actuated Green, G (s)
Effective Green, g (s)
Actuated g/C Ratio
Clearance Time (s)
Vehicle Extension (s)
Lane Gpp Cap (vph)
ws Ratio Prot
ws Ratio Prot ncremental Delay, d2 Approach Delay (s) Approach LOS Heavy Vehides (%) Turn Type Protected Phases Progression Factor Jniform Delay, d1 Delay (s) Level of Service v/c Ratio

Britannia & RR25 BA Group - NHY

2032 Future Total AM 01-12-2024 Timings 2: Regional Rd 25 & Whitlock Ave

	1	†	>	ţ	4	•	←	۶	→	
Lane Group	EBL	EBT	WBL	WBT	WBR	图	NBT	SBL	SBT	
ane Configurations	*	2,	*	*	R.	K	443	*	4413	
raffic Volume (vph)	145	20	20	32	95	45	1205	20	1775	
-uture Volume (vph)	145	20	20	32	92	45	1205	20	1775	
Turn Type	Perm	Ϋ́	Perm	Ϋ́	Perm	pm+pt	Ϋ́	pm+pt	Ϋ́	
Protected Phases		4		∞		2	2	~	9	
Permitted Phases	4		∞		∞	2		9		
Detector Phase	4	4	∞	∞	∞	2	2	-	9	
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	
Fotal Split (s)	38.0	38.0	38.0		38.0	11.0	81.0		81.0	
Fotal Split (%)	29.2%	29.2%	29.5%		29.5%	8.5%	62.3%		62.3%	
(ellow Time (s)	3.3	3.3	3.3		3.3	3.0	4.2		4.2	
All-Red Time (s)	3.2	3.2	3.2		3.2	1.0	2.3	1.0	2.3	
ost Time Adjust (s)	-1.0	-1.0	-1.0		-1.0	-1.0	-1.0		-1.0	
Fotal Lost Time (s)	5.5	5.5	5.5	5.5	5.5	3.0	5.5		5.5	
.ead/Lag						Lead	Lag		Lag	
-ead-Lag Optimize?						Yes	Yes		Yes	
Recall Mode	None	None	None	None	None	None	C-Max	~	C-Max	
Act Effct Green (s)	20.4	20.4	20.4	20.4	20.4	28.7	89.7	28.7	9.68	
Actuated g/C Ratio	0.16	0.16	0.16	0.16	0.16	0.76	69.0	92.0	0.69	
//c Ratio	0.69	0.49	0.33	0.13	0.31	0.26	0.41	0.15	0.63	
Sontrol Delay	68.1	30.2	52.5	45.3	10.9	12.4	6.8	5.3	13.6	
λueue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Fotal Delay	68.1	30.2	52.5	45.3	10.9	12.4	6.8	5.3	13.6	
SO.	ш	ပ	_	۵	ш	ш	⋖	⋖	ш	
Approach Delay		49.2		29.2			7.0		13.4	
Approach LOS		٥		O			∢		В	
ntersection Summary										
Sycle Length: 130										
Actuated Cycle Length: 130										
Offset 64 (49%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	to phase	2:NBTL	Ind 6:SB7	L, Start o	of Green					
Natural Cycle: 95										
Control Type: Actuated-Coordinated	linated									
Maximum v/c Ratio: 0.69										
ntersection Signal Delay: 14.8	∞			₹	Intersection LOS: B	LOS: B				
ntersection Capacity Utilization 75.1%	on 75.1%			೦	ICU Level of Service D	f Service	۵			
Analysis Period (min) 15										

404 Splits and Phases: 2: Regional Rd 25 & Whitlock Ave 11 81s Ø1 • 02 (R)

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Britannia & RR25 BA Group - NHY

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Queues 2: Regional Rd 25 & Whitlock Ave

2032 Future Total AM 01-12-2024

	•	†	\	ţ	✓	•	←	۶	→	
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	
Lane Group Flow (vph)	145	145	20	35	95	45	1215	20	1875	
v/c Ratio	69:0	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	 5.	20.2	5.6	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)		67.9		68.1			6.969		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 molecular of young the analysis of 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis 2: Regional Rd 25 & Whitlock Ave

2032 Future Total AM 01-12-2024

1775 1775 1775 1900 5.5 6.80 1.00 1.00 1.00 1.00 1.00 1.00 1.00 87.9 88.9 0.68 6.5 1872 % ₹ c0.43 1.00 1.1 12.6 B %0 93.6 95.6 0.74 4.0 3.0 3.0 3.0 3.0 0.11 0.17 5.2 1.00 0.3 14.0 D 25% 1215 87.9 88.9 0.68 6.5 3.0 3.0 2933 0.28 % ¥ 0.41 9.1 0.64 0.4 6.2 A A 6.6 45 45 3.0 3.0 3.0 1.00 1.00 0.95 1.00 1.00 45 45 % 93.6 95.6 0.74 4.0 3.0 155 0.20 0.20 0.29 8.5 2.04 1.0 HCM 2000 Level of Service Sum of lost time (s) ICU Level of Service 19.4 20.4 0.16 6.5 3.0 228 0.07 46.7 1.00 0.1 46.8 % ¥ ₩ 0.13 1.00 0.2 0.2 47.3 D 19.4 20.4 0.16 6.5 3.0 0.05 0.33 1.00 1.3 50.0 15.6 0.63 130.0 75.1% 8 0 0 2 % 8 8 8 19.4 20.4 0.16 6.5 3.0 3.0 237 0.06 0.36 49.0 1.00 0.9 49.9 D 32% NA 145 145 1900 1.00 1.00 0.99 0.95 0.73 1333 145 145 5 4% 19.4 20.4 0.16 6.5 3.0 209 00.11 0.69 1.00 9.6 61.4 Intersection Summary
HCM 2000 Control Delay
HCM 2000 Volume to Capacity ratio Intersection Capacity Utilization Actuated Cyde Length (s) Lane Configurations
Traffic Volume (vph)
Ideal Fow (vpha)
Total Lost time (s)
Lane Utl. Factor
Tepb, ped lokes
Fith, ped lokes
Fit Protected
Satd. Flow (prot)
Fit Permitted
Satd. Flow (prot)
Fit Permitted
Satd. Flow (vph)
RTOR REduction (vph)
RTOR REduction (vph)
Confil. Peds, (#fhr) Permitted Phases Actuated Green, G (s) Effective Green, g (s) Actuated g/C Ratio Analysis Period (min) c Critical Lane Group Incremental Delay, d2 Approach Delay (s) Approach LOS Clearance Time (s) Vehicle Extension (s) Lane Grp Cap (vph) Vehicles (%) Progression Factor Protected Phases Uniform Delay, d1 Delay (s) Level of Service v/s Ratio Perm Turn Type Heavy

Britannia & RR25 BA Group - NHY

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Timings 5: Regional Rd 25 & Etheridge Ave/Collector Road

2032 Future Total AM 01-12-2024

→	SBT	ተ ቶኑ	1800	1800	₹	9		9		20.0	38.4	70.0	53.8%	4.2	2.2	-1.0	5.4	Lag	Yes	C-Max	86.3	99.0	99.0	9.0	0:0	9.0	∢	8.9	∢										
۶	SBL	-	30	30	Perm		9	9		20.0	38.4	70.0	53.8%	4.2	2.2	-1.0	5.4	Lag	Yes	C-Max	86.3	99.0	0.10	3.9	0.0	3.9	⋖											۵	
←	NBT	444	1005	1005	≨	2		7		20.0	38.4	81.0	62.3%	4.2	2.2	-1.0	5.4			C-Max	92.8	0.74	0.32	2.4	0.0	2.4	⋖	5.2	∢								LOS: B	CU Level of Service D	
•	NBL	-	75	75	pm+pt	2	2	2		7.0	11.0	11.0	8.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	98.2	92.0	0.45	43.4	0.0	43.4	_						Green				Intersection LOS: B	U Level o	
Ļ	WBT	æ	0		¥			∞		10.0	36.2	37.0	28.5%	3.3	2.9	-1.0	5.2	Lag	Yes	None	14.0	0.11	0.19	4.	0.0	1.4	⋖	36.9	٥				Start of (Ξ	೦	
>	WBL	<u></u>	65	92	Perm		∞	∞		10.0	36.2	37.0	28.5%	3.3	5.9	-1.0	5.2	Lag	Yes	None	14.0	0.11	0.50	0.79	0.0	0.79	ш						6:SBTL						
†	EBT	æ	0	0	¥	4		4		10.0	36.2	49.0	37.7%	3.3	2.9	-1.0	5.2			None	23.6	0.18	0.48	21.6	0.0	21.6	ပ	43.5	٥				VBTL and						
4	EBF	J F	200	200	pm+pt	7	4	7		7.0	11.0	15.0	9.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	25.8	0.20	0.75	63.8	0.0	63.8	ш						bhase 2:1		dinated		5	ion 78.9%	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	ros	Approach Delay	Approach LOS	Intersection Summary	Cycle Lenath: 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 Capacity Utilization 78.9%	Analysis Period (min) 15

Splits and Phases: 5: Regional Rd 25 & Etheridge Ave/Collector Road



Synchro 11 Report Page 7 Britannia & RR25 BA Group - NHY

Queues 2032 Future Total AM 5: Regional Rd 25 & Etheridge Ave/Collector Road 01-12-2024

	• =	† 🛱	₩	↓ MBT	√ ₩	← NBI	≯ ₩	→ SBT	
ane Group Flow (vph)	200	185	65	22	75	1025	90	1890	
	0.75	0.48	0.50	0.19	0.42	0.32	0.10	99.0	
	63.8	21.6	0.79	1.4	43.4	2.4	3.9	9.0	
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	63.8	21.6	0.79	1.4	43.4	2.4	3.9	9.0	
Jueue Length 50th (m)	48.3	16.1	16.9	0.0	8.2	9.4	6.0	144.9	
Jueue Length 95th (m)	6.69	37.5	31.6	0.0	m15.5	14.5	m1.6	183.3	
ntemal Link Dist (m)		53.9		63.1		292.1		6.969	
urn Bay Length (m)	40.0		40.0		70.0		70.0		
Sase 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	0.45	0.32	0.10	99.0	
tersection Summary									
,									

m Volume for 95th percentile queue is metered by upstream signal.

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Britannia & RR25 BA Group - NHY

HCM Signalized Intersection Capacity Analysis 5: Regional Rd 25 & Etheridge Ave/Collector Road

2032 Future Total AM 01-12-2024

	1	†	<u>/</u>	>	ţ	4	•	←	•	۶	→	•
Movement	EB	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	2,		r	2,		<u>, </u>	4413		r	4413	
Traffic Volume (vph)	200	0	185	65	0	22	75	1005	50	30	1800	8
Future Volume (vph)	200	0	185	92	0	22	75	1005	50	30	1800	6
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	
F	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	22	75	1005	20	30	1800	6
RTOR Reduction (vph)	0	93	0	0	20	0	0	_	0	0	7	0
Lane Group Flow (vph)	200	92	0	65	2	0	75	1024	0	30	1888	0
Heavy Vehides (%)	1%	%0	%0	%0	%0	%0	3%	%9	%0	%0	2%	%9
Turn Type	pm+pt	NA		Perm	¥		pm+pt	¥		Perm	NA	
Protected Phases	7	4			œ		2	7			9	
Permitted Phases	4			œ			2			9		
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	00.00	90.0			0.00		c0.03	0.24			00.44	
v/s Ratio Perm	c0.09			0.02			0.31			0.02		
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		9.99	53.7		13.6	6.3		9.6	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		9.0	1.	
Delay (s)	62.2	45.7		64.0	53.8		45.9	2.3		3.1	9.8	
Level of Service	ш	Ω		ш	□		Ω	⋖		⋖	⋖	
Approach Delay (s)		54.2			59.3			5.3			8.5	
Approach LOS		Ω			ш			⋖			V	
Intersection Summary												
HCM 2000 Control Delay			14.2	ĭ	3M 2000	HCM 2000 Level of Service	Service		В			1
HCM 2000 Volume to Capacity ratio	city ratio		0.70									
Actuated Cycle Length (s)			130.0	S	Sum of lost time (s)	time (s)			16.6			
Intersection Capacity Utilization	tion		%6.87	೦	U Level o	ICU Level of Service			Ω			
Analysis Period (min)			15									
c Critical Lane Group												

2032 Future Total AM 01-12-2024 Timings 7: Regional Rd 25 & Britannia Rd

	1	†	/	ţ	•	•	۶	→	
Lane Group	EBL	EBT	WBL	WBT	图	NBT	SBL	SBT	
Lane Configurations	F	4413	K.	4413	K.	4413	K.	4413	
Traffic Volume (vph)	8	415	430	345	20	006	360	1670	
Future Volume (vph)	9	415	430	345	20	006	360	1670	
Turn Type	Prot	Ϋ́	Prot	Ϋ́	Prot	Ϋ́	Prot	¥	
Protected Phases	7	4	က	∞	2	2	-	9	
Permitted Phases									
Detector Phase	7	4	က	∞	2	2	-	9	
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%	39.5%	8.5%	39.5%	
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)	9.0	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	92.0	0.87	0.38	0.22	0.77	09:0	0.84	
Control Delay	59.9	46.4	9.89	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	9.89	29.3	9.69	41.1	53.9	48.0	
ros	ш	۵	ш	ပ	ш	_	_	_	
Approach Delay		47.5		47.8		41.9		49.0	
Approach LOS		۵		۵		Ω		Ω	
Intersection Summary									
Cycle Lenath: 130									
Actuated Cycle Length: 130									
Offset 104 (80%), Referenced to phase 2:NBT and 6:SBT, Start of Green	d to phas	e 2:NBT a	Ind 6:SB7	, Start of	Green				
Natural Cycle: 130									
Control Type: Actuated-Coordinated	dinated								
Maximum v/c Ratio: 0.87									
Intersection Signal Delay: 46.8	8			흐	ersection	Intersection LOS: D			
Intersection Capacity Utilization 82.9%	on 82.9%			⊇	U Level o	ICU Level of Service E	ш		
Analysis Period (min) 15									

100 603 Splits and Phases: 7: Regional Rd 25 & Britannia Rd ↑ Ø5 + Ø6(R) Ø2 (R)

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Britannia & RR25 BA Group - NHY

Synchro 11 Report Page 11

Queues 7: Regional Rd 25 & Britannia Rd

2032 Future Total AM 01-12-2024

44	0	0	0	15		-	.5	4.	0.	0.	0.	4	06	П	
0.84				2005		292	#228.5	157.4			48.0		1690	SBT	→
09.0	0	0	0	909	90.0		#73.7	51.6	53.9	0.0	53.9	09.0	360	SBL	۶
0.77	0	0	0	1464		165.3	130.2	108.9	41.1	0.0	41.1	0.77	1125	NBT	←
0.22	0	0	0	225	0.06		13.4	6.7	9.69	0.0	9.69	0.22	20	NBL	•
0.35	0	0	0	1368		182.4	51.0	37.4	29.3	0.0	29.3	0.38	485	WBT	ţ
0.85	0	0	0	203	120.0		#86.3	29.0	9.89	0.0	9.89	0.87	430	WBL	>
0.51	0	0	0	1370		377.9	76.0	62.7	46.4	0.0	46.4	92.0	700	EBT	†
0.12	0	0	0	482	0.09		15.3	8.0	59.9	0.0	29.9	0.26	9	EBL	4
Reduced v/c Ratio	Storage Cap Reductn	Spillback Cap Reductn	Starvation Cap Reductn	Base Capacity (vph)	Turn Bay Length (m)	Internal Link Dist (m)	Queue Length 95th (m)	Queue Length 50th (m)	Total Delay	Queue Delay	Control Delay	v/c Ratio	Lane Group Flow (vph)	Lane Group	
	Storage Co	Spillback C	Starvation	Base Capa	Turn Bay L	Internal Lir	Queue Ler	Queue Ler	Total Delay	Queue Del	Control De	v/c Ratio	Lane Grou	Lane Grou	

Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis 7: Regional Rd 25 & Britannia Rd

2032 Future Total AM 01-12-2024

NBI NBI NBI SBI SBI SBI SBI SBI SBI SBI SBI SBI S	`	•	†	<u> </u>	>	ţ	1	•	←	•	۶	→	•
10	Ш	EE	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
60 415 286 430 345 140 50 900 225 360 1670 1900 1900 1900 1900 1900 1900 1900 19		F	444		F	444		F	444		F	441	
1900 1900		9	415	285	430	345	140	20	006	225	360	1670	20
1900 1900		8	415	282	430	345	140	20	006	225	360	1670	20
3.0 6.5 3.0 6.5 3.0 6.7 3.0 6.7 0.97 0.98 0.97 0.90 0.97 0.90 0.97 0.80 1.00 0.96 1.00 0.96 1.00 0.95 1.00 1.00 1.00 0.95 1.00 1.00 1.00 0.95 1.00 0.95 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.95 1.00	15	000	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
1,00 0,94 1,00 0,95 1,00 0,97 1,00 0,95 1,95		3.0	6.5		3.0	6.5		3.0	6.7		3.0	6.7	
100 094 100 096 100 097 100 100 097 300 098 3003 4239 4234 4207 3867 4221 3802 4324 098 100 100 099 100 099 100 099 100 099 100 099 100 100	0	.97	*0.80		0.97	*0.80		0.97	*0.80		0.97	*0.80	
0.95 100 0.95 100 0.95 100 0.95 100 0.95 0.00	-	8	0.94		1.00	96.0		1.00	0.97		1.00	1.00	
3303 4239 3445 4307 3367 4221 3502 4324 100 0.95 1100 1.00 1.00 1.00 1.00 1.00 1.00 1.0	0	58.	1.00		1.00	1.00		0.95	1.00		0.95	1.00	
0.95 100 0.95 100 0.95 100 0.95 100 0.95 100 0.95 100 0.95 100 0.95 100 0.95 100 0.95 100 0.95 100 0.95 100 0.90 0.91 0.01 0.01 0.01 0.01 0.01	33	303	4239		3445	4307		3367	4221		3502	4324	
3303 4239 3445 4307 3367 4221 3502 4324 4307 60 410 10	0	.95	1:00		1.00	1.00		0.95	1.00		0.95	1.00	
100 100 100 100 100 100 100 100 100 100	33	303	4239		3445	4307		3367	4221		3502	4324	
60 415 286 430 345 140 50 900 225 360 1670 66 606 60 0 40 427 0 50 126 0 0 0 1 1 689 6 606 60 0 40 427 0 50 1699 0 360 1689 6% 1% 1% 1% 1% 1% 2% 4% 5% 4% 5% 4% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5%		8	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
60 94 0 0 58 0 0 26 0 0 1 60 140 140 140 140 140 20 50 1099 0 0 56 0 60 140 140 140 140 140 140 140 140 140 14		8	415	285	430	345	140	20	006	225	360	1670	20
60 60 430 427 6 1099 0 360 1689 6% 1% 1% 1% 2% 4% 5% 4% 5% 5% 188 5% 5% 168 5%		0	8	0	0	28	0	0	56	0	0	-	0
6% 1% 1% 7% 1% 2% 4% 5% 4% 6% 5% Prot NA Prot NA Prot NA Prot NA 7 4 3 8 5 2 1 6 6 250 178 362 63 42.5 21.5 57.7 7.6 26.0 188 37.2 7.3 43.5 22.5 58.7 4.0 7.5 4.0 7.7 4.0 7.7 40 7.7 4.0 7.5 4.0 7.7 4.0 7.7 4.0 7.7 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 1.0 7.7 4.0 7.7 4.0 7.7 4.0 7.7 2.0 7.1 0.8 4.3 1.0 0.0 0.0 1.0 0.0 0.0 0.0 0.0 0.0 0.0 <td>(hd)</td> <td>8</td> <td>909</td> <td>0</td> <td>430</td> <td>427</td> <td>0</td> <td>20</td> <td>1099</td> <td>0</td> <td>360</td> <td>1689</td> <td>0</td>	(hd)	8	909	0	430	427	0	20	1099	0	360	1689	0
Prof. NA		%9	1%	4%	%/	1%	5%	4%	2%	4%	%0	2%	27%
66 25.0 17.8 36.2 6.3 42.5 21.5 7.6 26.0 18.8 37.2 6.3 42.5 22.5 7.6 26.0 18.8 37.2 7.3 43.5 22.5 8.0 0.20 0.14 0.29 0.06 0.33 0.17 4.0 7.5 4.0 7.5 4.0 7.7 4.0 1.93 847 4.98 1.232 189 1412 606 0.02 0.0.14 0.012 0.10 0.01 0.26 0.78 0.05 58.7 48.5 54.3 36.8 58.8 38.9 49.5 58.7 48.5 54.3 36.8 58.8 38.9 49.5 58.7 48.5 54.3 36.8 58.8 38.9 49.5 58.7 48.5 54.3 36.8 38.9 49.5 59.6 51.4 44.7 34.3 50.4 50.4	ш.	hot	Ν		Prot	A		Prot	Α		Prot	¥	
6.6 25.0 17.8 36.2 6.3 42.5 21.5 7.6 26.0 18.8 37.2 7.3 43.5 22.5 0.06 0.20 0.14 0.29 0.06 0.33 0.17 4.0 7.5 4.0 7.5 4.0 7.7 4.0 193 8.7 3.0 3.0 3.0 3.0 3.0 3.0 193 8.7 4.8 1.32 1.89 14.2 606 4.0 0.02 co.14 4.98 1.32 1.89 14.2 60.1 0.0 0.31 0.7 4.0 0.7 0.0		7	4		က	∞		2	7		_	9	
66 25.0 17.8 36.2 6.3 42.5 21.5 7.6 26.0 18.8 37.2 7.3 43.5 22.5 7.0 6.00 0.04 0.29 0.06 0.33 0.17 4.0 7.5 4.0 7.5 4.0 7.7 4.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 1.03 847 4.98 12.2 1.0 1.1 4.0 1.03 8.47 4.98 12.2 1.0 1.1 6.06 0.32 0.71 0.01 0.01 0.26 0.78 0.05 58.7 4.8 5.4 3.6 8.8 3.8 49.5 1.00 1.00 0.93 0.93 1.00 1.00 0.99 1.0 1.0 1.0 1.0 1.0 1.0 0.99 1.0 1.0 1.0 1.0 1.0 0.99 0.4 1.2													
7.6 26.0 18.8 37.2 7.3 43.5 22.5 0.06 0.20 0.14 0.29 0.06 0.33 0.17 3.0 3.0 3.0 3.0 3.0 3.0 3.0 193 847 498 1232 189 1412 606 0.02 c0.14 c0.12 0.10 0.01 0.26 c0.10 s.0 0.31 0.71 0.86 0.35 0.26 0.78 0.59 6.0 <td></td> <td>9.9</td> <td>25.0</td> <td></td> <td>17.8</td> <td>36.2</td> <td></td> <td>6.3</td> <td>42.5</td> <td></td> <td>21.5</td> <td>27.7</td> <td></td>		9.9	25.0		17.8	36.2		6.3	42.5		21.5	27.7	
0.06 0.20 0.14 0.29 0.06 0.33 0.17 4.0 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2		9.7	26.0		18.8	37.2		7.3	43.5		22.5	28.7	
40 7.5 4.0 7.5 4.0 7.7 4.0 30 3.0 3.0 3.0 3.0 3.0 3.0 3.0 193 8.7 3.0 3.0 3.0 3.0 3.0 3.0 0.02 0.74 0.012 0.10 0.01 0.26 0.71 6.6 58.7 4.3 1.0 1.0 1.0 0.59 0.59 0.59 58.7 4.3 5.4 3.6 5.8 8.9 49.5 1.0 1.00 1.00 0.93 0.93 1.00 1.00 0.99 49.5 5.1 4.2 5.4 3.6 5.8 8.9 49.5 5.4 5.2 1.4 6.7 3.4 3.2 5.5 43.5 5.0 5.0 5.2.1 4.7 3.4 3.4 3.5 43.9 D D D 5.2.1 4.8 1.00 1.00 1.00 1.0		90:	0.20		0.14	0.29		90.0	0.33		0.17	0.45	
30 30 30 30 30 30 30 30		4.0	7.5		4.0	7.5		4.0	7.7		4.0	7.7	
193 847 498 1232 189 1412 606 0.02 60.14 60.12 0.10 0.01 0.26 60.10 60.10 0.31 0.71 0.86 0.35 0.26 0.78 0.59 58.7 48.5 54.3 36.8 58.8 38.9 49.5 1.0 1.00 0.93 0.39 1.0 0.99 0.9 51.4 64.7 34.3 89.5 43.2 50.4 E D E C E D D D 52.1 48.6 F C E D D D D D D D D D D D A8.3 HCM 2000 Level of Service D D D D D A8.3 LCU Level of Service E D D D D		3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
0.02 c0.14 c0.12 0.10 0.01 0.26 c0.10 0.31 0.71 0.86 0.35 0.26 0.78 0.59 58.7 48.5 54.3 38.8 58.8 38.9 49.5 1.00 1.00 0.93 0.93 1.00 1.00 0.99 0.9 2.9 14.2 0.2 0.8 4.3 1.2 58.6 51.4 64.7 34.3 59.5 4.3 1.2 E D E C E D D D E C E D D E SZ.1 48.6 43.9 D Dapacity ratio 0.81		193	847		498	1232		189	1412		909	1952	
0.31 0.71 0.86 0.35 0.26 0.78 0.59 0.58 0.81 0.71 0.86 0.35 0.26 0.78 0.59 0.58 0.82 0.78 0.89 0.89 0.99 0.99 0.99 0.99 0.99 0.9	0	.02	c0.14		c0.12	0.10		0.01	0.26		c0.10	c0.39	
0.31 0.71 0.86 0.35 0.26 0.78 0.59 (58.7 48.5 54.3 36.8 58.8 38.9 49.5 51 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1													
58.7 48.5 54.3 36.8 58.8 38.9 49.5 51.00 1.00 0.99 1.00 1.00 0.99 0.90 1.00 0.99 1.00 1.00	0	ج	0.71		98.0	0.35		0.26	0.78		0.59	0.87	
100 100 0.93 0.93 1.00 1.00 0.99 1 5.90 142 0.2 0.8 4.3 1.2 5.90 5.41 6.47 34.3 59.5 43.2 50.4 4.8 E 52.1 48.6 43.9 D D pacity ratio 0.81 HCM 2000 Level of Service E 5.21	5	8.7	48.5		54.3	36.8		28.8	38.9		49.5	32.1	
0.9 2.9 142 0.2 0.8 4.3 12 12 12 15 15 15 15 15 15 15 15 15 15 15 15 15	_	8	1.00		0.93	0.93		1:00	1.00		0.99	1.39	
59.6 51.4 64.7 34.3 59.5 43.2 50.4 E D E C E D D D D D D D D D D D D D D D		6.0	5.9		14.2	0.2		8.0	4.3		1.2	4.4	
E C E D D D D D D D D D D D D D D D D D	Đ.	9.6	51.4		64.7	34.3		29.2	43.2		50.4	49.0	
52.1 48.6 43.9		ш	□		ш	ပ		ш			Δ	Ω	
D D 48.3 HCM 2000 Level of Service D pacity ratio 0.81 (30.0 Sum of lost time (s) 19.2 zation 82.9% ICU Level of Service E 15			52.1			48.6			43.9			49.3	
48.3 HCM 2000 Level of Service 0.81 0.81) 130.0 Sum of lost time (s) zation 82.9% ICU Level of Service			Ω			Ω							
48.3 HCM 2000 Level of Service 0.81 0.81 130.0 Sum of lost time (s) zation 82.9% ICU Level of Service 15	ary												
Capacity ratio 0.81 h (s) 130.0 Sum of lost time (s) Utilization 82.9% ICU Level of Service 15	Delay			48.3	=	M 2000 I	evel of S	ervice		۵			
h (s) 1300 Sum of lost time (s) Utilization 82.9% IOU Level of Service 15	to Capacity rail	Ę.		0.81									
Utilization 82.9% 15 1p	gth (s)			130.0	S	m of lost	time (s)			19.2			
dı	ity Utilization			82.9%	⊇	U Level o	f Service			ш			
coup	Ē.			15									
	roup												

Britannia & RR25
BA Group - NHY
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HCM Unsignalized Intersection Capacity Analysis 8: Site Dwy (South)/Site Dwy (North) & Etheridge Ave

2032 Future Total AM 01-12-2024

EBL EBT EBR WBL 5 165 5 45 100 100 100 100 5 165 5 45 1120 100 100 100 122 22 124 4.1 120 170 170 170 170 170 170 170 170			-	_	L	•	,
tions (Ab) 5 165 5 45 (Vehrly) 5 165 5 45 (Vehrl) 5 165 5 45 (Vehrl) None (Vehrl)	WBT WBR	NBL	NBT	NBR	SBL	SBT	SBR
(m/s) 5 165 5 45 (veh/h) 5 165 5 45 (veh/h) 5 165 5 45 (veh) 7 100 1.00 1.00 1.00 1.00 1.00 1.00 1.0	(4			4	
(m/s) 5 165 5 45 6 10 100 1,00	85 35	20	0	125	92	0	15
Free (vph) 5 165 5 45 (vph) 5 165 5 45 45 (vph) 5 165 5 45 45 (vph) 6 100 100 100 100 100 100 100 100 100 1		50	0	125	92	0	15
(m/s) (m	Free		Stop			Stop	
(mis) (m	%0		%0			%0	
(m/s) ge (veh) None (veh) int vol int		1.00	1.00	1.00	1.00	1.00	1.00
(mis) ye (veh) vol if (m) stocked cloune 120 170 mf vol	85 35	20	0	125	92	0	15
(veh) 99 (veh) None vota) I (m) Jocked Joc							
(m/s) ge (vet) vet) India land							
(veh) (v							
(veh) (veh) (veh) (veh) (in) (olume 120 170 inf vol 120 170 inf vol 120 170 (vel 120 (v							
weth) None None I (m) Jocked I (m) Jocked I (m) Jocked I (m) I							
weth) larry (with) mit vol	None						
(m)							
hirty of the control	78						
minary 120 170 min val							
mirval vol 120 170 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1		382	388	168	495	372	102
hhh) 120 170 2.2 2.2 2.2 hhh) 1480 1420 1420 # EB1 WB1 NB1 SB1 1420 # 100 8 15 145 110 5 45 20 96 5 35 125 15 5 48 20 96 5 35 10 96 5 48 20 96 5 35 10 96 6 10 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0							
val 120 170							
## ## ## ## ## ## ## ## ## ## ## ## ##		382	388	168	495	372	102
hhh) 1480 97 # EB1 WB1 NB1 5B1 175 165 145 110 5 35 125 15 5 35 125 15 5 35 125 15 5 35 125 15 6 00 0.03 0.18 0.25 5) A A B C 7 (s) 0.2 2.3 10.4 15.8 Cmmary 6.1		7.1	6.5	6.2	7.1	6.5	6.2
Manary 2.2 2.2 2.2 2.2 2.3 4.0 9.7 1480 4.5 1480 4.5 1480 9.7 1480 9.7 1480 9.8 1480 1480 9.8 1480 1490 1490 1400							
% 100 97 420 474 420 434 444 444 444 444 444 444 444 444 44		3.5	4.0	3.3	3.5	4.0	3.3
## EB1 WB1 NB1 5B1 ## EB1 WB1 NB1 SB1 175 165 145 110 5 35 125 115 1480 1420 815 442 acity 0.00 0.03 0.18 0.25 Seth (m) 0.1 0.8 5.2 7.8 S) A A B C r(s) 0.2 2.3 10.4 15.8 c) 7 (s) 0.2 2.3 10.4 15.8 mmary 6.1		96	100	98	11	100	8
## EB1 WB1 NB1 SB1 175 165 145 110 176 140 1420 815 442 both 0.00 0.03 0.18 0.25 Sth (m) 0.1 0.8 5.2 78 S) A A B C V(s) 0.2 2.3 10.4 15.8 Cmmary 6.1		223	23	882	408	541	928
175 165 145 110 5 45 20 95 5 35 120 165 1480 1420 815 442 95 000 0.03 0.18 0.25 95 000 0.03 0.18 0.25 95 000 0.03 0.18 0.25 96 000 0.03 0.18 0.25 97 000 0.03 0.18 0.25 98 0.2 2.3 10.4 15.8 99 0.2 2.3 10.4 15.8 6.1							
5 45 20 95 15 15 15 15 15 15 15 15 15 15 15 15 15							
5 35 125 15 42 edge 1480 1480 1480 815 442 edge 1480 1480 81 62 85th (m) 0.1 0.8 5.2 7.8 s) A A B C C (s) 0.2 2.3 104 15.8 C C (s) 0.2 2.3 104 15.8 C C mmary 6.1							
ocity 0.00 0.03 0.18 0.25 58th (m) 0.1 0.8 5.2 7.8 5) A A B C V (s) 0.2 2.3 10.4 15.8 C V (s) 0.2 2.3 10.4 15.8 C Mmary 6.1							
Seity 0.00 0.03 0.18 0.25 Seith (m) 0.1 0.8 5.2 7.8 s) A A B C V (s) 0.2 2.3 10.4 15.8 E C mmary 6.1							
Sith (m) 0.1 0.8 5.2 7.8 s) 0.2 2.3 10.4 15.8 d (s) 0.2 2.3 10.4 10.4 10.4 10.4 10.4 10.4 10.4 10.4							
s) 0.2 2.3 10.4 15.8 (s) A A B C C (s) 0.2 2.3 10.4 15.8 (mmary 6.1							
(s) 0.2 2.3 10.4 15.8 Cmmary 6.1							
r(s) 0.2 2.3 10.4 15.8 E C mmary 6.1							
B C mmary 6.1							
mmary 6.1							
6.1							
Utilization 46.7%	ICU Level of Service			∢			
Analysis Period (min)							

Britannia & RR25 BA Group - NHY

Timings 2032 Future Total AM 10: Britannia Rd & Farmstead Dr 01-12-2024

6 8 8 8 6 220.0 10.0 10.0 224.4 15.3 15.3 22.2 2.0 2.0 1.0 1.0 1.0 10.0 10.0 10.0	Prot 8 8 8 8 15.3 410.0 2.0 2.0 1.0 4.3 None	Prot 8 8 8 8 10.0 10.0 15.3 39.0% 3 39.0% 3 3.0 1.0 1.0 4.3 None None 12.8	Prot 8 8 8 8 44.0 39.0% 3 3.3 2.0 -1.0 -1.0 4.3 0.43	Prot 8 8 8 4 15.3 33.3 3.3 2.0 -1.0 -1.0 -1.0 -1.0 0.12 0.12 0.43 49.0
2 6 20.0 20.0 20.4 20.4 64.0 50.5% 39 42 42 42 22 22 -1.0 -1.0 5.4 5.4 18.9	2 6 6 200 200 200 204 204 204 204 204 20 20 20 20 20 20 20 20 20 20 20 20 20	2 6 6 200 200 200 200 200 200 200 200 20	2 6 6 20.0 20.0 20.0 20.4 20.5 30.0 61.0% 50.5% 39 7.2 2.2 2.2 2.2 2.2 1.0 1.0 5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4	2 6 6 20.0 20.0 20.0 20.4 20.4 20.4 20.4 20.4
20.0 20.0 10.0 29.4 29.4 15.3 64.0 53.0 41.0 61.0% 80.5% 39.0% 33.2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	20.0 20.0 10.0 29.4 29.4 15.3 64.0 53.0 41.0 61.0% 80.5% 39.0% 31.2 2.2 2.2 2.2 2.2 2.2 2.3 5.4 5.4 4.3 5.4 6.	20.0 20.0 10.0 29.4 29.4 15.3 64.0 53.0 41.0 61.0% 80.5% 39.0% 33.4 2.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2 2	20.0 20.0 10.0 29.4 29.4 15.3 64.0 53.0 41.0 61.0% 50.5% 39.0% 39.0% 31.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2	20.0 20.0 10.0 294 28.4 15.3 64.0 53.0 41.0 61.0% 50.5% 30.0% 31.3 2.2 2.0 -1.0 -1.0 -1.0 -1.0 5.4 5.4 4.3 12.8 6.7 82.3 12.8 86.7 82.3 12.8 86.7 82.3 12.8 86.7 82.3 12.8 86.7 82.3 12.8 86.7 82.3 12.8 86.7 82.3 12.8 86.7 82.3 12.8 86.7 82.3 12.8 86.7 82.3 12.8 86.7 82.3 12.8 86.7 82.3 12.8 86.7 82.3 12.8 86.7 82.3 12.8 86.7 82.3 12.8 86.7 82.3 12.8 86.7 82.3 12.8
200 010 294 294 153 640 530 410 610% 505% 390% 3 22 22 22 1.10 -1.0 -1.0 54 54 43 Yes	200 100 294 294 153 640 530 410 610% 505% 390% 33 22 22 22 -10 -10 -10 5.4 54 4.3 Lag Yes C-Max None I	200 200 100 294 294 294 294 153 640 53.0 41.0 61.0% 50.5% 39.0% 33 2.2 2.2 2.0 -1.0 -1.0 -1.0 -1.0 54 54 4.3 Yes C-Max C-Max None P 86.7 82.3 12.8 0.83 0.78 0.12	200 200 100 294 294 294 294 153 640 530 410 610% 50.5% 39.0% 33 2.2 2.2 2.2 2.0 1.0 1.0 1.0 5.4 5.4 4.3 Leg Yes C-Max C-Max None P86.7 82.3 12.8 69.3 0.43 0.43 0.43	20.0 20.0 10.0 29.4 15.3 64.0 53.0 41.0 61.0% 60.5% 39.0% 33 4.2 2.2 2.2 2.0 -1.0 -1.0 -1.0 5.4 5.4 4.3 Yes Regard C-Max C-Max None P 86.7 82.3 12.8 86.7 82.3 12.8 6.9 0.83 0.78 0.12 0.18 0.18 0.44 49.0
610% 50,5% 39,0% 3 4,2 4,2 3,3 2,2 2,2 2,0 -1,0 -1,0 -1,0 5,4 4,3 Yes	610% 50.5% 39.0% 33 4.2 4.2 3.3 2.2 2.0 -1.0 -1.0 -1.0 5.4 5.4 4.3 Lag Ves C-Max C-Max None P	610% 50.5% 39.0% 33 4.2 4.2 3.3 2.2 2.0 -1.0 -1.0 -1.0 5.4 5.4 4.3 Leg C-Max C-Max None P 86.7 82.3 12.8 0.83 0.78 0.12	61,0% 50,5% 39,0% 33 42 42 33 22 22 22 -10 -1,0 -1,0 54 54 4.3 Lag Yes C-Max C-Max None P 86.7 82,3 12,8 0.13 0.13	61,0% 50,5% 39,0% 33 4,2 4,2 33 2,2 2,2 2.0 -1,0 -1,0 -1,0 5,4 5,4 4,3 Lag Yes C-Max None P 86,7 82,3 12,8 0,83 0,78 0,12 0,83 0,78 0,12 0,83 0,78 0,12 2,8 4,4 49,0
30 4.2 4.2 5.5 1.0 2.2 2.2 2.0 -1.0 -1.0 -1.0 -1.0 30 5.4 5.4 4.3 Lead Lag	30 5.4 4.2 5.5 1.0 2.2 2.2 2.0 1.0 -1.0 -1.0 1.0 8.0 5.4 5.4 4.3 1.0 5.4 5.4 4.3 1.0 7.0 7.8 7.8 7.8 7.8 7.8 7.8 7.8 7.8 7.8 7.8	3.0 4.2 2.2 2.0 2.0 -1.0 -1.0 -1.0 3.0 5.4 4.3 Lad Ves None C-Max C-Max None P 88.0 86.7 8.3 0.72 0.84 0.83 0.78 0.12	3.0 4.2 2.2 2.0 2.0 -1.0 -1.0 -1.0 -1.0 -1.0 -1.0 -1.0 -1	3.0 4.2 2.2 2.0 2.0 1.0 2.1.0
-1.0 -1.0 -1.0 -1.0 3.0 5.4 5.4 4.3 Lead Lag Yes Yes	1.0 -1.0 -1.0 -1.0 1.0 3.0 5.4 5.4 4.3 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	1.0 -1.0 -1.0 -1.0 -1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	7 7 85 7 87 87 87 87 87 87 87 87 87 87 87 87 8	1.0 -1.0 -1.0 -1.0 -1.0 1.0 3.0 5.4 5.4 4.3 Lead Yes None C-Max C-Max None P88.0 86.7 82.3 12.8 88.0 96.7 80.12 0.03 0.18 0.13 0.43 2.4 2.8 4.4 49.0
Lead Lag Yes Yes	2.0 3.4 4.5 Lead Lag Yes Yes None C-Max C-Max None I	20 34 4.3 124 Lead Lead Leg Yes None C-Max C-Max None None Res 88.0 86.7 82.3 12.8	2.0 5.4 4.3 Lead Lag Yes Yes None C-Max C-Max None D-Max C-Max None D-Max C-Max None D-Max None D-M	Su 344 4.53 Lag Yes Yes Yes None C-Max C-Max None None None C-Max C-Max None None None None None None None None
	Yes Yes None C-Max C-Max None P	7 Yes Yes Yes None C-Max C-Max None P 880 86.7 82.3 12.8 0.84 0.83 0.78 0.12	7 Yes Yes None C-Max C-Max None None C-Max C-Max None C-Max None C-Max None None None None None None None None	Yes Yes Yes None C-Max C-Max None None C-Max C-Max None O.84 86.7 82.3 12.8 0.42 0.03 0.18 0.13 0.43 2.4 2.8 4.4 49.0
	None C-Max C-Max None None None None None None None None	None C-Max C-Max None 1 88.0 86.7 82.3 12.8 0.84 0.83 0.78 0.12	None C-Max C-Max None N 88.0 86.7 82.3 12.8 0.84 0.83 0.78 0.12 0.03 0.18 0.13 0.43	C-Max C-Max None P 86.7 82.3 12.8 0.83 0.78 0.12 0.18 0.13 0.43 2.8 4.4 49.0
0.83 0.78 0.12 0.83 0.78 0.12 0.18 0.13 0.43 2.8 4.4 49.0 0.0 0.0 0.0	0.18 0.13 0.43 2.8 4.4 49.0 0.0 0.0 0.0	2.8 4.4 49.0 0.0 0.0	0.0 0.0 0.0	
0.00 00.7 02.3 17.0 0.00 0.12 0.00 0.00 0.13 0.43 0.43 0.43 0.43 0.43 0.40 0.00 0.0	0.03 0.18 0.13 0.43 2.4 2.8 4.4 49.0 0.0 0.0 0.0 0.0 2.4 2.8 4.4 49.0 0.0 0.0 0.0	2.8 4.4 49.0 0.0 0.0 0.0 2.8 4.4 49.0	0.0 0.0 0.0 2.8 4.4 49.0	4.4 49.0
00.7 02.3 17.0 0.3 0.78 0.12 0.18 0.13 0.43 0.43 0.49 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	0.18 0.13 0.43 2.8 4.4 49.0 0.0 0.0 0.0 2.8 4.4 49.0 A A D 2.8 4.4 40.6	2.8 4.4 49.0 0.0 0.0 0.0 2.8 4.4 49.0 A A D 2.8 4.4 40.6	0.0 0.0 0.0 2.8 4.4 49.0 A A D 2.8 4.4 40.6	4.4 49.0 A D 4.4 40.6

Splits and Phases: 10: Britannia Rd & Farmstead Dr

Britannia & RR25
BA Group - NHY
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Queues
10: Britannia Rd & Farmstead Dr

	1	†	ţ	٠	•	
Lane Group	EBL	EBT	WBT	SBL	SBR	
Lane Group Flow (vph)	8	029	415	06	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)	9.0	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	295	222	
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						
(10000000000000000000000000000000000000						

HCM Signalized Intersection Capacity Analysis 10: Britannia Rd & Farmstead Dr

2032 Future Total AM 01-12-2024

																																						A		12.7	¥		
•	SBR	¥c.	8	30	1900	4.3	1.00	0.85	1.00	1538	1:00	1538	1:00	e 1	77.	က	2%	Perm		8	8.6	10.8	0.10	5.3	3.0	158		0.00	0.02	42.3	1.00	0.0	42.4	۵				HCM 2000 Level of Service		time (s)	Service		
و د	WBR SBL	je.	25 90		1900 1900	4.3	1.00	1.00	0.95	1703	0.95		1.00		0 0			Prot	∞		8.6	10.8	0.10	5.3	3.0	175	c0.05		0.51	44.6	1.00	2.5	47.2	۵	46.0	۵		HCM 2000 L		Sum of lost time (s)	ICU Level of Service		
↓	WBT W	•		330	1900				1.00		1.00	4203	1:00			412			9				Ŭ				0.10		0.13		1.00		4	⋖	4.0			7.3	0.23	105.0	33.1%	15	
† ~	EBL EBT	ľ	20 670		1900 1900				0.95 1.00		0.45 1.00	792 4427	1.00 1.00				9% 3%	pm+pt NA	5 2		83.5 83.5	84.5 84.5		4.0 6.4		668 3562			0.03 0.19		1.00 1.00	0.0	2.1 2.5		2.5	A			ratio				
	Movement	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Ideal Flow (vphpl)	Total Lost time (s)	Lane Util. Factor	Fr	Flt Protected	Satd. Flow (prot)	FIt Permitted	Satd. Flow (perm)	Peak-hour factor, PHF	Adj. Flow (vph)	KIOR Reduction (vph)	Lane Group Flow (vph)	Heavy venicles (%)		Protected Phases	Permitted Phases	Actuated Green, G (s)	Effective Green, g (s)	Actuated g/C Ratio	Clearance Time (s)	Vehicle Extension (s)	Lane Grp Cap (vph)	v/s Ratio Prot	v/s Ratio Perm	v/c Ratio	Uniform Delay, d1	Progression Factor	Incremental Delay, d2	Delay (s)	Level of Service	Approach Delay (s)	Approach LOS	Intersection Summary	HCM 2000 Control Delay	HCM 2000 Volume to Capacity ratio	Actuated Cycle Length (s)	Intersection Capacity Utilization	Analysis Period (min)	c Critical Lane Group

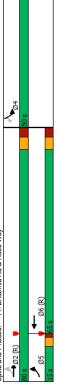
Britannia & RR25 BA Group - NHY Page 16

Timings 11: Britannia Rd & Rose Way

2032 Future Total AM 01-12-2024

•	SBR	¥C	75	75	Perm		4	4		10.0	43.0	20.0	38.5%	3.0	3.0	-1.0	5.0			None	11.8	60:0	0.35	16.3	0:0	16.3	В						eeu				ntersection LOS: A	CU Level of Service A	
٠	SBL	<u>, </u>	22	22	Prot	4		4		10.0	43.0			3.0	3.0	-1.0	2.0			None	1.8	0.09	0.34	61.1	0.0	61.1	ш	35.2	Ω				start of Gr				Inte	ಶ	
ţ	WBT	4413	840	840	¥	9		9		20.0	29.0		20.0%	4.0	3.0	-1.0	0.9	Lag	Yes	C-Max	100.6	0.77	0.24	4.7	0.0	4.7	∢	4.7	∢				6:WBT, 9						
†	EBT	444	975	975	¥	7		7		20.0	29.0	80.0	61.5%	4.0	3.0	-1.0	0.9			C-Max	107.2	0.82	0.26	5.9	0.0	5.9	∢	2.8	∢				EBTL and						
1	EB	*	52	52	pm+pt	2	2	22		7.0	11.0	15.0	11.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	110.2	0.85	0.05	4.0	0.0	4.0	∀						o phase 2:		rdinated		3	tion 38.3%	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	SOT	Approach Delay	Approach LOS	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: 65	Control Type: Actuated-Coordinated	Maximum v/c Ratio: 0.35	Intersection Signal Delay: 7.3	Intersection Capacity Utilization 38.3%	Analysis Period (min) 15

Splits and Phases: 11: Britannia Rd & Rose Way



2032 Future Total AM 01-12-2024 Queues 11: Britannia Rd & Rose Way

			I	I		
	^	†	ļ	۶	•	
Lane Group	EBL	EBT	WBT	SBL	SBR	
Lane Group Flow (vph)	22	975	850	22	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	0.97		
Turn Bay Length (m)	20.0			20.0		
Base Capacity (vph)	222	3761	3523	624	809	
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	0.26	0.24	0.09	0.12	
Information Cummons						
Illersection Summary						

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis 11: Britannia Rd & Rose Way

2032 Future Total AM 01-12-2024

																																						∢		14.0	¥		
•	SBR	¥C.	75	75	1900	5.0	1.00	0.85	1.00	1615	1.00	1615	1.00	75	89	7	%0	Perm		4	10.8	11.8	60:0	0.9	3.0	146		0.00	0.05	54.0	1.00	0.1	54.1	O				HCM 2000 Level of Service		time (s)	f Service		
و √	WBR SBL	je-	10 55		1900 1900	2.0	1.00	1.00	0.95	1805	0.95		_	10 55	0 0		%0 %0	Prot	4		10.8	11.8	60:0	0.9	3.0	163	c0.03		0.34	55.4	1.00	1.2	299	ш	55.2	ш		HCM 2000 I		Sum of lost time (s)	ICU Level of Service		
ţ	T WBT	*			_		*		0 1.00		0 1.00		•	975 840		975 850	%0 %0	_	2 6						3.0 3.0	0 3466			_				4		5.7 4.7	A		8.5	0.27	130.0	38.3%	15	
⊤	EBL EBJ	Γ.	25 975		_		*			7		1					0 %0		2	2		107.2 107.2					0.00 c0.21		0.05 0.26		2.32 2.21		4.9 5	∢	5				city ratio		tion		
	Movement	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Ideal Flow (vphpl)	Total Lost time (s)	Lane Util. Factor	표	Flt Protected	Satd. Flow (prot)	Flt Permitted	Satd. Flow (perm)	Peak-hour factor, PHF	Adj. Flow (vph)	RTOR Reduction (vph)	Lane Group Flow (vph)	Heavy Vehicles (%)	Turn Type	Protected Phases	Permitted Phases	Actuated Green, G (s)	Effective Green, g (s)	Actuated g/C Ratio	Clearance Time (s)	Vehicle Extension (s)	Lane Grp Cap (vph)	v/s Ratio Prot	v/s Ratio Perm	v/c Ratio	Uniform Delay, d1	Progression Factor	Incremental Delay, d2	Delay (s)	Level of Service	Approach Delay (s)	Approach LOS	Intersection Summary	HCM 2000 Control Delay	HCM 2000 Volume to Capacity ratio	Actuated Cycle Length (s)	Intersection Capacity Utilization	Analysis Period (min)	c Critical Lane Group

Britannia & RR25 BA Group - NHY

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Britannia & RR25 BA Group - NHY

2032 Future Total PM 01-12-2024 Timings 1: Regional Rd 25 & Louis St Laurent Ave

→	SBL SBT	¥ 445	95 950		pm+pt NA		9	1 6			9.0 32.2				1.0 3.0			Lead Lag		Ó	68.2 57.2				0.0 0.0		0 0	35.9	۵								
-	NBT	4413	1005	1005	Ϋ́	2		2		20.0	32.2	0.89	48.6%	4.2	3.0	-1.0	6.2	Lag	Yes	C-Max	65.3	0.47	0.74	31.4	0.0	31.4	ပ	32.3	O								
•	NBL	*	220	220	pm+pt	2	2	2		2.0	0.6	22.0	15.7%	3.0	1.0	-1.0	3.0	Lead	Yes	None	79.3	0.57	0.74	37.8	0.0	37.8	0						Green				
ţ	WBT	₩	545	545	Ϋ́	∞		∞		10.0	30.0															55.8	ш	55.4	ш				. Start of				
>	WBL	*	365	365	pm+pt	က	∞	က		10.0	14.0									None						54.7	۵						d 6:SBTL				
1	EBT	+ 13	375	375	Ϋ́	4		4		10.0	30.0	30.0	21.4%	4.0	3.0	-1.0	0.9	Lag	Yes	None	23.4	0.17	0.84	66.4	0.0	66.4	ш	59.1	ш				NBTL an				
4	EBE	*	205	202	pm+pt	7	4	7		2.0	9.0	22.0	15.7%	3.0	1.0	-1.0	3.0	Lead	Yes	None	43.2	0.31	0.68	41.4	0.0	41.4							to phase 2:		ordinated		
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	SO7	Approach Delay	Approach LOS	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	

603 Splits and Phases: 1: Regional Rd 25 & Louis St Laurent Ave • * Ø6 (R) Ø2 (R **√** Ø5

Synchro 11 Report Page 1 Britannia & RR25 BA Group - NHY

Britannia & RR25 BA Group - NHY

Synchro 11 Report Page 2

Queues 1: Regional Rd 25 & Louis St Laurent Ave

2032 Future Total PM 01-12-2024

	4	†	>	ţ	•	•	۶	→	
-ane Group	EBF	EBT	WBL	WBT	NBL	NBT	SBL	SBT	
-ane Group Flow (vph)	205	200	365	610	220	1460	95	1145	
//c Ratio	0.68	0.84	98.0	0.75	0.74	0.74	0.57	0.65	
Control Delay	41.4	66.4	54.7	22.8	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	22.8	37.8	31.4	35.1	36.0	
Queue Length 50th (m)	39.5	2.69	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	
nternal Link Dist (m)		126.1		117.1		481.0		113.5	
Turn Bay Length (m)	0.06		32.0		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	99.0	0.74	0.57	0.65	

Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis 1: Regional Rd 25 & Louis St Laurent Ave

2032 Future Total PM 01-12-2024

Main Configurations		4	†	>	>	ţ	4	•	←	•	۶	→	•
10	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
205 375 125 365 545 65 220 206 375 125 365 545 65 220 30 1900 1900 1900 1900 1900 1900 3 6 0 2 0 6 0 3.0 1.00 0.99 1.00 1.00 1.00 1.00 0.99 1.00 1.00 1.00 1.00 0.96 1.00 0.98 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Lane Configurations	y -	4₽		F	4₽		je-	444		F	444	
205 375 125 385 545 65 220 190 190 1900 1900 1900 1900 1900 10 0.99 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Traffic Volume (vph)	202	375	125	365	545	92	220	1005	455	92	920	195
1900	Future Volume (vph)	202	375	125	365	545	9	220	1005	455	32	920	195
1.00	Ideal Flow (vphpl)	3.0	0061	1900	0081	0061	1900	300	96.	1900	300	900	1900
1.00 0.99 1.00	ane IIII Factor	8.8	0.0		0.7	0.0		5 6	*0.80		0.5	*0.80	
1,00 1,00	Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	0.99		1.00	1.00	
1,00 0.96 1,00 0.98 1,00	Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
(s) 291 100 100 100 095 1187 1187 1189 3537 1187 1189 3537 1187 1189 3537 1187 1189 3537 1187 1189 3537 1187 1189 3537 1187 1187 1180 1100 1100 1100 1100 110	F.	1.00	96:0		1.00	0.98		1.00	0.95		1.00	0.97	
1766 3431 1899 3537 1787 0.26 1.00 0.17 1.00 0.11 488 3431 331 3337 2.09 178 1.00 1.00 1.00 1.00 1.00 1.00 170 1.00 1.00 1.00 1.00 1.00 1.00 170 1.00 1.00 1.00 1.00 1.00 1.00 170 1.00 1.00 1.00 1.00 1.00 1.00 170 1.00 1.00 1.00 1.00 1.00 1.00 170 1.00 1.00 1.00 1.00 1.00 1.00 170 1.00 1.00 1.00 1.00 1.00 1.00 170 1.00 1.00 1.00 1.00 1.00 187 86 545 66 520 170 0 220 0.20 0.20 170 0 220 0.20 170 0 220 0.20 170 0 220 0.17 170 0 2	FIt Protected	0.95	1.00		1.00	1.00		0.95	1.00		0.95	1.00	
1.00	Satd. Flow (prot)	1768	3431		1899	3537		1787	4136		1805	4286	
He 1.00 1.	Flt Permitted	0.26	1.00		0.17	1.00		0.11	1.00		0.08	1.00	
HF 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Satd. Flow (perm)	483	3431		331	3537		209	4136		151	4286	
205 375 125 365 545 65 220	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
Part	Adj. Flow (vph)	202	375	125	365	545	92	220	1005	455	92	920	195
rph) 205 477 0 365 603 0 220 280 280 280 280 280 280 280 280 2	RTOR Reduction (vph)	0	23	0	0	7	0	0	22	0	0	17	0
1, 2% 1% 0% 0% 0% 2% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1%	Lane Group Flow (vph)	202	477	0	365	603	0	220	1405	0	92	1128	0
Delay	Confl. Peds. (#/hr)	2		2	2		2	2		2	2		5
(s) 38.1 22.4 50.6 30.9 75.2 2	Heavy Vehicles (%)	5%	1%	%0	%0	%0	5%	1%	%9	1%	%0	4%	%0
(s) 38.1 22.4 8.8 5.2 2 (s) 38.1 22.4 50.6 8.05.9 755.2 2 (s) 40.1 23.4 516 31.9 762.2 5.6 4.0 2.9 0.17 0.37 0.23 0.54.4 5.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3	Turn Type	pm+pt	Ν		pm+pt	AA		pm+pt	ΑN		pm+pt	¥	
(s) 3.4 2.4 8.8 3.2 2.2 (s) 3.4 2.4 5.6 3.9 3.0 7.5 2.2 (s) 40.1 2.2.4 5.16 3.19 76.2 2.2 (s. 2.2.4 5.1.6 3.1.9 7.6 2.2 (s. 2.2.4 5.1.6 3.1.9 7.0 2.3 0.2.4 5.1.0 3.0 7.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3	Protected Phases	7	4		က	œ		2	2		~	9	
(s) 38.1 22.4 50.6 30.9 75.2 (s) 40.1 23.4 51.6 31.9 76.2 (s) 40.2 (s) 3.0 3.0 70.3 (s) 40.0 (s) 40.1 51.6 (s)	Permitted Phases	4			∞			2			9		
(s) 40.1 23.4 51.6 31.9 76.2 0.54 0.54 0.55 0.55 0.57 0.23 0.55 0.55 0.55 0.57 0.23 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.5	Actuated Green, G (s)	38.1	22.4		9.09	30.9		75.2	64.3		63.1	56.2	
0.29 0.17 0.37 0.23 0.54 4.0 7.0 3.0 7.0 4.0 3.0 3.0 3.0 3.0 3.0 2.91 573 415 805 294 0.08 c.0.14 c.0.16 0.17 c.0.09 0.70 0.83 0.88 0.75 c.0.09 1.00 1.00 1.00 1.00 1.00 2.5 1.00 1.00 1.00 1.00 48.2 66.4 56.6 54.2 34.1 Delay 42.4 HCM 2000 Level of Service 1.00 5.0 5.0 5.0 1.00 5.0 5.0 5.0 1.00 5.0 5.0 1.	Effective Green, g (s)	40.1	23.4		51.6	31.9		76.2	65.3		65.1	57.2	
s) 3.0 7.0 3.0 7.0 4.0 10.0 10.0 10.0 10.0 10.0 10.0 10.	Actuated g/C Ratio	0.29	0.17		0.37	0.23		0.54	0.47		0.46	0.41	
S S S S S S S S S S	Clearance Time (s)	4.0	2.0		3.0	7.0		4.0	7.2		4.0	7.2	
291 573 415 805 294 0.08 0.0.14 0.0.16 0.17 0.0.09 0.12 0.12 0.16 0.17 0.0.09 0.12 0.10 0.10 0.10 0.10 0.10 1.00 1.00 1.00 1.00 1.00 48.2 66.4 56.6 54.2 34.1 0.12 0.13 0.13 0.13 0.13 0.13 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15	Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
0.08 c0.14 c0.16 0.17 c0.09 0.12 0.16 0.17 c0.09 0.12 0.16 0.17 c0.032 0.70 0.83 0.88 0.75 c0.32 0.70 0.83 0.88 0.75 24.2 1.00 1.00 1.00 1.00 1.00 1.01 1.01 1.02 1.00 1.02 1.02 1.03 1.03 1.03 1.03 1.04 48.2 66.4 66.6 54.2 34.1 Delay 61.1 E E D C E B D C E B D C C C C C C C C C C C C C C C C C C C	Lane Grp Cap (vph)	291	573		415	802		294	1929		163	1751	
0.12 0.16 0.032 0.70 0.83 0.88 0.75 0.75 0.70 0.83 0.88 0.75 0.75 0.70 1.00 1.00 1.00 1.00 1.00 d2 7.5 10.0 18.7 3.8 10.0 d2 7.5 10.0 1.00 1.00 1.00 D6lay 42.4 HCM 2000 Level of Service to Capacity ratio 0.81 0.00 of time (s) ity Ultitation 87.3% (CU Level of Service)	v/s Ratio Prot	0.08	c0.14		c0.16	0.17		c0.09	0.34		0.03	0.26	
0.70 0.83 0.88 0.75 0.75 40.7 56.4 38.0 50.3 24.2 40.7 56.4 38.0 50.3 24.2 40.7 56.4 36.6 54.2 34.1 48.2 66.4 56.6 54.2 34.1 0 E E D C E D C SELIT SEL	v/s Ratio Perm	0.12			0.16			c0.32			0.24		
40.7 56.4 38.0 50.3 24.2 1.00 1.00 1.00 1.00 1.00 48.2 66.4 56.6 54.2 34.1 D E E D C 61.1 55.1 Delay 42.4 HCM 2000 Level of Service to Capacity ratio 0.81 1v. Hirzation 87.3% ICU Level of Service	v/c Ratio	0.70	0.83		0.88	0.75		0.75	0.73		0.58	0.64	
1.00	Uniform Delay, d1	40.7	56.4		38.0	50.3		24.2	30.2		24.3	33.2	
d2 7.5 10.0 18.7 3.8 10.0 48.2 66.4 56.6 54.2 34.1 D	Progression Factor	1.00	1:00		1:00	1.00		1.00	1.00		1.00	1.00	
48.2 66.4 56.6 54.2 34.1 D E E D C C G C C C C C C C C C C C C C C C C C	Incremental Delay, d2	7.5	10.0		18.7	3.8		10.0	2.4		5.5	1.8	
Delay 42.4 HCM 2000 Level of Service C C L C L L L L L L L L L L L L L L L	Delay (s)	48.2	66.4		9.99	54.2		84.1	32.6		29.6	35.1	
any E E E E E E Dalay A24 HCM 2000 Level of Service 0.81 424 HCM 2001 Level of Service 140.0 Sum of lost time (s) ty Utilization 87.3% ICU Level of Service	Level of Service	۵	ш		ш	۵		ပ	ပ		ပ	□	
E 42.4 42.4 ratio 0.81 140.0 87.3%	Approach Delay (s)		61.1			55.1			32.8			34.7	
42.4 42.4 0.81 140.0 87.3%	Approach LOS		ш			ш			ပ			ပ	
42.4 ratio 0.81 140.0 87.3%	Intersection Summary												
natio 0.81 140.0 87.3%	HCM 2000 Control Delay			42.4	¥	3M 2000 I	evel of 5	Service		۵			
140.0	HCM 2000 Volume to Capacit	y ratio		0.81									
87.3%	Actuated Cycle Length (s)			140.0	ૹ	ım of lost	time (s)			18.2			
	Intersection Capacity Utilizatio	u.		87.3%	೦	U Level o	f Service			ш			
Analysis Period (min) 15	Analysis Period (min)			15									

c Critical Lane Group

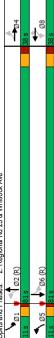
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Timings 2: Regional Rd 25 & Whitlock Ave

2032 Future Total PM 01-12-2024

→	SBT	ተ ቶЪ	1185	1185	ΝΑ	9		9		20.0	35.5	81.0	62.3%	4.2	2.3	-1.0	5.5	Lag	Yes	C-Max	91.1	0.70	0.44	9.3	0.0	9.3	⋖	9.2	¥										
٠	SBL	<u></u>	09	09	pm+pt	-	9	-		7.0	11.0		8.5%	3.0	1:0	-1.0	3.0	Lead		_	101.9	0.78	0.27	6.2	0:0	6.2	∢												
←	NBT	444	1680	1680	≨	2		2		20.0	35.5	81.0	62.3%	4.2	2.3	-1.0	5.5	Lag	Yes	C-Max	93.3	0.72	0.55	6.1	0.0	6.1	⋖	0.9	∢									C	
•	NBL	<u>r</u>	90	90	pm+pt	2	2	2		7.0	11.0		8.5%		1:0		3.0	Lead	Yes	None	102.6	0.79	0.30	3.3	0.0	3.3	∢										Intersection LOS: B	CU Level of Service C	
4	WBR	¥C	75	75	Perm		∞	00		10.0	37.5	38.0	29.2%	3.3	3.2	-1.0	5.5			None	16.6	0.13	0.29	13.0	0.0	13.0	Ф						of Green				ntersectio	OU Level	
ţ	WBT	*	40	40	¥	∞		∞		10.0	37.5		23		3.2		5.5			None	16.6	0.13	0.17	50.0	0.0	20.0		30.2	ပ				TL, Start				=	_	
-	WBL	<u>_</u>	25	25	Perm		∞	∞		10.0	37.5	38.0	29.5%	3.3	3.2	-1.0	5.5			None	16.6	0.13	0.15	50.2	0.0	50.2							and 6:SB						
†	EBT	2	4	40	Ϋ́	4		4		10.0	37.5	38.0	29.5%	3.3	3.2	-1.0	5.5			None	16.6	0.13	0.32	31.8	0.0	31.8	O	52.0	Ω				2:NBTL						
1	EBL	J F	105	105	Perm		4	4		10.0	37.5	38.0	29.2%	3.3	3.2	-1.0	5.5			None	16.6	0.13	09:0	67.4	0.0	67.4	ш					0	ed to phase		ordinated		10.6	ation 66.5%	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effet Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	ros	Approach Delay	Approach LOS	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 Capacity Utilization 66.5%	Analysis Period (min) 15

Splits and Phases: 2: Regional Rd 25 & Whitlock Ave



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Queues 2: Regional Rd 25 & Whitlock Ave 01-12-2024

	4	†	>	ţ	4	•	←	۶	→	
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	
Lane Group Flow (vph)	105	8	25	4	75	6	1720	99	1320	
v/c Ratio	09.0	0.32	0.15	0.17	0.29	0.30	0.55	0.27	0.44	
Control Delay	67.4	31.8	50.2	20.0	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	20.0	13.0	3.3	6.1	6.2	9.3	
Queue Length 50th (m)	27.2	10.6	6.1	8.6	0.0	1.6	53.2	5.6	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)		67.9		68.1			6.969		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										

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HCM Signalized Intersection Capacity Analysis 2: Regional Rd 25 & Whitlock Ave

apacity Analysis 2032 Future Total PM Ave 01-12-2024

Movement EB EB WB WB WB WB WB WB		1	†	<i>></i>	>	ţ	✓	•	←	•	۶	→	\rightarrow
15	Movement	BE	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
1155 40 40 25 40 75 90 1580 40 60 1185 1900 1900 1900 1900 1900 1900 1900 190	Lane Configurations	*	43		*	*	*	F	4413		r	4413	
105 40 40 25 40 75 90 1880 40 60 1185 100 1900 1900 1900 1900 1900 1900 1900 1900 100 100 1900 1900 1900 1900 1900 1900 1900 100 100 100 100 100 100 100 100 100 0.99 1.00 1.00 1.00 1.00 1.00 100 0.99 1.00 1.00 1.00 1.00 1.00 100 0.99 1.00 1.00 1.00 1.00 1.00 100 0.99 1.00 1.00 1.00 1.00 1.00 100 0.99 1.00 1.00 1.00 1.00 1.00 100 0.99 1.00 1.00 1.00 1.00 1.00 100 0.99 1.00 1.00 1.00 1.00 1.00 100 0.99 1.00 1.00 1.00 1.00 1.00 100 0.99 1.00 1.00 1.00 1.00 1.00 100 0.99 1.00 1.00 1.00 1.00 1.00 100 1.00 1.00 1.00 1.00 1.00 1.00 100 1.00 1.00 1.00 1.00 1.00 1.00 100 1.00 1.00 1.00 1.00 1.00 1.00 100 1.00 1.00 1.00 1.00 1.00 1.00 100 1.00 1.00 1.00 1.00 1.00 1.00 100 1.00 1.00 1.00 1.00 1.00 100 1.00 1.00 1.00 1.00 1.00 100 1.00 1.00 1.00 1.00 1.00 100 1.00 1.00 1.00 1.00 100 1.00 1.00 1.00 1.00 100 1.00 1.00 1.00 1.00 100 1.00 1.00 1.00 1.00 100 1.00 1.00 1.00 1.00 100 1.00 1.00 1.00 1.00 100 1.00 1.00 1.00 1.00 100 1.00 1.00 1.00 1.00 100 1.00 1.00 1.00 1.00 100 1.00 1.00 1.00 1.00 100 1.00 1.00 1.00 1.00 100 1.00 1.00 1.00 1.00 100 1.00 1.00 1.00 1.00 100 1.00 1.00 1.00 100 1.00 1.00 1.00 100 1.00 1.00 1.00 100 1.00 1.00 1.00 100 1.00 1.00 1.00 100 1.00 1.00 1.00 100 1.00 1.00 1.00 100 1.00 1.00 1.00 100 1.00 1.00 1.00 100 1.00 1.00 1.00 100 1.00 1.00 1.00 100 1.00 1.00 1.00 100 1.00 1.00 1.00 100 1.00 1.00 1.00 100 1.00 1.00 100 1.00 1.00 1.00 1	Traffic Volume (vph)	105	40	40	25	40	75	06	1680	40	09	1185	135
1900 1900	Future Volume (vph)	105	40	40	22	40	75	90	1680	40	09	1185	135
100	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
1,00	Total Lost time (s)	5.5	5.5		5.5	5.5	5.5	3.0	5.5		3.0	5.5	
1,00 0.99	Lane Util. Factor	1.0	1.00		1.00	1.00	1:00	1.00	*0.80		1.00	*0.80	
1,000 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	Flpb, ped/bikes	0.99	1.00		0.99	1.00	1:00	1.00	1.00		1.00	1.00	
0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.05 1.00 0.07 1.00 1.00 1.30 1.37 1.4229 1.77 4.261 0.07 1.00 1.00 1.41 1.00 0.08 1.00 1.00 1.00 1.00 1.00 1.0	Ŧ	1.00	0.93		1.00	1.00	0.85	1.00	1.00		1.00	0.98	
1776 1699 1795 1900 1539 1787 4329 1770 4261 1367 1699 1735 1900 1539 1787 4329 1770 4261 1367 1699 1332 1900 1539 1781 4329 1770 4261 1360 130 130 130 130 130 100 100 100 100 100 105 40 40 25 40 75 90 1660 40 60 1185 106 40 40 25 40 75 90 1660 40 60 1185 107 108 48 25 40 75 90 1660 40 60 1314 14 5 5 5 5 5 5 5 5 5 15 15	Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
0,73 1,00 0,77 1,00 1,00 0,14 1,00 0,00 0,00 1,00 1,00	Satd. Flow (prot)	1776	1699		1795	1900	1539	1787	4329		1770	4261	
1367 1699 1332 1900 1539 261 4329 149 4261 100	Flt Permitted	0.73	1.00		0.70	1.00	1.00	0.14	1.00		0.08	1.00	
100 100	Satd. Flow (perm)	1367	1699		1332	1900	1539	261	4329		149	4261	
105 40 40 25 40 75 90 1680 40 60 1185 10 32 0 0 6 65 0 1719 0 60 1314 5 8 6 5 5 8 8 7 8 8 1 8 5 6 1314 11% 5% 0% 0% 0% 3% 1% 5% 0% 2% 6% 14 8 8 8 2 6 6 6 6 15 15 15 15 15 15 15 15 15 15 15 15 15	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
10 32 0 0 0 65 0 1719 0 0 0 0 0 0 0 0 0	Adj. Flow (vph)	105	40	40	52	40	75	90	1680	40	09	1185	135
105	RTOR Reduction (vph)	0	32	0	0	0	65	0	_	0	0	9	0
1,	Lane Group Flow (vph)	105	48	0	52	4	9	6	1719	0	09	1314	0
1% 5% 0% 0% 3% 1% 5% 0% 2% 6%	Confl. Peds. (#/hr)	2		2	2		2			2	2		
Perm NA	Heavy Vehicles (%)	1%	2%	%0	%0	%0	3%	1%	2%	%0	2%	%9	%0
156 156	Turn Type	Perm	NA		Perm	¥	Perm	pm+pt	¥		pm+pt	NA	
15.6 15.6 15.6 15.6 15.8 8 2 6 16.6 16.6 15.6 15.6 15.6 15.9 91.5 95.9 16.6 16.6 16.6 16.6 100.9 92.5 97.9 16.7 16.8 16.8 16.8 16.8 10.9 92.5 97.9 16.8 16.8 16.8 16.8 16.8 16.8 16.8 16.8 16.8 16.8 16.8 16.8 16.8 16.8 16.8 16.8 16.8 16.8 16.8 16.8 16.8 16.8 16.8 16.8 16.8 16.8 16.8 16.8 16.8 16.8 16.8 16.8 16.8 16.8 16.8 16.8 16.8 16.8 16.8 16.8 16.8 16.8 16.8 16.8 16.8 16.8 16.8 16.8 16.8 16.8 16.8 16.8 16.8 16.8 16.8 16.8 16.8 16.8 16.8 16.8 16.8 16.8 16.8 16.8 16.8 16.8 16.8 16.8 16.8 16.8 16.8 16.8 16.8 16.8 16.8 16	Protected Phases		4			∞		2	2		-	9	
156 156 156 156 156 915 915 959 15 959 16 16 166 166 166 1609 925 9779 16 16 165 166 1609 925 9779 16 16 165 165 166 1009 925 9779 17 9729 17	Permitted Phases	4			∞		∞	7			9		
166 166 166 166 166 100.9 92.5 97.9 17.1	Actuated Green, G (s)	15.6	15.6		15.6	15.6	15.6	98.9	91.5		95.9	0.06	
0.13 0.13 0.13 0.13 0.13 0.14 0.75 (a) 5 6.5 6.5 6.5 6.5 6.5 4.0 6.5 4.0 (b) 3.0 3.0 3.0 3.0 3.0 3.0 3.0 (c) 6.0 0.2 0.0 0.0 0.0 0.0 0.0 0.0 (c) 6.0 0.2 0.15 0.17 0.05 0.2 0.0 0.0 (c) 6.0 0.2 0.15 0.17 0.05 0.3 0.2 0.0 (c) 6.0 0.2 0.15 0.17 0.05 0.3 0.0 (c) 6.0 0.2 0.15 0.17 0.05 0.3 0.2 (c) 6.0 0.2 0.15 0.10 0.3 0.1 0.0 (c) 6.0 0.2 0.14 0.0 0.3 0.5 0.6 0.9 (c) 7 0.0 0.0 0.3 0.1 0.0 0.3 0.5 (c) 7 0.0 0.3 0.1 0.0 0.3 0.5 (c) 8 0.5 0.4 0.3 0.1 0.5 0.6 0.9 (c) 8 0.5 0.4 0.3 0.1 0.5 0.6 0.9 (c) 9 0.1 0.0 0.3 0.1 0.5 0.6 0.9 (c) 9 0.1 0.0 0.3 0.1 0.5 0.6 0.9 (c) 9 0.1 0.0 0.3 0.1 0.5 0.6 0.9 (c) 9 0.1 0.0 0.3 0.1 0.5 0.6 0.9 (c) 9 0.1 0.0 0.3 0.1 0.5 0.6 0.9 (d) 9 0.1 0.0 0.3 0.1 0.5 0.6 0.9 (e) 9 0.1 0.0 0.3 0.1 0.5 0.6 0.9 (e) 9 0.1 0.0 0.3 0.1 0.5 0.6 0.9 (e) 9 0.1 0.0 0.3 0.1 0.1 0.5 0.6 0.9 (e) 9 0.1 0.0 0.3 0.1 0.1 0.5 0.6 0.9 (e) 9 0.1 0.0 0.3 0.1 0.1 0.5 0.6 0.9 (e) 9 0.1 0.0 0.3 0.1 0.1 0.5 0.6 0.9 (e) 9 0.1 0.0 0.3 0.1 0.1 0.5 0.6 0.9 (e) 9 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1	Effective Green, g (s)	16.6	16.6		16.6	16.6	16.6	100.9	92.5		97.9	91.0	
S	Actuated g/C Ratio	0.13	0.13		0.13	0.13	0.13	0.78	0.71		0.75	0.70	
174 216 170 242 196 310	Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	4.0	6.5		4.0	6.5	
174 216 170 242 196 301 3080 198 198 103 103 100	Vehide Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Color	Lane Grp Cap (vph)	174	216		170	242	196	301	3080		198	2982	
60.08 0.02 0.01 0.21 0.21 0.21 0.21 0.22 0.22	v/s Ratio Prot		0.03			0.02		c0.02	c0.40		0.02	0.31	
0.60 0.22 0.15 0.17 0.05 0.30 0.56 0.30 0.50 0.50 0.50 0.50 0.50 0.50 0.50	v/s Ratio Perm	0.08			0.02		0.01	0.21			0.21		
## 536 50.9 50.4 50.5 49.8 44 9.0 5.9 ## 50.4 50.5 49.8 44 9.0 5.9 ## 50.4 50.4 10.0 1.00 0.39 0.57 1.00 ## 50.4 51.4 50.8 50.9 49.9 2.2 5.7 6.8 ## 50.8 50.9 49.9 2.2 5.7 6.8 ## 50.9 50.3 0.1 0.5 0.6 ## 50.9 50.3 0.1 0.5 0.6 ## 50.9 0.5 0.3 0.1 0.5 0.6 ## 50.9 0.5 0.3 0.1 0.5 0.8 ## 50.0 0.5 0.5 0.1 0.5 0.1 0.5 0.1 ## 50.0 0.5 0.5 0.1 0.5 0.1 0.5 0.1 ## 50.0 0.5 0.5 0.5 0.1 0.5 0.1 0.5 0.1 ## 50.0 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.	v/c Ratio	0.60	0.22		0.15	0.17	0.05	0.30	0.56		0.30	0.44	
1,00 1,00 1,00 1,00 1,00 0,39 0,57 1,00 0,58 0,58 0,58 0,59 0,4 0,3 0,1 0,50 0,59 0,57 1,00 0,59 0,57 1,00 0,99 0,57 1,00 0,99 0,57 1,00 0,99 0,57 1,00 0,99 0,57 1,00 0,90 1,00 1,00 1,00 1,00 1,00 1,00	Uniform Delay, d1	53.6	50.9		50.4	50.5	49.8	4.4	9.0		5.9	8.5	
d2 5.8 0.5 0.4 0.3 0.1 0.5 0.6 0.9 5.94 51.4 50.8 50.9 49.9 2.2 5.7 6.8 E 55.9 50.3 50.3 5.5 A A A B 55.9 E D B A A B 55.9 E D B A B A B 55.9 E B B B B B B B B B B B B B B B B B B	Progression Factor	1.00	1:00		1.00	1:00	1.00	0.39	0.57		1.00	0.1	
594 514 50.8 50.9 49.9 22 5.7 6.8	Incremental Delay, d2	2.8	0.5		0.4	0.3	0.1	0.5	9.0		0.0	0.5	
E D D D A A A A A A A A A A A A A A A A	Delay (s)	59.4	51.4		20.8	50.9	49.9	2.2	2.7		9.9	8.9	
55.9 50.3 5.5 E D Delay 11.3 HCM 2000 Level of Service B TO Service B TO Service B TO Service C	Level of Service	ш	□		۵	Δ	□	⋖	∢		∢	∢	
### D A A Branch	Approach Delay (s)		55.9			50.3			5.5			8.8	
11.3 HCM 2000 Level of Service 0.55 130.0 Sum of lost time (s) 66.5% ICU Level of Service 15	Approach LOS		ш			_			∢			¥	
11.3 HCM 2000 Level of Service 0.55 130.0 Sum of lost time (s) 66.5% ICU Level of Service 15	Intersection Summary												
0.55 130.0 Sum of lost time (s) 6.5% ICU Level of Service 15	HCM 2000 Control Delay			11.3	Ĭ	3M 2000	Level of	Service		В			
130.0 Sum of lost time (s) 66.5% ICU Level of Service 15	HCM 2000 Volume to Capa	acity ratio		0.55									
66.5% ICU Level of Service 15	Actuated Cycle Length (s)			130.0	જ	m of lost	time (s)			14.0			
15 Ip	Intersection Capacity Utilize	ation		%5.99	೨	U Level o	of Service	_		ပ			
c Critical Lane Group	Analysis Period (min)			15									
	c Critical Lane Group												

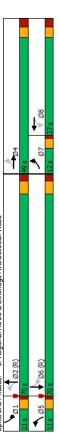
Britannia & RR25 BA Group - NHY

7.55 1.Y

Timings 2032 Future Total PM 5: Regional Rd 25 & Etheridge Ave/Collector Road 01-12-2024

→	SBT	**B	965	965	NA	9		9		20.0	38.4	70.0	3.8%	4.2	2.2	-1.0	5.4	Lag	Yes	C-Max	84.2	0.65	0.43	5.1	0.0	5.1	٨	5.5	4								
٠	SBL	F	22	22	pm+pt	-	9	-		7.0	11.0						3.0	Lead		None C	94.9	0.73	0.26	13.4	0.0	13.4	Ф										
-	NBT	4413	1635	1635	ΑΝ			7		20.0	38.4	70.0	53.8%	4.2	2.2	-1.0	5.4	Lag	Yes	C-Max	88.8	0.68	0.57	7.5	0:0	7.5	∢	8.2	∢								
•	NBL	r	180	180	pm+pt	2	2	2		7.0	11.0														0.0	15.0	Ф						of Green				
ţ	WBT	2,	.0	0				œ		10.0	36.2	37.0	28.5%	3.3	5.9	-1.0	5.2	Lag	Yes	None	11.9	0.09	0.14	1.0	0.0	1.0	∢	31.9	ပ				TL, Start o				
\	WBL	r	40	40	Perm		∞	œ		10.0	36.2														0.0		ш						and 6:SB				
†	EBT	2,	0	0	¥	4		4		10.0	36.2		37.7%							None					0.0		∢	32.3	ပ				2:NBTL				
4	EBL	je.	135	135	pm+pt	7	4	7		7.0	11.0							Lead	Yes	None	23.7	0.18	0.56	55.2	0.0	55.2	ш						to phase		nated		
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)		Protected Phases	S	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	ros	Approach Delay	Approach LOS	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	

Splits and Phases: 5: Regional Rd 25 & Etheridge Ave/Collector Road



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Queues 5: Regional Rd 25 & Etheridge Ave/Collector Road

→	SBT	1195	0.43	5.1	0.0	5.1	64.9	63.3	6.969		2785	0	0	0	0.43	
٠	SBL	22	0.26	13.4	0.0	13.4	2.2	8.5		20.0	215	0	0	0	0.26	
←	NBT	1700	0.57	7.5	0.0	7.5	53.5	m69.5	292.1		2983	0	0	0	0.57	
•	NBL	180	0.52	15.0	0.0	15.0	8.1	m22.4		70.0	349	0	0	0	0.52	
ţ	WBT	40	0.14	1.0	0.0	1.0	0.0	0.0	63.5		515	0	0	0	0.08	
>	WBL	40	0.33	62.8	0.0	62.8	10.4	22.4		40.0	321	0	0	0	0.12	
†	EBT	100	0.24	1.3	0.0	1.3	0.0	0.0	53.9		664	0	0	0	0.15	
4	EBL	135	0.56	55.2	0.0	55.2	32.1	51.1		40.0	243	0	0	0	0.56	
	Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Queue Delay	Total Delay	Queue Length 50th (m)	Queue Length 95th (m)	Internal Link Dist (m)	Turn Bay Length (m)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio	

Intersection Summary more is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis 5: Regional Rd 25 & Etheridge Ave/Collector Road

2032 Future Total PM 01-12-2024

FBL FBT FBR WBL WBT WBR NBL NBT NBR NBL NBT NBT NBR NBT		•	†	<i>></i>	>	ţ	✓	•	←	•	۶	-	•
155 16 17 16 17 16 18 1855 65 65 136 1835 65 136	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
135 0 100 40 0 40 180 1835 65 190 1900 1900 1900 1900 1900 1900 1900	Lane Configurations	*	£,		*	æ,		*	443		*	4413	
135	Traffic Volume (vph)	135	0	100	9	0	40	180	1635	92	22	965	230
1900 1900 1900 1900 1900 1900 1900 1900	Future Volume (vph)	135	0	100	40	0	40	180	1635	65	22	965	230
3.0 5.2 5.2 5.2 3.0 5.4	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
1.00 1.00 1.00 1.00 0.085 1.00 0.080 0.085 1.00 0.085 1.00 0.099 1.00 0.085 1.00 0.099 1.00 0.085 1.00 0.099 1.00 0.085 1.00 0.099 1.00 0.095 1.00 0.099 1.00 0.095 0.095	Total Lost time (s)	3.0	5.2		5.2	5.2		3.0	5.4		3.0	5.4	
1.00 0.85 1.00 0.99 1.00 0.99 1.00 0.99 1.00 0.99 1.00 0.95 1.00 0.99 1.00 0.95 1.00 0.99 1.00 0.95 1.00 0.99 1.00 0.95 1.00 0.95 1.00 0.99 1.00 1.00 1.00 1.00 1.00 1.00	Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	*0.80		1.00	*0.80	
0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 0.00 0.95 1.00 0.05 0.05 0.05 0.05 0.05 0.05 0.0	Fit	1.00	0.85		1:00	0.85		1.00	0.99		1.00	0.97	
1752 1615 1805 1615 1805 4365 11 100 1.00 1.00 1.00 1.00 1.00 1.00 1.	Fit Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
1,000	Satd. Flow (prot)	1752	1615		1805	1615		1805	4366		1805	4274	
1035 1615 1315 1615 293 4366	Flt Permitted	0.56	1.00		69:0	1.00		0.15	1.00		0.08	1.00	
155 100 100 100 100 100 100 100 100 100	Satd. Flow (perm)	1035	1615		1315	1615		293	4366		150	4274	
135 0 100 40 0 40 180 1635 65 10 68 0 0 37 0 0 0 2 0 3% 0% 0% 0% 0% 0% 0% 0% 0% 14% 0 0 0 0 0 0 0 0 0 0 0 21.7 21.7 89 89 89 96.7 86.8 22.7 22.7 99 99 99 96.7 86.8 3.0 3.0 3.0 3.0 3.0 0.04 0.01 0.00 0.02 0.03 0.03 0.05 0.06 0.03 0.00 0.03 0.08 0.08 0.08 0.09 0.74 0.67 4.0 6.2 6.2 6.2 4.0 6.4 20.04 0.01 0.00 0.02 0.03 0.03 0.05 0.06 0.03 0.00 0.03 0.06 0.03 0.00 0.03 0.03 1.4 4.9 59 85.7 194 7.3 1.5 1.4 44.9 59 85.7 194 7.3 1.6 2.8 0.0 0.1 0.0 1.00 1.00 0.8 1.8 A HE B B B B B B B B B B B B B B B B B B	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
1 0 83 0 0 37 0 0 0 2 0 0 0 37 0 0 0 0 0 0 0 0 0	Adj. Flow (vph)	135	0	100	4	0	40	180	1635	92	22	965	230
135 17 0 40 3 0 180 1698 0 0 37% 0/% 0/% 0/% 0/% 0/% 0/% 0/% 0/% 0/% 0/	RTOR Reduction (vph)	0	83	0	0	37	0	0	2	0	0	17	0
3% 0% 0% 0% 0% 4% 0% pm+pt NA Perm NA pm+pt NA pm 7 4 8 8 5 2 5 4 8 8 8 9 5 85.8 8 52.7 22.7 22.7 99 99 96.7 86.8 8 22.7 22.7 99 99 96.7 86.8 8	Lane Group Flow (vph)	135	17	0	4	က	0	180	1698	0	22	1178	0
pm+pt NA Perm NA pm+pt NA pm 7 4 4 8 5 2 2 2 4 9 5 85.8 8 9 5 85.8 8	Heavy Vehicles (%)	3%	%0	%0	%0	%0	%0	%0	4%	%0	%0	4%	2%
7 4 8 8 5 2 2 4 8 8 9 55 8 8 8 8 2 2 21.7 21.7 8 8 9 8 9 95 8 8 8 8 8 8 8 8 8 8 8 8 8		pm+pt	ΑN		Perm	ΑN		pm+pt	AN		pm+pt	≨	
1		7	4			œ		2	2		-	9	
21.7 21.7 89 89 95 868 868 868 870 868 870 868 870 870 870 870 870 870 870 870 870 87	Permitted Phases	4			∞			2			9		
227 227 227 99 99 967 868 0.17 0.17 0.17 0.08 0.08 0.08 0.74 0.67 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 234 282 100 122 342 2915 0.06 0.03 0.03 0.03 0.35 0.58 0.06 0.40 0.02 0.53 0.58 1.00 1.00 0.100 0.100 0.282 0.100 1.00 1.00 1.00 0.88 1.14 4.19 598 557 194 7.3 1.14 HCM 2000 Level of Service B Capacity ratio 0.60 Sum of lost time (s) 166 Utilization 65.2% ICU Level of Service C	Actuated Green, G (s)	21.7	21.7		8.9	6:8		95.5	82.8		87.9	82.0	
1,0 0.17 0.08 0.08 0.74 0.67 3,0 6,2 6,2 6,2 4,0 6,4 3,0 3,0 3,0 3,0 3,0 2,34 2,82 100 1,22 3,42 2,915 0,04 0,01 0,00 0,004 0,039 0,08 0,06 0,40 0,02 0,33 0,58 1,00 1,00 1,00 1,00 0,4 1,00 1,00 1,00 0,4 1,00 1,00 1,00 0,4 1,01 1,00 1,00 0,4 1,01 1,00 1,00 0,4 1,01 1,00 1,00 0,4 1,01 1,01 1,01 0,4 1,02 1,03 1,04 1,04 1,03 1,04 1,04 1,04 1,04 1,04 1,05 1,05 1,05	Effective Green, a (s)	22.7	22.7		6.6	6.6		296.7	89.8		6.68	83.0	
4.0 6.2 6.2 4.0 6.4 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 2.34 282	Actuated g/C Ratio	0.17	0.17		0.08	0.08		0.74	0.67		0.69	0.64	
3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Clearance Time (s)	4.0	6.2		6.2	6.2		4.0	6.4		4.0	6.4	
234 282 100 122 342 2915 0.004 0.011 0.000 0.004 0.039 0.08 0.06 0.03 0.35 1.00 1.00 1.00 0.02 0.53 0.58 1.00 1.00 1.00 0.02 0.53 0.58 1.00 1.00 1.00 0.02 0.53 0.59 1.01 1.00 1.00 0.28 0.59 1.02 1.00 1.00 0.28 0.59 1.03 1.00 1.00 0.28 0.59 1.04 4.9 59.8 55.7 194 7.3 1.05 E E B A B A B A B A B B A B B A B A B B A B B B B B A B	Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Color Colo	Lane Grp Cap (vph)	234	282		100	122		342	2915		191	2728	
0.06 0.03 0.03 0.35 0.58 0.68 0.06 0.000 0.000 0.03 0.35 0.58 0.06 0.40 0.002 0.53 0.58 0.06 0.40 0.002 0.003 0.58 0.05 0.00 0.00 0.00 0.00 0.00 0.00	v/s Ratio Prot	90.09	0.01			0.00		c0.04	c0.39		0.02	0.28	
0.58 0.06 0.40 0.02 0.53 0.58 0.6 48.0 44.8 77.2 55.6 6.6 11.7 1.00 1.00 1.00 1.00 0.7 0.4 2.4 0.1 2.6 0.1 0.7 0.4 2.6 0.1 0.7 0.4 2.7 0.4 7.3 2.8 5.7 19.4 7.3 2.8 5.7 19.4 7.3 2.9 5.8 5.7 19.4 7.3 2.9 5.7 19.4 7.3 2.9 5.7 19.4 7.3 2.9 5.7 19.4 7.3 2.9 5.7 19.4 7.3 2.9 5.7 19.4 7.3 2.9 5.7 19.4 7.3 2.9 5.7 19.4 7.3 2.9 5.7 19.4 7.3 2.9 5.7 19.4 7.3 2.9 5.7 19.4 7.3 2.9 6.7 11.4 1.3 2.9 7.8 1.3 2.9 1.3 2	v/s Ratio Perm	90.00			0.03			0.35			0.18		
48.0 44.8 57.2 55.6 6.6 11.7 1.00 1.00 1.00 2.82 0.59 2.	v/c Ratio	0.58	90:0		0.40	0.02		0.53	0.58		0.29	0.43	
1,00 1,00 1,00 2,82 0,59 2 3,4 0,1 2,6 0,1 0,0 0,4 0,4 0,1 0,4 0,4 0,4 0,4 0,4 0,4 0,4 0,4 0,4 0,4	Uniform Delay, d1	48.0	44.8		57.2	55.6		9.9	11.7		8.3	11.7	
3.4 0.1 2.6 0.1 0.7 0.4 51.4 44.9 59.8 55.7 19.4 7.3 D D E E B A A A B B.5 B A A A B B.5 In A 48.6 57.8 8.5 In A 48.6 57.8 8.5 In A HCM 2000 Level of Service B Capacity ratio 65.2% (CU Level of Service C C C C C C C C C C C C C C C C C C C	Progression Factor	1.00	1.00		1.00	1.00		2.82	0.59		2.31	0.41	
51,4 44,9 59,8 55,7 19,4 7.3 D D E E B A 48,6 57,8 8,5 A B B A A A B B A A A B B A A B B B A A A B B A A A B B B B A A A B B A B A B B B A B A B B B A B A B B B C B C	Incremental Delay, d2	3.4	0.1		5.6	0.1		0.7	0.4		0.8	0.5	
D D E E B A A 48.6 57.8 8.5 8.5 A E B A A B B A B B A B B B A B B B B B	Delay (s)	51.4	44.9		29.8	22.7		19.4	7.3		19.9	5.2	
48.6 57.8 8.5 D E A A A A A A A A A A A A A A A A A A A	Level of Service	Δ	□		ш	ш		Ф	∢		ш	⋖	
A HCM 2000 Level of Service capacity ratio 0.60 Sum of lost time (s) Utilization 65.2% ICU Level of Service 15	Approach Delay (s)		48.6			27.8			8.5			5.9	
lay 11.4 HCM 2000 Level of Service Capacity ratio 0.60 Sum of lost time (s) Utilization 65.2% ICU Level of Service 15	Approach LOS		Ω			ш			∢			¥	
slay 11.4 HCM 2000 Level of Service Capacity ratio 0.60 Sum of lost time (s) h (s) 13.00 Sum of lost time (s) Unitzation 65.2% ICU Level of Service 15 15	Intersection Summary												
Capacity ratio 0.60 Sum of lost time (s) 130.0 Sum of lost time (s) Ulitzation 65.2% ICU Level of Service 15	HCM 2000 Control Delay			11.4	I 보	:M 2000 L	evel of 5	Service		В			
h (s) 130.0 Sum of lost time (s) Ulitzation 65.2% ICU Level of Service	HCM 2000 Volume to Capacity	/ ratio		09:0									
Utilization 65.2% 15	Actuated Cycle Length (s)			130.0	S	m of lost	time (s)			16.6			
5	Intersection Capacity Utilization	_		65.2%	ਠ	U Level of	f Service			ပ			
of the contract of the contrac	Analysis Period (min)			15									
	c Critical Lane Group												

Synchro 11 Report Page 9 Britannia & RR25 BA Group - NHY

Timings 7: Regional Rd 25 & Britannia Rd

2032 Future Total PM 01-12-2024

Lane Group		1	†	/	ţ	•	←	۶	→	
ph) 50 320 300 250 1455 165 165 165 165 165 165 165 165 165 1	Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	
ph) 50 320 300 500 250 1455 165 165 17 y	Lane Configurations	44	441	44	441	14	441	44	441	
ph) 50 320 300 500 250 1455 165 165 165 165 165 165 165 165 165 1	Traffic Volume (vph)	22	320	300	200	250	1455	165	890	
Prof. NA P	Future Volume (vph)	20	320	300	200	250	1455	165	890	
(s) 7 4 3 8 5 2 1 7 4 3 8 5 2 1 110 46,5 11,0 45,5 11,0 49,7 11,0 110 46,5 11,0 45,5 11,0 49,7 11,0 110 46,5 11,0 49,5 11,0 49,7 11,0 110 46,5 11,0 49,5 11,0 49,7 11,0 110 46,5 11,0 49,5 11,0 49,7 11,0 110 46,5 11,0 49,5 11,0 49,7 11,0 110 46,5 11,0 49,5 11,0 49,7 11,0 110 41,2 11,0 41,0 11,0 11,0 11,0 110 10,0 11,0 11,0 1	Turn Type	Prot	Ϋ́	Prot	ΑN	Prot	₹	Prot	₹	
7.0 10.0 7.0 10.0 7.0 20.0 7.0 11.0 45.5 11.0 45.5 11.0 45.5 11.0 45.5 11.0 45.7 11.0 11.0 45.5	Protected Phases	7	4	က	∞	ა	2	~	9	
7 4 3 8 5 2 1 110 45.5 11.0 45.5 11.0 49.7 11.0 110 45.5 11.0 45.5 11.0 49.7 11.0 110 45.5 11.0 45.5 11.0 49.7 11.0 110 45.5 11.0 45.0 16.0 58.0 12.0 8.5% 35.4% 10.8% 37.7% 12.3% 44.6% 92.% 4 3.0 4.2 3.0 4.2 3.0 4.2 3.0 4.2 3.0 1.0 3.3 1.0 3.3 1.0 3.5 1.0 3.5 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 0.6 0.20 0.8 18.8 Yes	Permitted Phases									
(s) 7.0 10.0 7.0 10.0 7.0 20.0 7.0 11.0 45.5 1	Detector Phase	7	4	က	∞	ა	5	~	9	
(s) 7.0 10.0 7.0 10.0 7.0 20.0 7.0 11.0 45.5 11.0 45.5 11.0 45.5 11.0 45.5 11.0 45.5 11.0 45.5 11.0 45.5 11.0 45.5 11.0 45.5 11.0 45.5 11.0 45.5 11.0 45.0 12.0 8.5% 35.4% 10.8% 37.7% 12.3% 44.6% 92.% 4 3.0 4.2 3.0	Switch Phase									
110 45.5 11.0 45.5 11.0 49.7 11.0 11.0 46.7 11.0 46.7 11.0 46.0 18.5% 35.4% 10.8% 37.7% 12.3% 44.8% 92.% 4 3.0 4.2 3.0 4.2 3.0 4.2 3.0 4.2 3.0 4.2 3.0 4.2 3.0 4.2 3.0 4.2 3.0 4.2 3.0 4.2 3.0 4.2 3.0 4.2 3.0 4.2 3.0 4.2 3.0 4.2 3.0 4.2 3.0 4.2 3.0 4.2 3.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4	Minimum Initial (s)	7.0	10.0	7.0	10.0	7.0	20.0	7.0	20.0	
(s) 110 460 140 490 160 580 120 85% 35.4% 10.8% 37.7% 12.3% 44.6% 92.2% 4 130 4.2 30 1.0 3.3 1.0 3.3 1.0 3.5 1.0 3.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1	Minimum Split (s)	11.0	45.5	11.0	45.5	11.0	49.7	11.0	49.7	
(s) 3.64% 10.8% 37.7% 12.3% 44.6% 92% 4 3.0 3.0 4.2 3.	Total Split (s)	11.0	46.0	14.0	49.0	16.0	58.0	12.0	54.0	
(s) 3.0 4.2 3.0 4.2 3.0 4.2 3.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1	Total Split (%)	8.5%	35.4%	10.8%	37.7%	12.3%	44.6%	9.5%	41.5%	
(s) -10 33 1.0 33 1.0 35 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	Yellow Time (s)	3.0	4.2	3.0	4.2	3.0	4.2	3.0	4.2	
(s) -10 -10 -10 -10 -10 -10 -10 -10 -10 -10	All-Red Time (s)	1.0	3.3	1.0	3.3	1.0	3.5	1.0	3.5	
s) 30 6.5 3.0 6.5 3.0 6.7 3.0 17 3.0 18 18 18 18 18 18 18 18 18 18 18 18 18	Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	
Lead Lag Lead None None None None C-Max None C-M	Total Lost Time (s)	3.0	6.5	3.0	6.5	3.0	6.7	3.0	6.7	
Fig. 1 Ves Yes Yes Yes Yes Yes Yes Yes Yes Yes Y	Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag	
None None None None CMax	Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
) 80 260 110 31.2 15.3 61.5 12.3 10.0 0.06 0.20 0.08 0.24 0.12 0.47 0.09 0.25 0.40 0.98 0.89dr 0.61 0.93 0.50 0.00 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Recall Mode	None	None	None	None	None	C-Max	None	C-Max	
0.06 0.20 0.08 0.24 0.12 0.47 0.09 0.25 0.40 0.98 0.89dr 0.61 0.93 0.50 0.14 4.35 1.23.0 37.7 0.06 41.8 73.7 0.0 0.0 0.0 0.0 0.0 0.0 0.14 4.35 123.0 37.7 60.6 41.8 73.7 E	Act Effct Green (s)	8.0	26.0	11.0	31.2	15.3	61.5	12.3	58.5	
0.25 0.40 0.98 0.89dr 0.61 0.93 0.50 (1.4 43.5 123.0 37.7 60.6 41.8 73.7 61.4 43.5 123.0 37.7 60.6 41.8 73.7 61.4 43.5 123.0 37.7 60.6 41.8 73.7 61.4 43.5 123.0 37.7 60.6 41.8 73.7 61.4 43.5 123.0 37.7 60.6 41.8 73.7 61.4 61.4 61.4 61.4 61.4 61.4 61.4 61.4	Actuated g/C Ratio	90:0	0.20	0.08	0.24	0.12	0.47	0.09	0.45	
61.4 43.5 123.0 37.7 60.6 41.8 73.7 70.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	v/c Ratio	0.25	0.40	0.98	0.89dr	0.61	0.93	0.50	0.48	
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Control Delay	61.4	43.5	123.0	37.7	9.09	41.8	73.7	18.6	
614 435 1230 37.7 60.6 41.8 73.7 E D E D E D E D E D E D E D E D E D E	Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
E D F D E D E 440 D E D E D E 440	Total Delay	61.4	43.5	123.0	37.7	9.09	41.8	73.7	18.6	
45.7 59.5 44.0 D E D	SOT	ш	۵	ш	□	ш	Ω	ш	Ф	
Approach LOS D E D C	Approach Delay		45.7		59.5		44.0		26.8	
Inforesculin Cumman	Approach LOS		۵		ш		□		O	
	Intersection Cummany									

Actualed Cycle Length: 130
Actualed Cycle Length: 130
Actualed Cycle Length: 130
Offset: 104 (80%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Next 104 (80%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Control Types Actualed-Coordinated
Maximum vic Patic 0.98
Intersection Signal Delay: 44.0
Intersection Capacity Utilization 85.9%
Analysis Period (min) 15
or Defacto Right Lane. Recode with 1 though lane as a right lane.

Intersection LOS: D ICU Level of Service E

Splits and Phases: 7: Regional Rd 25 & Britannia Rd

104 07 Ø3 • • Ø6 (R) Ø2 (R) **√**

Synchro 11 Report Page 10 Britannia & RR25 BA Group - NHY

2032 Future Total PM 01-12-2024 Queues 7: Regional Rd 25 & Britannia Rd

o								
	^	†	>	ţ	•	←	۶	→
Lane Group	EB	EBT	WBL	WBT	퓜	NBT	SBL	SBT
Lane Group Flow (vph)	20	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	9.09	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	9.09	41.8	73.7	18.6
Queue Length 50th (m)	6.7	33.5	9.44	47.0	33.4	199.5	23.4	39.4
Queue Length 95th (m)	13.7	42.5	#75.1	20.0	46.8	#278.1	36.4	46.3
Internal Link Dist (m)		377.9		190.1		165.3		292.1
Turn Bay Length (m)	0.09		120.0		90.0		90.0	
Base Capacity (vph)	203	1371	302	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
Information Cummons								

Intersection Summary
95th precratile downline 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.

Synchro 11 Report Page 11 Britannia & RR25 BA Group - NHY

HCM Signalized Intersection Capacity Analysis 7: Regional Rd 25 & Britannia Rd

2032 Future Total PM 01-12-2024

	4	†	<i>></i>	>	Ļ	4	•	•	•	۶	→	•
Movement	田田	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	F	443		K.	4413		*	4413		K.	4413	
Traffic Volume (vph)	20	320	40	300	200	375	250	1455	465	165	890	20
Future Volume (vph)	20	320	40	300	200	375	250	1455	465	165	830	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	
F	1.00	0.98		1.00	0.94		1.00	96.0		1.0	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	9.
Adj. Flow (vph)	20	320	40	300	200	375	220	1455	465	165	830	22
RTOR Reduction (vph)	0	=	0	0	117	0	0	34	0	0	က	0
Lane Group Flow (vph)	20	349	0	300	758	0	220	1886	0	165	937	0
Heavy Vehides (%)	%9	%0	%0	7%	1%	1%	%0	3%	7%	4%	4%	%0
Turn Type	Prot	Ā		Prot	≨		Prot	¥		Prot	AN	
Protected Phases	7	4		က	∞		2	2		-	9	
Permitted Phases												
Actuated Green, G (s)	5.6	25.8		10.0	30.2		14.3	29.7		11.3	299	
Effective Green, q (s)	9.9	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		80.00	c0.18		c0.02	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	5.9		2.5	10.8		[0.8	
Delay (s)	60.5	44.7		124.7	45.9		22.0	43.9		20.0	17.9	
Level of Service	ш	_		ш	□		ш	□		ш	ш	
Approach Delay (s)		46.6			63.8			45.4			25.6	
Approach LOS		۵			ш			۵			O	
Intersection Summary												
HCM 2000 Control Delay			45.5	Ĭ	HCM 2000 Level of Service	Level of S	service		۵			
HCM 2000 Volume to Capacity ratio	ratio		0.88									
Actuated Cycle Length (s)			130.0	જ	Sum of lost time (s)	time (s)			19.2			
Intersection Capacity Utilization	_		85.9%	೦	ICU Level of Service	f Service			ш			
Analysis Period (min)			15									
dr Defacto Right Lane. Recode with 1 though lane as a right lane.	de with	1 though I	ane as a	right lane								

Britannia & RR25 BA Group - NHY

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis 2032 Future Total PM 8: Site Dwy (South)/Site Dwy (North) & Etheridge Ave

EBL EBT WELL WETT WERR NBL NBT NBR S 10 100 100 101 135 175 100 10 0 80 10 100 100 101 135 175 100 10 0 80 100 100 100 100 100 100 100 100 10 100 10		1	†	<i>></i>	>	ţ	4	•	←	•	۶	→	•
wee (vehich) 10 10 135 175 100 10 0 80 me (vehich) 10 100 10 10 10 0 80 and (vehich) 10 100 10 10 10 10 80 pector 100 100 100 100 100 100 100 rate (vph) 10 100 100 100 100 100 100 rate (vph) 10 100 100 100 100 100 100 seed (ms) 100 100 100 100 100 100 100 seed (ms) 100 100 100 100 100 100 100 seed (ms) 100<	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
me (verly) 10 100 10 135 175 100 10 0 80 me (verly) 10 100 10 135 175 100 10 0 80 me (verly) 10 100 100 10 135 175 100 10 0 80 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0%	ane Configurations		4			4			4			4	
me (Vehrh) 10 100 10 135 175 100 10 0 80 me (Vehrh) 10 100 10 135 175 100 100 100 case (m/s) 10 100 100 100 100 100 100 case (m/s) 10 10 10 135 175 100 10 100 100 case (m/s) 10 10 10 135 175 100 100 100 case (m/s) 10 10 10 10 10 10 10 case (m/s) 10 10 10 10 10 10 10 case (m/s) 10 10 10 10 10 10 10 case (m/s) 10 10 10 10 10 10 10 case (m/s) 10 10 10 10 10 10 case (m/s) 10 10 10 10 10 case (m/s) 10 10 10 10 10 case (m/s) 10 10 10 case (m/s) 10 10 10 10 case (m/s) 10 10 10 case (m/s) 10 10 10 10 case (m/s) 1	raffic Volume (veh/h)	9	100	9	135	175	100	9	0	80	22	0	10
Free Free Stop	uture Volume (Veh/h)	10	100	9	135	175	100	9	0	80	22	0	10
Factor 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	ign Control		Free			Free			Stop			Stop	
Excirc 100 100 100 100 100 100 100 100 100 10	Srade		%0			%			%			%0	
rate (vph) 10 100 10 135 175 100 10 0 80 sed (ms) eed (ms	eak 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
eed (mis) eed vel) 78 1007 78 110 600 642 105 105 107 1007	fourly flow rate (vph)	19	100	9	135	175	100	9	0	80	22	0	10
(m) are (veh) as eved (m(s) ckage are (veh) by age veh) age veh) age veh) An and an	edestrians												
eed (m/s) are (veh) by state (veh) are (veh) are (veh) by state (veh) are (veh) by state (veh) by state (veh) confroid 233 confroid 222 confroid 233 confroid 243 confroid	ane Width (m)												
ckage are (veh) None None Sage veh) Red veh Sage veh Red vel Red vel Sage veh Red vel Red vel Sage veh Red vel Red vel Red vel Sage veh Red vel Red vel Red vel Sage vel Red v	Valking Speed (m/s)												
are (veh) See See See See See See See See See Se	ercent Blockage												
sage veh) yeage veh yeage veh) yeage ve	tight turn flare (veh)												
rage veh) rage veh) rage veh) rage veh) raginat (m)	ledian type		None			None							
ignal (m) 78 0.97 0.97 unblocked 0.97 110 6.97 0.97 unblocked 275 110 6.97 0.97 1 conf vol 275 110 6.00 670 105 2 conf vol 233 110 6.00 642 105 3 conf vol 23 11 6.5 6.2 6.5 6.5 5 soft vol 22 2.2 3.5 4.0 3.3 86.5 6.2 6.5 6.5 6.5 6.2 6.5 6.5 6.2 6.5 6.2 6.5 6.2 6.5 6.2	ledian storage veh)												
unblocked 0.87 110 0.97 0.97 103 103 volume 275 110 0.99 0.97 0.97 103 volume 275 110 0.99 0.97 0.97 103 volume 275 110 0.99 0.99 0.99 0.99 0.99 0.99 0.99	pstream signal (m)					28							
rig volume 275 110 630 670 105 105 105 105 105 105 105 105 105 10	X, platoon unblocked	0.97						0.97	0.97		0.97	0.97	0.97
1 conf vol 233 110 600 642 105 62 2 conf vol 233 110 600 642 105 62 62 63 64 64 64 64 64 64 64 64 64 64 64 64 64	C, conflicting volume	275			110			630	029	105	200	625	225
2 confivol 2.33 110 600 642 105 442 105 55 62 105 542 105 55 62 105 542 105 55 62 105 542 105 55 62 105 55 62 105 55 62 105 55 62 105 55 62 105 55 62 105 105 105 105 105 105 105 105 105 105	C1, stage 1 conf vol												
Sheek vol 233 110 600 642 105 Sh 4.1 4.1 6.5 6.2 105 Sh 2.2 2.2 3.5 4.0 3.3 ee% 99 91 97 100 92 r(vehrly) 1302 1493 367 345 955 ame # EB 1 WB 1 NB 1 SB 1 367 345 955 ame # EB 1 WB 1 NB 1 SB 1 365 <td< td=""><td>C2, stage 2 conf vol</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>	C2, stage 2 conf vol												
(s) 4.1 4.1 7.1 6.5 6.2 (s) 2.2 2.2 3.5 4.0 3.3 ee% 99 91 97 100 92 (Verln1) 1302 1493 811 388 an	Cu, unblocked vol	233			110			009	642	105	673	292	181
(\$) 22 22 22 35 40 33 ee%, 99 91 91 97 100 92 7(vehrln) 1302 ane # EB 1 WB 1 NB 1 SB 1 an 120 140 90 65 al 120 410 90 65 tr 10 130 130 21 493 801 80 10 10 10 10 10 10 10 10 10 10 10 10 10), single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
ee% 99 22 3.5 4.0 3.3 and #	C, 2 stage (s)												
ee % 99 91 97 100 92 // (vehrly) 1302 // (vehrly) 1202 // (vehrly) 1202 // (vehrly) 1203 // (vehrl	(s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
(verlvh) 1302 1493 367 345 955 ane # EB 1 WB 1 NB 1 SB 1 367 345 955 al 120 410 90 65 65 65 65 irt 10 130 10 65 65 67 78 78 irt 10 100 80 10 65 67 78) dueue free %	ගි			6			97	100	92	85	100	66
ane # EB1 WB1 SB1 a1 120 410 90 65 t t 10 130 80 10 int 10 100 80 10 int 1302 1489 811 338 apacity 0.01 0.09 0.11 0.19 ay (s) A A A C belay (s) 0.7 3.1 10.0 182 OS Summary 50 A A C Capacity Uslization 46.4% ICU Level of Service	M capacity (veh/h)	1302			1493			367	342	922	302	367	838
t 120 410 90 65 It 10 135 10 55 Int 10 135 10 55 Int 10 138 10 55 Int 1302 1499 811 338 Capacity 0.01 0.09 0.11 0.19 By (s) 0.7 3.1 10.0 18.2 OS 3.1 10.0 18.2 OS 3.1 10.0 18.2 OS 3.1 10.0 18.2 OS 4 A C Capacity Utilization 46.4% ICU Level of Service	irection, Lane #	EB 1	WB1	NB 1	SB 1								
t t 10 135 10 55 Int 10 130 80 10 1302 1338 81 388 Sapacity 0.01 0.09 0.11 0.19 gth 95th (m) 0.2 2.4 3.0 5.6 av (s) 0.7 3.1 10.0 18.2 Summary A A C Summary 5.0 Summary 5.0 Summary 6.0 Summary 6.0 Summary 6.0 Summary 7.0 Summar	olume Total	120	410	06	92								
Int 10 100 80 10 1302 14938 811 338 2apacity 0.01 0.03 0.11 0.19 gth 95th (m) 0.2 2.4 3.0 5.6 ay (s) 0.7 3.1 10.0 18.2 A A A A C Summary A A C Summary 5.0 Substitution 46.4% ICU Level of Service for a condition of the c	olume Left	9	135	9	22								
1302 1493 811 338 2apacity 0.01 0.09 0.11 0.19 gth 95th (m) 0.2 24 3.0 56 ay (s) A A A C A A A C C A Summary Asy 150	olume Right	10	100	8	9								
Japacity 0.01 0.09 0.11 0.19 ght 95ih (m) 0.2 2.4 3.0 5.6 ay (s) 0.7 3.1 10.0 18.2 OS 3.1 10.0 18.2 OS A A C Summary A C Capacity Utilization 46.4% ICU Level of Service	곮	1302	1493	811	338								
gth 95th (m) 0.2 2.4 3.0 5.6 ay (s) 0.7 3.1 10.0 18.2 A A A C A A C OS A A C C Summary A C Summary 5.0 15	olume to Capacity	0.01	0.0	0.11	0.19								
ay (s) 0.7 3.1 10.0 18.2 A A A C C Delay (s) 0.7 3.1 10.0 18.2 OS A C Summary 5.0 Capacity Usitization 46.4% ICU Level of Service indefinity 15.0	nene Length 95th (m)	0.2	2.4	3.0	9.6								
A A A C belay (s) 0.7 3.1 10.0 18.2 OS Summary A C Summary 5.0 Cabcity Utilization 46.4% ICU Level of Service 15.0 15.0	ontrol Delay (s)	0.7	3.1	10.0	18.2								
belay (s) 0.7 3.1 10.0 18.2 OS Summary A C Summary 5.0 Capacity Utilization 46.4% ICU Level of Service	ane LOS	∢	∢	⋖	ပ								
A C V 5.0 Utilization 46.4% ICU Level of Service 15.0	pproach Delay (s)	0.7	3.1	10.0	18.2								
y 5.0 Utilization 46.4% ICU Level of Service 15.	pproach LOS			∢	ပ								
5.0 Utilization 46.4% ICU Level of Service	Itersection Summary												
Utilization 46.4% ICU Level of Service	verage Delay			5.0									
	tersection Capacity Utilizatio	Ę		46.4%	⊇	U Level o	f Service			∢			
	Analysis Period (min)			15									

Britannia & RR25
BA Group - NHY
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Timings 10: Britannia Rd & Farmstead Dr

2032 Future Total PM 01-12-2024

`	SBR	R.	15	15	Perm		œ	8		10.0	15.3	41.0	39.0%	3.3	2.0	-1.0	4.3			None	11.4	0.11	0.08	6.6	0.0	19.9	В						Ę.				Intersection LOS: A	CU Level of Service A	
٠	SBL	-	22	22	Prot	œ		∞			15.3				5.0		4.3						0.29			47.2	۵	41.4	۵				Start of Gree				Inters	100	
ţ	WBT	4413	720	720	¥	9		9		20.0	29.4	53.0	20.5%	4.2	2.2	-1.0	5.4	Lag	Yes	C-Max	83.6	0.80	0.23	4.1	0.0	4.1	∢	4.1	∢				16:WBT,						
†	EBT	###	322	322	¥	2		2		20.0	29.4	64.0	61.0%	4.2	2.2	-1.0	5.4			C-Max	88.0	0.84	0.09	2.1	0.0	2.1	∢	5.1	∢				EBTL and						
^	EBF	*	25	25	pm+pt	2	2	2		7.0	11.0	11.0	10.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	89.3	0.85	0.04	2.0	0.0	2.0	V					105	ed to phase 2:		Coordinated	σ.	y: 5.6	IIIZation 37.2%	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	SOT	Approach Delay	Approach LOS	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 Capacity Utilization 37.2% Analysis Period (min) 15	

Splits and Phases: 10: Britannia Rd & Farmstead Dr



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Queues 10: Britannia Rd & Farmstead Dr

		5				
	4	†	ţ	٠	<i>*</i>	
Lane Group	EBL	EBT	WBT	SBL	SBR	
Lane Group Flow (vph)	22	355	800	22	15	
v/c Ratio	9.0	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	1.1	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)	261	3822	3549	909	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						

Britannia & RR25
Synchro 11 Report
BA Group - NHY

HCM Signalized Intersection Capacity Analysis 10: Britannia Rd & Farmstead Dr

2032 Future Total PM 01-12-2024

12.7 HCM 2000 Level of Service Sum of lost time (s) ICU Level of Service 8 8.4 9.4 0.09 3.0 144 8.4 9.4 0.09 5.3 3.0 155 c0.03 55 55 55 1900 1.00 1.00 0.95 1.736 0.95 1.00 55 55 0.35 44.9 1.00 1.4 46.3 D D D D 80 80 78.1 79.1 0.75 6.4 3.0 3353 c0.18 5.7 0.24 105.0 37.2% 720 720 720 1900 5.4 *0.80 0.98 1.00 4452 1.00 720 5 5 720 5 8 0.24 3.9 1.00 0.2 4.1 A 84.9 85.9 0.82 6.4 3.0 3730 c0.08 HCM 2000 Control Delay
HCM 2000 Volume to Capacity ratio
Aduated Cycle Length (s)
Intersection Capacity Utilization
Analysis Period (min)
c Critical Lane Group 84.9 85.9 0.82 4.0 3.0 4.0 0.00 0.00 1.00 0.0 1.00 4.0 25 25 25 3.0 3.0 3.0 3.0 1.00 0.0.95 5.48 5.48 5.48 0.0.29 0.0.20 0.0.29 0.0.29 0.0.29 0.0.29 0.0.20 0.0.00 Fit Protected Satt Ibov (prof)

Satt Show (perm)

Peak-how fach M. Adj. Flow (php)

RTOR Reduction (pph)

Lane Group Flow (php) Turn Type
Prosteded Phases
Permited Phases
Actuated Green, G (s)
Effective Green, g (s)
Actuated g/C Ratio
Clearance Time (s)
Vehicle Extension (s)
Lane Grp Cap (vph)
WS Ratio Perm v/c Ratio Uniform Delay, d1 Progression Factor Incremental Delay, d2 Lane Configurations
Traffic Volume (vph)
Future Volume (vph)
Ideal Flow (vphpl)
Total Lost time (s)
Lane Util. Factor ntersection Summary Delay (s) Level of Service Approach Delay (s) Approach LOS Heavy Vehides (%)

Britannia & RR25 Synchro 11 Report
BA Group - NHY Page 16

Timings 2032 Future Total PM 11: Britannia Rd & Rose Way 01-12-2024

EBL EBT WBT SBL SB SD		I		I	ı		
Hitors F. A.		4	†	↓	٠	*	
(yph) 80 870 1125 30 1125 30 (yph) 80 870 1125 30 1120 1120 1120 1120 1120 1120 1120 1	dno.	EBE	EBT	WBT	SBL	SBR	
(vph) 80 870 1125 33 (vph) 80 870 1125 33 (vph) 80 870 1125 30 80 870 1125 30 80 870 1125 30 80 870 1125 30 80 80 80 80 80 80 80 80 80 80 80 80 80	onfigurations	-	444	4413	×	¥.	
(vph) 80 870 1125 30 ess 2 5 6 4 ess 2 7.0 20.0 10.0 for all 1.0 29.0 29.0 43.0 for all 2.0 3.0 6.0 6.0 for all 2.0 3.0 6.0 6.0 5.0 for all 2.0 3.0 6.0 6.0 5.0 for all 2.0 3.0 6.0 6.0 5.0 for all 2.0 3.0 6.0 6.0 for all 2.0 3.0 6.0 6.0 for all 3.0 6.0 6.0 for al	/olume (vph)	8	870	1125	8	50	
ess 5 2 6 4 ess 2 2 6 4 ess 2 2 6 4 ess 2 2 6 4 (s) 770 2000 2000 1000 (s) 1110 2900 2900 43.00 1150 80.00 65.00 89.59 1150 80.00 65.00 89.59 1150 80.00 65.00 89.59 1150 80.00 89.59 est 2 9 25 51 58.7 A A A A Character Coordinated Est 2 0.00 0.00 0.00 Est 2 0.00 0.00 E	/olume (vph)	8	870	1125	೫	50	
ses 5 2 6 4 ses 5 2 6 4 ses 5 2 6 4 (s) 7.0 20.0 20.0 10.0 (s) 11.0 29.0 29.0 430.0 11.0 80.0 65.0 50.0 11.5 80.0 85.0 85.0 11.5 80.0 85.0 85.0 11.5 80.0 85.0 85.0 11.5 80.0 85.0 11.5 80.0 85.0 11.5 80.0 80.0 1		m+pt	ΑN	Ϋ́	Prot	Perm	
(s) 7.0 20.0 20.0 10.0 (s) 11.0 20.0 20.0 10.0 (s) 11.0 20.0 20.0 43.0 11.0 20.0 20.0 43.0 11.0 20.0 20.0 43.0 20.0 43.0 20.0 43.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 2		2	2	9	4		
(s) 7.0 200 200 100 100 100 100 100 100 100 10	ed Phases	5				4	
(s) 7.0 20.0 20.0 10.0 10.0 11.0 29.0 29.0 43.0 43.0 11.0 29.0 29.0 43.0 43.0 11.0 29.0 29.0 43.0 11.0 29.0 29.0 43.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	r Phase	ა	2	ဖ	4	4	
(s) 7.0 20.0 20.0 10.0 10.0 10.0 10.0 10.0 10	Phase						
(s) 110 290 290 430 1115% (515% 500% 550 500 550 500 550 500 550 500 550 500 550 500 550 500 550 500 550 500 550 500 550 500 550 500 550 500 550 500 550 500 550 500 5	m Initial (s)	7.0	20.0	20.0	10.0	10.0	
15.0 80.0 65.0 80.0 80.0 81.0 81.0 81.0 81.0 81.0 81	m Split (s)	11.0	29.0	29.0	43.0	43.0	
11.5% 61.5% 50.0% 38.5% 30.0% 38.5% 30.4% 30.2% 30.5% 30.6% 30.5% 30.6% 30.5% 30.6% 30.5% 30.6% 30.5% 30.6% 30.5% 30.6% 30.5%	olit (s)	15.0	80.0	65.0	20.0	50.0	
st(s) 10 4.0 4.0 3.0 3.0 st(s) 10 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.	olit (%)	1.5%	61.5%	20.0%	38.5%	38.5%	
Adjust (s) 1.0 3.0 3.0 3.0 Adjust (s) -1.0 -1.0 -1.0 -1.0 1.0 -1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	Time (s)	3.0	4.0	4.0	3.0	3.0	
Adjust (s) -1.0 -1.0 -1.0 -1.0 -1.0 Time (s) 3.0 6.0 6.0 5.0 5.0 Ead Lag Lead Lag Lead Lag None C-Max C-Max None C-Max No	Time (s)	1:0	3.0	3.0	3.0	3.0	
Time (s) 3.0 6.0 6.0 5.0 Lead Lag Lead Lag Ves Yes Yes Yes None C-Max C-Max None Interect (s) 114.2 112.4 103.5 11.0 Interect (s) 0.21 0.22 0.33 0.20 Interect (s) 0.21 0.22 0.33 0.20 Interect (s) 0.2 0.2 0.3 0.20 Interect (s) 0.2 0.2 0.3 0.20 Interect (s) 0.2 0.2 0.3 0.20 Interect (s) 0.3 0.2 0.2 0.3 0.20 Interect (s) 0.3 0.2 0.2 0.3 0.2 Interect (s) 0.3 0.2 0.2 0.3 0.2 Interect (s) 0.3 0.2 0.2 0.3 0.2 Interect (s) 0.3 0.2 0.2 0.2 Interect (s) 0.3 0.2 Intere	ne Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	
Lead Lag	ost Time (s)	3.0	0.9	0.9	2.0	5.0	
Ves None C-Max C-Max None I14.2 112.4 103.5 10.08 0.80 0.00 0.08 0.21 0.22 0.33 0.20 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Đ.	Lead		Lag			
None G-Max G-Max None 1142 1154 1035 1150 0.88 0.89 0.89 0.21 0.22 0.33 0.20 0.29 2.5 5.1 887 0.00 0.0 0.00 0.00 0.00 0.00 0.00 0		Yes		Yes			
1142 1124 1035 1100 0.088 0.080 0.080 0.080 0.080 0.000 0.000 0.00		None	C-Max	C-Max	None	None	
0.88 0.86 0.80 0.08 0.08 0.22 0.33 0.20 0.22 0.33 0.20 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	t Green (s)	114.2	112.4	103.5	11.0	11.0	
0.21 0.22 0.33 0.20 2.9 2.5 5.1 58.7 A A A B A A A B A A A C A D D D D D D D D D D D D D D D D D D D	d g/C Ratio	0.88	0.86	0.80	0.08	0.08	
29 25 51 587 00 00 00 00 00 00 00 00 00 00 00 00 00	0	0.21	0.22	0.33	0.20	0.27	
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Delay	5.9	2.5	5.1	28.7	18.8	
29 25 5.1 28.7 A A A B E A SE T	Delay	0:0	0.0	0.0	0.0	0.0	
A A A A E 26 5.1 33.8 A C C A C C S.1 33.8 A C C C C C C C C C C C C C C C C C C	əlay	5.9	2.5	5.1	28.7	18.8	
2.6 5.1 33.8 A A C A G C C A A C C C C C C C C C C C C C C C C		∢	∢	∢	ш	В	
A A C A A C d to phase 2:EBTL and 6:WBT, Start reinated 0 ition 49.7%	ch Delay		5.6	5.1	33.8		
of to phase 2:EBTL and 6:WBT, Start rdinated 0 0 1 ion 49.7%	sp LOS		∢	∢	ပ		
od to phase 2:EBTL and 6:WBT, Start rdinated 0	tion Summary						
of to phase 2:EBTL and 6:WBT, Start reinated 0 itin 49.7%	ength: 130 d Cycle Length: 130						
Natural Cycle: 85 Control Type: Actuated-Coordinated Maximum vic Ratio: 0.33 Intersection Signal Delay, 5.0 Intersection Capacity Unitization 49.7% Intersection Capacity Unitization 49.7% Intersection Capacity Unitization 49.7%	35 (50%). Referenced to	phase	2:EBTL a	nd 6:WB	. Start o	Green	
	Cycle: 85						
: 5.0 ization 49.7%	Type: Actuated-Coordin	ated					
: 5.0 ization 49.7%	m v/c Ratio: 0.33						
ization 49.7%	tion Signal Delay: 5.0				☲	ersection LOS: A	
Androic Dodged (min) 46	tion Capacity Utilization	49.7%			೦	ICU Level of Service A	
Alialysis Fellou (IIIII) 13	Analysis Period (min) 15						

Britannia & RR25
BA Group - NHY
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Queues 2032 Future Total PM 11: Britannia Rd & Rose Way 01-12-2024

	١	Ť	,	٠	*	
Lane Group	图	EBT	WBT	SBL	SBR	
Lane Group Flow (vph)	8	870	1185	30	20	
v/c Ratio	0.21	0.22	0.33	0.20	0.27	
Control Delay	2.9	2.5	5.1	28.7	18.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	2.9	2.5	5.1	28.7	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	97.6		
Turn Bay Length (m)	20.0			20.0		
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 guere is metered by upstream signal	i en en en it	smetered	hv	an signs		
	anoph our	2000	by apolic	3166		

Britannia & RR25 BA Group - NHY

HCM Signalized Intersection Capacity Analysis 11: Britannia Rd & Rose Way

2032 Future Total PM 01-12-2024

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BA Group - NHY
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2037 Future Total Traffic Conditions - NO RIRO Accesses

2037 Future Total AM 01-12-2024 Timings 1: Regional Rd 25 & Louis St Laurent Ave

→	SBT	444	1280	1280	Ϋ́	9		9		20:0	32.2	52.0	37.1%	4.2	3.0	-1.0	6.2	Lag	Yes	C-Max	47.5	0.34	0.95	60.2	0.0	60.2	ш	29.1	ш										
۶	SBL	F	92	92	pm+pt	-	9	~		5.0	9.0	9.0	6.4%	3.0	1.0	-1.0	3.0	Lead	Yes	None	56.9	0.41	0.50	36.6	0.0	36.6	٥											ш	
←	NBT	4413	1155	1155	ΑĀ	2		7		20.0	32.2	55.0	39.3%	4.2	3.0	-1.0	6.2	Lag	Yes	C-Max	52.3	0.37	0.95	54.9	0:0	54.9	_	54.5									LOS: E	CU Level of Service F	
•	NBL	*	115	115	pm+pt	2	2	2		2.0	0.6	12.0	%9.8	3.0	1.0	-1.0	3.0	Lead	Yes	None	62.7	0.45	0.71	49.3	0.0	49.3	۵						reen				Intersection LOS: E	U Level o	
ţ	WBT	₩	260	290	¥	80		∞		10.0	30.0	49.0	35.0%	4.0	3.0	-1.0	0.9	Lag	Yes	None	46.6	0.33	0.57	40.2	0.0	40.2	٥	9.09	٥				Start of (할	⊇	
>	WBL	*	495	495	pm+pt	က	∞	ო		10.0	14.0	39.0	27.9%	3.0	0.0	-1.0	5.0	Lead	Yes	None	72.3	0.52	0.93	64.3	0.0	64.3	ш						6:SBTL,						
†	EBT	₩	535	535	¥	4		4		10.0	30.0	37.0	26.4%	4.0	3.0	-1.0	0.9	Lag	Yes	None	30.9	0.22	0.93	70.3	0.0	70.3	ш	59.2	ш				JBTL and						
4	EB	<u>, </u>	270	270	pm+pt	7	4	7		2.0	9.0	27.0	19.3%	3.0	1.0	-1.0	3.0	Lead	Yes	None	52.7	0.38	0.65	29.5	0.0	29.5	ပ						phase 2:N		dinated		8	on 99.2%	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	SOT	Approach Delay	Approach LOS	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 Capacity Utilization 99.2%	Analysis Period (min) 15

4 **€** Ø3 Splits and Phases: 1: Regional Rd 25 & Louis St Laurent Ave ↑ ø5 🕴 🕶 Ø6 (R) Ø1 → Ø2 (R)

Synchro 11 Report Page 1 Britannia & RR25 BA Group - NHY

Queues 1: Regional Rd 25 & Louis St Laurent Ave

2037 Future Total AM 01-12-2024

→	SBT	1375	0.95	60.2	0:0	60.2	165.3	#206.5	113.5		144	0	0	0	0.95	
۶	SBL	65	0.50	36.6	0.0	36.6	11.0	20.8		80.0	130	0	0	0	0.50	
•	NBT	1495	0.95	54.9	0:0	54.9	~181.7	#222.6	481.0		1579	0	0	0	0.95	
•	NBL	115	0.71	49.3	0.0	49.3	20.0	#46.0		65.0	164	0	0	0	0.70	
ţ	WBT	655	0.57	40.2	0.0	40.2	79.1	105.6	117.1		1149	0	0	0	0.57	
>	WBL	495	0.93	64.3	0.0	64.3	120.2	#185.9		32.0	248	0	0	0	06.0	
†	EBT	725	0.93	70.3	0.0	70.3	105.5	#144.0	126.1		786	0	0	0	0.92	
4	EBL	270	0.65	29.5	0.0	29.5	43.2	62.6		0.06	481	0	0	0	0.56	
	Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Queue Delay	Total Delay	Queue Length 50th (m)	Queue Length 95th (m)	Internal Link Dist (m)	Turn Bay Length (m)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio	

- Volume exceeds capacity, queue is theoretically infinite.

 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.

Synchro 11 Report Page 2 Britannia & RR25 BA Group - NHY

HCM Signalized Intersection Capacity Analysis 1: Regional Rd 25 & Louis St Laurent Ave

2037 Future Total AM 01-12-2024

Movement EB		1	†	<i>></i>	>	ţ	4	•	←	•	٠	→	•
270 538 190 495 560 95 115 1155 340 65 1280 1900 1900 1900 1900 1900 1900 1900 19	Movement	EBF	EBI	EBR	WBL	WBT	WBR	NB.	NBT	NBR	SBL	SBT	SBR
270 558 190 495 560 96 115 340 65 1280 1900	Lane Configurations	*	₩		je-	₩.		F	444		F	441	
270 535 190 495 560 95 115 1155 340 66 1280 190	Traffic Volume (vph)	270	535	130	495	260	32	115	1155	340	65	1280	95
1900 1900	Future Volume (vph)	270	232	96	495	290	8	112	1155	88	92	1280	92
30 60	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
1,00 0,95	Total Lost time (s)	3.0	0.9		2.0	0.9		3.0	6.2		3.0	6.2	
1,00	Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	*0.80		1.00	*0.80	
100 100	Frpb, ped/bikes	1.00	1.00		1.00	1.00		9.	1.00		1.00	1.00	
1,00 0.96 1,00 0.99 1,00 0.97 1,00 0.99 1,00 0.99 1,00 0.99 1,00 0.99 1,00 0.99 1,00 0.99 1,00 1,00 0.99 1,00	Flpb, ped/bikes	1.00	1.00		1.00	1:00		1.00	1.00		1.00	1.00	
196 100 100 100 100 0.95 100 0.95 100 10	Ŧ	1.00	96.0		1.00	0.98		1.00	0.97		1.00	0.99	
1767 3409 1863 3427 1703 4152 1719 4231 1719 4231 1710 100	Fit Protected	0.95	1.00		1.00	1.00		0.95	1.00		0.95	1.00	
100 101 100 101 100	Satd. Flow (prot)	1767	3409		1863	3427		1703	4152		1719	4231	
1,00 1,00	Flt Permitted	0.40	1.00		0.12	1.00		0.08	1.00		0.08	1.00	
1.00 1.00	Satd. Flow (perm)	737	3409		226	3427		142	4152		153	4231	
1,000 1,00	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
1	Adi. Flow (vph)	270	535	190	495	260	92	115	1155	340	9	1280	92
270 699 0 495 646 0 115 1465 0 65 1370 28	RTOR Reduction (vph)	0	56	0	0	တ	0	0	30	0	0	2	0
5 5 5 7% 3% 5% 7% 2% 2% 2% 7% 6% 7% 3% 5% 7% pm+pt NA pm+pt NA pm+pt NA pm+pt NA 7 A 8 5 2 6 6 4 4 6 6 4 1 NA 7 1 6 6 4 1 N 7 1 1 N 7 1 1 1 1 1 1 1 1 1 1 1 1 6 6 4 1	Lane Group Flow (vph)	270	669	0	495	646	0	115	1465	0	65	1370	0
2% 2% 2% 7% 6% 7% 3% 5% 7% pm+pt NA pm+pt NA pm+pt NA pm+pt NA 7 4 8 2 6 6 6 7% 4%	Confl. Peds. (#/hr)	2					2						
pm+pt NA pm+pt NA pm+pt NA pm+pt 7 4 3 8 5 2 1 4 4 8 5 2 1 4 4 8 5 2 1 4 4 8 5 2 1 4 4 8 6 594 514 504 498 31.0 684 466 594 514 504 6.5 0.22 0.49 0.33 0.42 0.37 0.37 6.0 0.22 0.49 0.33 0.42 0.37 0.37 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 40.5 5.2 4.140 160 1524 113 3.0 1.0 0.15 0.22 0.19 0	Heavy Vehicles (%)	2%	5%	1%	5%	5%	%/	%9	%/	3%	2%	%/	2%
7 4 3 8 5 2 1 4 4 8 5 2 6 47.8 3.00 67.4 456 58.4 50.4 50.4 49.8 31.0 68.4 46.6 59.4 51.4 52.4 50.4 40 7.2 0.49 0.33 0.42 0.37 0.32 0.32 0.32 0.32 0.32 0.32 0.32 0.32 0.32 0.32 0.32 0.32 0.32 0.32 0.32 0.32 0.32 0.32 0.32	Turn Type	pm+pt	AN		pm+pt	AN		pm+pt	AA		pm+pt	¥	
4 8 8 2 6 4 8 30.0 67.4 45.6 58.4 50.4 50.4 49.8 30.0 66.4 45.6 58.4 50.4 50.4 69.8 60.2 60.4 66.8 69.4 50.4 50.4 60.3 60.2 60.4 60.3 60.4 60.3 40.0 73.4 70.3 70.0 72.2 4.0 40.0 75.4 52.4 11.0 160 152.4 11.3 60.09 60.21 60.22 60.25 60.2 60.09 60.21 60.24 60.19 60.05 60.3 60.09 60.21 60.24 60.19 60.25 60.09 60.21 60.22 60.2 60.09 60.21 60.2 60.2 60.09 60.21 60.2 60.2 60.00 60.21 60.2 60.2 60.00 60.00 60.00 60.00 60.00 60.00 60.00 60.00 60.00 60.00 60.00 60.00 60.00 60.00 60.00 60.00 60.00 60.00 6	Protected Phases	7	4		က	œ		2	2		-	9	
47.8 30.0 67.4 45.6 58.4 50.4 50.4 49.8 31.0 68.4 46.6 59.4 51.4 52.4 0.36 0.35 0.42 0.42 0.37 4.0 7.0 3.0 7.0 4.0 7.2 4.0 4.0 7.5 3.0 3.0 3.0 3.0 5.0 5.2 1.140 160 1524 1.13 6.0 6.0 75.4 6.140 160 1524 1.13 6.0 6.0 6.2 0.2 0.26 0.05 6.0 6.0 0.3 0.0 0.0 6.0 6.0 0.3 0.0 0.10 6.0 6.0 0.3 0.10 0.10 7.0 7.0 7.0 7.0 0.10 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 8.0 6.9 7.0 7.0 8.0 6.9 7.0 7.0 8.0 7.0 7.0 7.0 9.0 7.	Permitted Phases	4			∞			2			9		
49.8 31.0 66.4 46.6 59.4 51.4 52.4 0.36 0.22 0.49 0.33 0.42 0.37 0.37 4.0 7.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 400 754 524 1140 160 1524 113 0.15 0.02 0.02 0.02 0.02 0.02 0.02 0.15 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.68 0.93 0.57 0.72 0.96 0.56 0.09 0.05 0.04 0.09 0.05 0.04 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 <td>Actuated Green, G (s)</td> <td>47.8</td> <td>30.0</td> <td></td> <td>67.4</td> <td>45.6</td> <td></td> <td>58.4</td> <td>50.4</td> <td></td> <td>50.4</td> <td>46.4</td> <td></td>	Actuated Green, G (s)	47.8	30.0		67.4	45.6		58.4	50.4		50.4	46.4	
0.36 0.22 0.49 0.33 0.42 0.37 0.37 1 3.0 7.0 3.0 7.0 4.0 7.2 4.0 1 4.0 754 5.24 1140 160 1524 113 0.09 0.21 0.22 0.86 0.19 0.81 5.34 41.3 88.4 31.7 43.3 83.8 1 4.0 1.00 1.00 1.00 1.00 1.00 1.00 d2 4.5 17.4 2.6 0.6 1.4 41.3 18.5 6.9 1 4.5 17.4 2.6 0.6 1.0 1.0 1.0 1.0 1.0 Delay E. J. HCM.2000 Level of Service E 1 0.0 5.0 5.0 5.0 5.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1	Effective Green, g (s)	49.8	31.0		68.4	46.6		59.4	51.4		52.4	47.4	
10	Actuated g/C Ratio	0.36	0.22		0.49	0.33		0.42	0.37		0.37	0.34	
3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 4.0	Clearance Time (s)	4.0	7.0		3.0	7.0		4.0	7.2		4.0	7.2	
400 754 524 1140 160 1524 113 113 114 115 11	Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
0.09 co.0.21 co.0.24 co.0.05	Lane Grp Cap (vph)	400	754		524	1140		160	1524		113	1432	
0.15 0.22 0.26 0.26 0.19 0.18 0.33 0.24 0.57 0.26 0.19 0.18 0.13 0.24 0.57 0.26 0.158 0.10 1.00 1.00 1.00 1.00 1.00 1.00 1.00	v/s Ratio Prot	0.0	c0.21		c0.24	0.19		c0.05	c0.35		0.02	0.32	
0.68 0.93 0.94 0.57 0.72 0.96 0.58 34.3 53.4 4.13 88.4 3.17 44.3 33.8 4.5 17.4 26.0 0.6 14.3 15.5 6.9 5.1	v/s Ratio Perm	0.15			0.22			0.26			0.19		
34.3 53.4 41.3 38.4 31.7 43.3 33.8 33.8 33.8 33.8 33.8 33.8 33.8	v/c Ratio	0.68	0.93		0.94	0.57		0.72	96.0		0.58	96.0	
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Uniform Delay, d1	34.3	53.4		41.3	38.4		31.7	43.3		33.8	45.3	
d2 4.5 17.4 26.0 0.6 14.3 15.5 6.9 3.8.8 70.8 67.3 39.0 46.1 58.9 40.7 D 62.1 51.2 58.0 D E D may 57.8 HCM 2000 Level of Service E E D gth (s) 0.35 HCM 2000 Level of Service E R gth (s) 140.0 Sum of lost time (s) 18.2 F yth Ulization 15.2 CU Level of Service F F	Progression Factor	1.00	1.00		1.00	1:00		1.00	1.00		1.00	1.00	
38.8 70.8 67.3 39.0 46.1 58.9 40.7 D E E D D E D 62.1 58.0 62.1 58.0 E D D E D E D D E D S8.0 E D D E D E D D D E D D E D E D D E D E D D E D E D D E D E D D E D E D D D E D E D D E	Incremental Delay, d2	4.5	17.4		26.0	9.0		14.3	15.5		6.9	15.4	
D E E D D E D E	Delay (s)	38.8	70.8		67.3	39.0		46.1	58.9		40.7	2.09	
62.1 51.2 58.0 E D Delay 57.8 HCM.2000 Level of Service E to Capacity ratio 0.95 Sum of lost time (s) 18.2 gth (s) 19.2 (CU Level of Service F n) 15.0 (CU	Level of Service	٥	ш		ш	Ω			ш		۵	ш	
E D E E S7.8 HCM 2000 Level of Service ratio 0.95 Sum of lost time (s) 99.2% (CU Level of Service 1.5	Approach Delay (s)		62.1			51.2			28.0			29.8	
57.8 HCM 2000 Level of Service 0.95 Sum of lost time (s) 99.2% (CU Level of Service 15	Approach LOS		ш			۵			ш			ш	
67.8 HCM 2000 Level of Service 0.95 Sum of lost time (s) 99.2% (CU Level of Service	Intersection Summary												
ratio 0.95 1400 Sum of lost time (s) 99.2% ICU Level of Service 15	HCM 2000 Control Delay			57.8	ĭ	3M 2000	level of S	Service		ш			
140.0 Sum of lost time (s) 99.2% ICU Level of Service 15	HCM 2000 Volume to Capa	city ratio		0.95									
99.2% ICU Level of Service 15	Actuated Cycle Length (s)			140.0	S	im of lost	time (s)			18.2			
15	Intersection Capacity Utiliza	ation		99.2%	ੁ	U Level c	of Service			ш			
	Analysis Period (min)			15									

c Critical Lane Group

Britannia & RR25 BA Group - NHY

Timings 2: Regional Rd 25 & Whitlock Ave

2037 Future Total AM 01-12-2024

→	SBT	4413	2115	2115	¥	9		9		20.0	35.5	81.0	62.3%	4.2	2.3	-1.0	5.5	Lag	Yes	C-Max	9.68	0.69	0.75	16.6	0.0	16.6	മ	16.3	Ω										
۶	SBL	*	20	20	pm+pt	_	9	-		7.0	11.0	11.0	8.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	98.7	9.70	0.18	2.8	0.0	2.8	∢												
←	NBT	444	1395	1395	≨	2		2		20.0	35.5	81.0	62.3%	4.2	2.3	-1.0	5.5	Lag	Yes	C-Max	89.7	69.0	0.47	7.1	0.0	7.1	⋖	9.7	⋖									۵	
•	NBL	*	45	45	pm+pt	2	7	2		7.0	11.0	11.0	8.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	98.7	9.70	0.28	21.5	0.0	21.5	ပ										LOS: B	CU Level of Service D	
4	WBR	*	92	92	Perm		∞	∞		10.0	37.5	38.0	29.5%	3.3	3.2	-1.0	5.5			None	20.4	0.16	0.31	10.9	0.0	10.9	Ф						of Green				Intersection LOS: B	U Level o	
ţ	WBT	*	35	32	ΑĀ	∞		∞		10.0	37.5	38.0	29.5%	3.3	3.2	-1.0	5.5			None	20.4	0.16	0.13	45.3	0.0	45.3	_	29.5	ပ				L, Start o				Ξ	೦	
>	WBL	<u>, </u>	20	20	Perm		∞	∞		10.0	37.5	38.0	29.5%	3.3	3.2	-1.0	5.5			None	20.4	0.16	0.33	52.5	0.0	52.5	Ω						Ind 6:SB1						
†	EBT	2	20	20	¥	4		4		10.0	37.5	38.0	29.5%	3.3	3.2	-1.0	5.5			None	20.4	0.16	0.49	30.2	0.0	30.2	ပ	49.2	۵				2:NBTL a						
1	EBF	,	145	145	Perm		4	4		10.0	37.5	38.0	29.5%	3.3	3.2	-1.0	5.5			None	20.4	0.16	0.69	68.1	0.0	68.1	ш						d to phase		rdinated		7.	ion 76.6%	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	SOT	Approach Delay	Approach LOS	Intersection Summary	Cycle Lenath: 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 Capacity Utilization 76.6%	Analysis Period (min) 15

Splits and Phases: 2: Regional Rd 25 & Whitlock Ave



Britannia & RR25 BA Group - NHY

> Synchro 11 Report Page 3

Queues 2: Regional Rd 25 & Whitlock Ave

2037 Future Total AM 01-12-2024

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Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	
Lane Group Flow (vph)	145	145	20	35	32	45	1405	20	2215	
v/c Ratio	69.0	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	2.8	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	2.8	16.6	
Queue Length 50th (m)	37.5	18.2	12.1	8.2	0.0	2.2	56.6	5.6	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)		67.9		68.1			6.969		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.

Synchro 11 Report Page 5 Britannia & RR25 BA Group - NHY

HCM Signalized Intersection Capacity Analysis 2: Regional Rd 25 & Whitlock Ave

2037 Future Total AM 01-12-2024

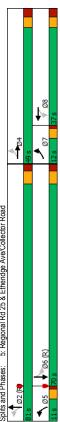
	٠	†	<u> </u>	>	↓	4	•	•	•	۶	→	•
Movement	BE	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	æ,		je-	*	¥	*	4413		<i>y</i> -	4413	
Traffic Volume (vph)	145	20	92	20	35	92	45	1395	10	20	2115	100
Future Volume (vph)	145	20	92	20	32	92	42	1395	9	20	2115	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5		5.5	2.5	5.5	3.0	2.5		3.0	2.2	
Lane Util. Factor	9:	1.00		1.00	0.1	1.00	1.00	*0.80		1.00	.0.80 *0	
Frpb, ped/bikes	9:	0.99		1.00	1.00	0.98	1:00	1:00		1.00	9.	
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00	1:00	1.00		1.00	1.00	
芷	1.00	0.90		1.00	1.00	0.85	1.00	1.00		1.00	0.39	
Fit 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		1802	4310	
Fit Permitted	0.73	1.00		0.53	1.00	1.00	0.04	1.00		0.12	1.00	
satd. Flow (perm)	1333	QICI		202	60/	1422	2	4737		233	4310	
Peak-hour factor, PHF	1.00	1.00	1.00	0.0	1.00	1.00	1.00	1.00	1.00	0.0	1.00	0.1
Adj. Flow (vpli)	2 -	000	200	9	3	CG CG	5 0	200	2 0	2	C 6	3
l and Group Flow (yph)	145	8 8	o c	ر د د	, K	8 t	45.0	1405	o c	20 0	2212	0 0
Confl Peds (#/hr)	2 10	3	ייי כ	3 10	3	2 10	2	2	>	3	1	
Heavy Vehicles (%)	4%	32%	, %	4%	%8	%6	%8	%9	25%	%0	2%	7%
Turn Type	Perm	N A	2	Perm	¥	Perm	pm+pt	¥		pm+pt	X Y	
Protected Phases		4			80		ഹ	2			9	
Permitted Phases	4			∞		∞	2			9		
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	92.6	88.9		92.6	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)	500	237		151	276	228	140	2935		252	2947	
v/s Ratio Prot		90.0			0.02		c0.02	0.33		0.01	00.51	
v/s Ratio Perm	c0.11			0.02		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	21.8	49.0		48.7	47.1	46.7	12.8	9.7		5.6	13.4	
Progression Factor	9:	1:00		9 :	9 (1.00	2.19	0.62		1.00	9:	
Incremental Delay, d2	9.6	6.0		 	0.5	0.1	1.2	0.5		0.4	8.	
Delay (s)	61.4	49.9		20.0	47.3	46.8	29.3	9.9		0.9	15.2	
Level of Service	ш	۵			Ω !	Ω	ပ	∢ '		∢	<u>m</u>	
Approach Delay (s)		22.7			8.74			.5.			12.0	
Approach LOS		ш			۵			∢			മ	
Intersection Summary												
HCM 2000 Control Delay			16.5	王	HCM 2000 Level of Service	Level of	Service		В			
HCM 2000 Volume to Capacity ratio	ity ratio		0.72									
Actuated Cycle Length (s)			130.0	S	Sum of lost time (s)	time (s)			14.0			
Intersection Capacity Utilization	on		%9.92	೦	ICU Level of Service	f Service			Δ			
Analysis Period (min)			15									
c Critical Lane Group												

Britannia & RR25 BA Group - NHY

2037 Future Total AM 01-12-2024 Timings 5: Regional Rd 25 & Etheridge Ave/Collector Road

ane Group Lane Configurations Traffic Volume (vph) Turn Yype Provided Passes	BB	E		WRT	2				
	×		WBL		NDL	NBT	SBL	SBT	
	-	4	×	¢	×	4413	F	4413	
	200	0	65	0	75	1195	8	2140	
	200	0	92		75	1195	8	2140	
	pm+pt	ΑĀ	Perm		pm+pt	ΑN	Perm	Ϋ́	
	7	4			2	2		9	
Se	4		œ		7		9		
ē	7	4	œ	œ	2	5	9	9	
Switch Phase									
		10.0	10.0	10.0	7.0	20.0	20.0	20.0	
t (s)	11.0	36.2	36.2	36.2	11.0	38.4	38.4	38.4	
				37.0	11.0	81.0	0.07	70.0	
				28.5%	8.5%	62.3%	53.8%	23.8%	
				3.3	3.0	4.2	4.2	4.2	
II-Red Time (s)				5.9	1.0	2.2	2.2	2.2	
ost Time Adjust (s)				-1.0	-1.0	-1.0	-1.0	-1.0	
otal Lost Time (s)			5.2	5.2	3.0	5.4	5.4	5.4	
				Lag	Lead		Lag	Lag	
.ead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes	
Recall Mode	None			None	None	C-Max	C-Max	C-Max	
Act Effct Green (s)	25.8			14.0	98.2	92.8	86.3	86.3	
Actuated g/C Ratio	0.20	0.18		0.11	0.76	0.74	99.0	99.0	
//c Ratio	0.75			0.21	0.43	0.38	0.13	0.78	
	63.8			2.5	44.6	2.3	3.7	10.1	
Á	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
otal Delay	63.8	22.5		2.5	44.6	2.3	3.7	10.1	
	ш	ပ	ш	⋖	۵	∢	∢	ш	
Approach Delay		44.0		37.4		4.8		10.0	
Approach LOS		۵		۵		∢		4	
ntersection Summary									
Sycle Length: 130									
Actuated Cycle Length: 130									
Offset 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	nase 2:N	BTL and	6:SBTL,	Start of G	reen				
Natural Cycle: 130									
Control Type: Actuated-Coordinated	ated								
Maximum v/c Ratio: 0.78									
ntersection Signal Delay: 12.4				Ĭ	Intersection LOS: B	LOS: B			
ntersection Capacity Utilization 85.5%	85.5%			ಠ	J Level o	ICU Level of Service E	ш		
Analysis Period (min) 15									

Splits and Phases: 5: Regional Rd 25 & Etheridge Ave/Collector Road



Synchro 11 Report Page 7 Britannia & RR25 BA Group - NHY

2037 Future Total AM 01-12-2024 Queues 5: Regional Rd 25 & Etheridge Ave/Collector Road

→	SBT	2230	0.78	10.1	0:0	10.1	194.9	193.1	6.969		2867	0	0	0	0.78	
٠	SBL	30	0.13	3.7	0.0	3.7	8.0	m1.2		20.0	232	0	0	0	0.13	
←	NBT	1215	0.38	2.3	0.0	2.3	11.1	m15.7	292.1		3168	0	0	0	0.38	
•	NBL	75	0.43	44.6	0.0	44.6	8.9	m13.2		0.07	175	0	0	0	0.43	
ţ	WBT	55	0.21	2.5	0.0	2.5	0.0	4.	63.1		471	0	0	0	0.12	
>	WBL	65	0.50	0.79	0.0	0.79	16.9	31.6		40.0	297	0	0	0	0.22	
†	EBT	185	0.48	22.5	0.0	22.5	17.0	38.5	53.9		617	0	0	0	0.30	
4	EBF	200	0.75	63.8	0.0	63.8	48.3	6.69		40.0	268	0	0	0	0.75	
	Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Queue Delay	Total Delay	Queue Length 50th (m)	Queue Length 95th (m)	Internal Link Dist (m)	Turn Bay Length (m)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio	

Intersection Summary molecular of the North of the North

Synchro 11 Report Page 8 Britannia & RR25 BA Group - NHY

2037 Future Total AM 01-12-2024 HCM Signalized Intersection Capacity Analysis 5: Regional Rd 25 & Etheridge Ave/Collector Road

FBI		١.	1	٠				-	-				
1		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
200 0 185 65 0 55 75 1195 200 1900 1900 1900 1900 1900 1900 1900 30 5.2 5.2 5.2 3.0 5.4 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.04 1.00 0.05 1.00 0.95 1.00 0.04 1.00 0.05 1.00 0.95 1.00 0.05 1.00 0.05 1.00 0.05 1.00 1.00 1.00 1.00 1.00 1.00 0.05 1.00 0.05 0.05 0.0 0.05 1.00 0.05 0.05 0.05 0.05 0.0 0.0 1.00 0.05 0.05 0.05 0.00 0.03 0.03 0.05 0.06 0.06 0.00 0.03 0.03 0.07 0.03 0.05 0.00 0.03 0.07 0.03 0.05 0.00 0.03 0.07 0.03 0.05 0.00 0.03 0.07 0.03 0.05 0.00 0.03 0.07 0.03 0.05 0.00 0.03 0.08 0.06 0.06 0.00 0.00 0.09 0.00 0.00 0.00 0.03 0.00 0.00 0.00 0.00	urations	*	æ		*	æ		y -	4₩₽		*	4413	
200 0 185 65 0 55 75 1195 3 0 5.2 5.2 5.2 3.0 5.4 1.00 1.00 1900 1900 1900 1900 1900 1900 0.95 1.00 1.00 1.00 1.00 1.00 1.00 0.95 1.00 0.95 1.00 1.00 1.00 1.00 0.95 1.00 0.95 1.00 0.95 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	ne (vph)	200	0	182	92	0	22	75	1195	50	30	2140	8
1900 1900 1900 1900 1900 1900 1900 1900	ne (vph)	500	0	188	9	0	S 2	22	1195	50	90	2140	8
3.0 5.2 5.2 5.2 3.0 5.4 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.	(ldud	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	le (s)	3.0	2.5		2.5	2.5		3.0	5.4		5.4	5.4	
1.00 0.85 1.00 0.85 1.00 1.00 1.00 1.00 1.00 1.00 0.85 1.00 0.05 1.00 0.05 1.00 0.05 1.00 0.05 1.00 0.05 1.00 0.05 1.00 0.05 1.00 0.05 1.00 0.05 1.00 1.00	ctor	9.5	3.0		0.1	9.5		9.5	0.80		1.00	0.80	
0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.96 1.00 0.96 1.00 0.96 1.00 0.90 0.90 0.90 0.95 0.95 0.95 0.95 0		9.	0.85		9.	0.82		0 !	1.00		00	0.99	
1787 1615 1805 1615 1752 4295 1056 100 0.64 1.00 0.05 1.00 1058 1610 1.218 1615 85 4295 100 0 0 185 65 0 55 75 1195 200 95 0 65 5 0 75 1214 178 0% 0% 0% 0% 0% 3% 6% 179 0.99 0.90 0.90 0.90 0.75 1214 179 0.90 0.90 0.90 0.90 0.90 0.75 1214 170 0.19 0.19 0.09 0.09 0.09 0.73 0.73 170 0.09 0.09 0.09 0.73 0.73 170 0.00 0.00 0.09 0.03 0.03 170 0.00 0.00 0.00 0.00 0.00 170 0.00 0.00 0.00 0.00 0.00 170 0.00 0.00 0.00 0.00 170 0.00 0.00 0.00 0.00 170 0.00 0.00 0.00 0.00 170 0.00 0.00 170 0.00 170 0.00		0.95	1.00		0.95	1:00		0.95	1.00		0.95	1.00	
10.68 1,00 0.64 1,00 0.05 1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,	rot)	1787	1615		1802	1615		1752	4295		1805	4315	
1086 1615 1218 1615 85 4295 1.00 1.00 1.00 1.00 1.00 1.00 1.00 200 0 185 65 0 55 75 1915 200 95 0 65 5 0 775 1214 1% 0% 0% 0% 0% 0% 3% 6% 1% 0% 0% 0% 0% 0% 3% 6% 1% 0% 0% 0% 0% 0% 3% 6% 1% 120 120 946 946 24.8 24.8 120 12.0 12.0 946 94.6 24.8 24.8 120 12.0 12.0 946 94.6 24.9 0.19 0.19 0.09 0.09 0.73 0.73 259 308 112 149 155 3125 259 308 112 149 165 3125 259 308 112 149 165 3125 20.06 0.06 0.06 0.09 0.03 3.0 0.77 0.31 0.58 0.03 0.48 48.8 45.2 56.6 53.7 19.2 6.7 1.00 1.00 1.00 1.00 1.00 2.94 0.30 1.30 0.40 0.05 254 0.30 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0		0.58	1.00		0.64	1:00		0.05	1.00		0.18	1.00	
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	erm)	1085	1615		1218	1615		82	4295		349	4315	
200 0 185 65 0 55 75 1195 200 200 95 0 6 5 0 5 0 75 1195 200 95 0 0 6 5 0 0 75 1214 200 95 0 0 6 5 0 0 75 1214 200 95 0 0 6 5 0 0 75 1214 214 214 214 214 214 214 214 214 21	stor, 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
0 90 0 0 65 0 0 1114 1/2 0/2 0/2 0/2 0/2 0/2 0/2 0/2 0/2 0/2 0	-	200	0	182	92	0	22	75	1195	20	30	2140	8
200 95 0 65 5 0 75 1214 1% 0% 0% 0% 0% 0% 3% 6% pm+pt NA Perm NA pm+pt NA 5 238 238 238 238 248 248 248 248 120 120 909 0.09 0.09 0.09 0.03 30 30 30 30 30 30 30 30 30 30 30 30 3	tion (vph)	0	6	0	0	20	0	0	_	0	0	2	0
1% 0% 0% 0% 0% 3% 6% pm+pt NA Perm NA pm+pt NA 7 4 8 2 2 23.8 23.8 11.0 11.0 93.6 93.6 24.8 24.8 12.0 12.0 94.6 94.6 94.6 0.19 0.19 0.09 0.09 0.73 0.73 0.73 25.9 3.0 3.0 3.0 9.4 6.4 6.4 6.4 25.9 3.0 3.0 3.0 0.09 0.73 3.0 3.0 2.2 4.0 6.7 6.7 6.7 6.7 6.7 6.7 6.7 6.7 6.7 6.7 6.0	-low (vph)	200	88	0	92	2	0	75	1214	0	30	2228	0
pm+pt NA Perm NA pm+pt NA 7 4 8 5 2 4 8 2 2 2 24.8 24.8 11.0 11.0 93.6 94.6 24.8 24.8 12.0 12.0 94.6 94.6 0.19 0.19 0.09 0.09 0.73 0.73 0.73 4.0 6.2 6.2 6.2 4.0 6.4 6.4 6.4 259 308 11.2 14.9 155 3125 0.73 0.73 0.73 0.73 0.78 0.06 0.06 0.06 0.00 0.03 0.28 0.03 0.28 0.03 0.28 0.03 0.28 0.03 0.28 0.03 0.28 0.03 0.28 0.03 0.28 0.03 0.28 0.03 0.28 0.03 0.28 0.03 0.28 0.03 0.28 0.03 0.04 0.03 0.	(%) se	1%	%0	%0	%0	%0	%0	3%	%9	%0	%0	2%	%9
7 4 8 8 5 2 2 2 2 3 8 3 6 2 2 3 8 3 6 2 3 8 2 3 8 3 8 3 8 2 3 8 2 3 8 2 3 8 2 3 8 2 3 8 2 3 8 2 3 8 2 3 8 2 3 8 2 3 8 2 3 8 2 3 8 2 3 8 2 3 9 3 9 2 3 9 3 9 3 9 3 9 3 9 3 9 3 9		pm+pt	ΑN		Perm	ΑN		pm+pt	Ν		Perm	¥	
23.8 23.8 11.0 11.0 93.6 2.24.8 24.8 12.0 12.0 94.6 94.6 94.6 0.19 0.19 0.09 0.09 0.09 0.73 0.73 0.73 0.73 0.73 0.73 0.73 0.73		7	4			∞		2	2			9	
23.8 23.8 11.0 11.0 93.6 93.6 0.24.8 24.8 12.0 12.0 94.6 94.6 0.19 0.09 0.09 0.09 0.73 0.73 0.73 0.73 0.73 0.73 0.73 0.74 0.00 0.09 0.09 0.09 0.09 0.09 0.09 0.0	ses	4			∞			2			9		
24.8 24.8 12.0 12.0 94.6 94.6 04.6 0.19 0.19 0.19 0.09 0.09 0.73 0.73 0.73 0.73 0.73 0.73 0.73 0.73	en, G (s)	23.8	23.8		11.0	11.0		93.6	93.6		83.3	83.3	
0.19 0.19 0.09 0.09 0.73 0.73 0.73 0.73 0.73 0.73 0.73 0.73	en, g (s)	24.8	24.8		12.0	12.0		94.6	94.6		84.3	84.3	
4.0 6.2 6.2 6.2 4.0 6.4 3.0 3.0 3.0 3.0 3.0 3.0 2.59 3.0 3.0 3.0 3.0 3.0 2.00 0.06 0.09 0.03 3.2 0.28 0.07 0.31 0.05 0.03 0.48 0.39 4.88 45.2 5.6 5.3.7 19.2 6.7 1.00 1.00 1.00 1.00 2.94 0.30 6.2 4.5 6.4 5.3 6.7 6.7 6.2 4.5 6.4 5.3 7.4 0.1 0.2 6.2 4.5 6.4 5.3 6.7 2.2 6.7 6.2 4.5 6.4 5.3 6.7 2.2 6.7 6.4 5.4 5.9 6.7 6.3 7.4 0.2 6.2 4.5 6.4 5.3 6.7 7.4 0.2 6.2	Ratio	0.19	0.19		0.09	0.09		0.73	0.73		0.65	0.65	
3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 2.55 3.05 3.0 3.	ne (s)	4.0	6.2		6.2	6.2		4.0	6.4		6.4	6.4	
259 308 112 149 155 3125 0.006 0.06 0.06 0.00 0.03 0.28 0.077 0.31 0.58 0.03 0.48 0.39 1.00 1.00 1.00 1.00 2.94 0.30 1.31 0.6 1.00 1.00 2.94 0.30 1.32 45.8 64.0 53.8 57.9 2.2 E D E D E D E A 24.3 54.3 55.5 54.3 FB D E A 13.9 HCM 2000 Level of Service 26.2 5.5 27.0 0.79 0.79 28.0 1.13 0.70 0.70 0.70 0.70 0.70 0.70 0.70 0.7	sion (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
6,006 0.06 0.00 0.00 0.00 0.00 0.00 0.00	(hdh)	259	308		112	149		155	3125		226	2798	
60.09 0.05 0.33 0.77 0.31 0.58 0.03 0.48 0.39 48.8 45.2 56.6 53.7 19.2 6.7 1.00 1.00 1.00 2.94 0.30 13.3 0.6 7.4 0.1 1.4 0.2 6.2 45.8 64.0 53.8 57.9 2.2 E D E D F A STANDARD STA		90.00	90.0			0.00		c0.03	0.28			c0.52	
0.77 0.31 0.58 0.03 0.48 0.39 48.8 45.2 56.6 53.7 19.2 6.7 10.0 1.00 1.00 2.94 0.30 13.3 0.6 7.4 0.1 1.4 0.2 6.2.2 45.8 64.0 53.8 57.9 2.2 E D E D E A 5.5 5.3 13.9 HCM 2000 Level of Service 2.0 0.79 Sum of lost time (s) 2.1 0.79 Sum of lost time (s) 2.2 0.79 Sum of lost time (s) 2.3 0.79 Sum of lost time (s) 2.4 0.79 Sum of lost time (s) 2.5 0.79 Sum of lost time (s) 2.7 0.70 Sum of lost time (s) 2.7 0.70 Sum of lost time (s)	E	60.09			0.02			0.33			0.09		
48.8 45.2 56.6 53.7 19.2 6.7 1.00 1.00 1.00 2.94 0.30 13.3 0.6 7.4 0.1 1.4 0.2 6.2.2 45.8 64.0 53.8 57.9 2.2 E D E D E A 54.3 59.3 5.5 D A 13.9 HCM 2000 Level of Service activate 0.79 Sum of lost time (s)		0.77	0.31		0.58	0.03		0.48	0.39		0.13	0.80	
1.00 1.00 1.00 2.94 0.30 13.3 0.6 7.4 0.1 1.4 0.2 15.2 458 640 53.8 5.9 2.2 15.4 0.1 1.4 0.2 15.5 E D E D E A 15.4 0.2 15.5 E A 1	y, d1	48.8	45.2		9.99	53.7		19.2	6.7		8.8	16.6	
13.3 0.6 7.4 0.1 1.4 0.2 62.2 45.8 64.0 53.8 57.9 2.2 E D E D E A 54.3 59.3 5.5 D E A A 13.9 HCM 2000 Level of Service acity ratio 0.79 Sum of lost time (s)	actor	1:00	1.00		1.00	1.00		2.94	0.30		0.25	0.47	
62.2 45.8 64.0 53.8 57.9 2.2 E D E D E A 5.5 54.3 59.3 5.5 D E A A 7.0 13.9 HCM 2000 Level of Service of S	elay, d2	13.3	9.0		7.4	0.1		1.4	0.2		0.8	1.7	
5.5		62.2	45.8		64.0	53.8		6'.29	2.2		3.0	9.5	
54.3 59.3 5.5 D E A 13.9 HCM 2000 Level of Service 20.79 Sum of lost time (s) 20.70 Sum of lost time (s) 20.70 Sum of lost time (s) 20.70 Sum of lost time (s)	ice	ш	Ω		ш	□		ш	∢		∢	⋖	
13.9 HCM 2000 Level of Service 2.79 HCM 2000 Level of Service 3.00 Sum of lost time (s)	ay (s)		54.3			59.3			5.5			9.4	
13.9 HCM 2000 Level of Service 0.79 Cum of lost time (s) 130.0 Sum of lost time (s) 130.0 Sum of lost time (s) 130.0 Sum of lost time (s)	S		Ω			ш			⋖			⋖	
13.9 HCM 2000 Level of Service 0.79 0.070 Sum of lost time (s) 13.00 Sum of lost time (s) 13.00 RF RP. ICH I and of Service	Summary												
Asocity ratio 0.79 Sum of lost time (s) 130.0 Sum of lost time (s) As Fax. In II I lost fax Carving	ontrol Delay			13.9	Ĭ	3M 2000	Level of S	Service		В			
130.0 Sum of lost time (s)	olume to Capacity	ratio		0.79									
25 5% ICH Layer of Sarvice	le Length (s)			130.0	ઝ	im of lost	time (s)			16.6			
00:3% ICO LEVEL OI SEIVICE	ntersection Capacity Utilization	_		85.5%	೦	U Level o	of Service			ш			
15	od (min)			12									
11.10													

Synchro 11 Report Page 9 Britannia & RR25 BA Group - NHY

Timings 7: Regional Rd 25 & Britannia Rd

	1	†	>	ţ	•	←	۶	→	
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	
Lane Configurations	14	441	14	441	44	444	14	441	
Traffic Volume (vph)	92	455	465	380	22	1075	330	1980	
Future Volume (vph)	92	455	465	380	22	1075	330	1980	
Turn Type	Prot	Α	Prot	Ϋ́	Prot	₹	Prot	≨	
Protected Phases	7	4	က	80	2	2	~	9	
Permitted Phases									
Detector Phase	7	4	ო	æ	2	5	~	9	
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%	39.5%	8.5%	39.5%	
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	19.0	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	0.30	0.74	1.05	
Control Delay	0.09	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	0.09	45.9	75.9	29.5	59.7	49.3	57.3	77.0	
SOT	ш	Ω	ш	ပ	ш	Ω	ш	ш	
Approach Delay		47.0		51.2		49.8		73.8	
Approach LOS		Ω		Ω		Ω		ш	
Intersection Summary									
Cycle Length: 130									
Actuated Cycle Length: 130									
Offset: 104 (80%), Referenced to phase 2:NBT and 6:SBT, Start of Green	ed to phase	2:NBT	Ind 6:SB	, Start of	Green				

Intersection LOS: E ICU Level of Service F Natural Cycle; 150
Control Type: Actuated-Coordinated
Maximum vic Ratio: 1.05
Intersection Signal Delay: 59.9
Intersection Capacity Utilization 91.3%
Analysis Pendo (min) 15
dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Splits and Phases: 7: Regional Rd 25 & Britannia Rd



Synchro 11 Report Page 10 Britannia & RR25 BA Group - NHY

2037 Future Total AM 01-12-2024 Queues 7: Regional Rd 25 & Britannia Rd

	1	†	>	ţ	•	+	۶	→	
Lane Group	田田	EBT	WBL	WBT	퓜	NBT	SBL	SBT	
Lane Group Flow (vph)	65	770	465	530	55	1320	330	2000	
v/c Ratio	0.28	0.87dr	0.92	0.39	0.24	06:0		1.05	
Control Delay	0.09	45.9		29.5	29.7	49.3	57.3	0.77	
Queue Delay	0:0	0:0		0.0	0.0	0.0		0.0	
Total Delay	0.09	45.9		29.5	29.7	49.3	57.3	0.77	
Queue Length 50th (m)	8.7	70.3		42.3	7.4	137.6		~246.7	
Queue Length 95th (m)	16.3	83.0	#97.3	22.8	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)	0.09		120.0		90.0		0.06		
Base Capacity (vph)	482	1368	203	1407	229	1463	230	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	
Information Cummons									

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.

To volume for 95th percentile queue is metered by upstream signal.

of Defacto Right Lane. Recode with 1 though lane as a right lane.

Synchro 11 Report Page 11

Britannia & RR25 BA Group - NHY

HCM Signalized Intersection Capacity Analysis 7: Regional Rd 25 & Britannia Rd

2037 Future Total AM 01-12-2024

	•	†	>	\	ļ	4	•	•	•	۶	→	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	F	444		F	444		ř.	444		F	444	
Traffic Volume (vph)	92	455	315	465	380	150	22	1075	245	390	1980	8
Future Volume (vph)	89	455	315	465	380	120	22	1075	242	330	1980	8
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	
±4	1.00	0.94		1:00	96.0		1.00	0.97		0.0	1.00	
Fit 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	9.	
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	0.1	9:	1.00
Adj. Flow (vph)	8	455	312	465	380	120	22	1075	242	330	1980	8
RTOR Reduction (vph)	0	90	0	0	22	0	0	23	0	0	-	0
Lane Group Flow (vph)	8	089	0	465	475	0	22	1297	0	330	1999	0
Heavy Vehides (%)	%9	1%	1%	%/	1%	2%	4%	2%	4%	%0	2%	27%
Turn Type	Prot	ΑN		Prot	₹		Prot	¥		Prot	ΑĀ	
Protected Phases	7	4		က	œ		2	7		_	9	
Permitted Phases												
Actuated Green, G (s)	8.9	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	25.8	
Actuated g/C Ratio	90.0	0.22		0.15	0.31		90.0	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		0.11	00.46	
√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	28.6	47.1		5 <u>7</u> .8	35.2		28.8	41.5		52.7	37.1	
Progression Factor	1.00	1.00		0.93	96.0		1.00	1.00		0.95	<u>-</u> 8	
Incremental Delay, d2	0.	2.9		22.5	0.2		0.8	10.9		3.6	45.0	
Delay (s)	29.6	20.0		73.3	33.8		9.69	52.4		53.7	91.7	
Level of Service	ш	Δ		ш	ပ		ш	٥		۵	ட	
Approach Delay (s)		20.7			52.3			52.7			85.5	
Approach LOS		Ω			Ω						ш	
Intersection Summary												
HCM 2000 Control Delay			66.3	¥	HCM 2000 Level of Service	evel of S	ervice		ш			
HCM 2000 Volume to Capacity ratio	y ratio		0.94									
Actuated Cycle Length (s)			130.0	S	Sum of lost time (s)	ime (s)			19.2			
Intersection Capacity Utilization	5		91.3%	ਂ	ICU Level of Service	Service			ш			
Analysis Period (min)			15									
dr Defacto Right Lane. Recode with 1 though lane as a right lane.	ode with	1 though I	ane as a I	right lane								
Critical Lang Group												

c Critical Lane Group

Synchro 11 Report Page 12 Britannia & RR25 BA Group - NHY

HCM Unsignalized Intersection Capacity Analysis 2037 Future Total AM 8: Site Dwy (South)/Site Dwy (North) & Etheridge Ave

Movement Lane Configurations Traffic Volume (veh/h)												
igurations ume (veh/h) ume (Veh/h)	EBL	EB	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
ume (veh/h) ume (Veh/h)		4			4			4			4	
ume (Veh/h)	2	165	2	42	88	32	20	0	125	92	0	15
-	2	165	2	45	82	32	20	0	125	92	0	15
		Free			Free			Stop			Stop	
		%0			%0			%0			%0	
Peak Hour Factor	1.0	1.00	9:	1.00	1.0	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	2	165	2	45	82	32	20	0	125	92	0	15
odestrians odestrians												
-ane Width (m)												
Valking Speed (m/s)												
Percent Blockage												
Right tum flare (veh)												
Median type		None			None							
Aedian storage veh)												
lpstream signal (m)					28							
X, platoon unblocked												
C, conflicting volume	120			170			382	388	168	495	372	102
C1, stage 1 conf vol												
/C2, stage 2 conf vol												
/Cu, unblocked vol	120			170			382	388	168	495	372	102
C, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
2 stage (s)												
	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
on due ue free %	10			97			96	100	98	11	100	86
cM capacity (veh/h)	1480			1420			553	531	882	408	54	928
Direction, Lane #	EB 1	WB1	NB 1	SB 1								
/olume Total	175	165	145	110								
/olume Left	2	45	20	92								
Volume Right	2	32	125	15								
	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								
ane LOS	∢	∢	ω	ပ								
Approach Delay (s)	0.2	2.3	10.4	15.8								
Approach LOS			В	ပ								
ntersection Summary												
Average Delay			6.1									
ntersection Capacity Utilization	Ē		46.7%	⊴	ICU Level of Service	Service			∢			
Analysis Period (min)			15									

Britannia & RR25
BA Group - NHY
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Timings 10: Britannia Rd & Farmstead Dr

2037 Future Total AM 01-12-2024

•	SBR	R.	30	30	Perm		œ	8		10.0	15.3	41.0	39.0%	3.3	2.0	-1.0	4.3			None	12.8	0.12	0.14	15.4	0.0	15.4	В									Intersection LOS: A	ICU Level of Service A	
٠	SBL	<u></u>	90	06	Prot	∞		∞		10.0	15.3			3.3	2.0	-1.0	4.3			None	12.8	0.12	0.43	49.0	0.0	49.0	٥	40.6	Ω			9	अवार श ज			Inte	<u>ವ</u>	
ţ	WBT	4413	430	430	Ϋ́	9		9		20.0	29.4	53.0	20.5%	4.2	2.2	-1.0	5.4	Lag	Yes	C-Max	82.3	0.78	0.14	4.4	0.0	4.4	V	4.4	∢			FOWO	d o.wbl,					
†	EBT	444	745	745	Ϋ́	2		2		20.0	29.4	64.0	61.0%	4.2	2.2	-1.0	5.4			C-Max	86.7	0.83	0.20	2.8	0.0	5.8	∢	5.8	∢			F	בפור מו					
^	EBL	¥	20	20	bm+pt	2	2	2		7.0	11.0	11.0	10.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	88.0	0.84	0.03	2.4	0.0	2.4	¥			,		h: 105	anced to priase z	d-Coordinated	:43	elay: 6.7	Utilization 33.1%	12
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	SOT	Approach Delay	Approach LOS	Intersection Summary	Cycle Length: 105	Actuated Cycle Length: 105	Oliset, 0 (0%), Referenced to priase Z.Ebil. and o.Wbi, Start of Green Natural Cycle: 60	Control Type: Actuated-Coordinated	Maximum v/c Ratio: 0.43	Intersection Signal Delay: 6.7	Intersection Capacity Utilization 33.1%	Analysis Period (min) 15

Splits and Phases: 10: Britannia Rd & Farmstead Dr



Britannia & RR25
Syndtro 11 Report
BA Group - NHY
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2037 Future Total AM 01-12-2024 Queues 10: Britannia Rd & Farmstead Dr

		5				
	4	†	ţ	٠	<i>*</i>	
ane Group	盟	EBT	WBT	SBL	SBR	
.ane Group Flow (vph)	8	745	455	6	30	
//c Ratio	0.03	0.20	0.14	0.43	0.14	
Control Delay	5.4	5.8	4.4	49.0	15.4	
Queue Delay	0.0	0.0	0.0	0.0	0:0	
Total Delay	2.4	5.8	4.4	49.0	15.4	
Queue Length 50th (m)	9.0	12.9	7.2	18.4	0:0	
Queue Length 95th (m)	2.3	21.1	19.4	33.1	8.5	
ntemal Link Dist (m)		101.0	377.9	199.3		
urn Bay Length (m)	20.0					
Base Capacity (vph)	702	3653	3297	292	257	
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	
Itersection Summary						
ntersection Summary						

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Britannia & RR25 BA Group - NHY

HCM Signalized Intersection Capacity Analysis 10: Britannia Rd & Farmstead Dr

2037 Future Total AM 01-12-2024 12.7 HCM 2000 Level of Service Sum of lost time (s) ICU Level of Service 8 10.8 0.10 5.3 3.0 158 9.8 10.8 0.10 5.3 3.0 175 c0.05 90 90 90 11.00 11.00 11.00 0.95 17.03 90 90 90 90 90 90 0.51 44.6 1.00 2.5 2.5 47.2 D D D D 25 0 0 0% 6.9 0.25 105.0 33.1% 430 430 430 1900 5.4 *0.80 0.99 1.00 4205 1.00 4205 1.00 430 3 3 452 8% NA 76.7 77.7 0.74 6.4 3.0 3.11 0.11 0.15 4.0 0.1 0.1 4.1 4.1 83.5 84.5 0.80 6.4 6.4 3.0 3562 c0.17 0.21 2.4 1.00 0.1 2.5 A A A HCM 2000 Control Delay
HCM 2000 Volume to Capacity ratio
Aduated Cycle Length (s)
Intersection Capacity Utilization
Analysis Period (min)
c Critical Lane Group 83.5 84.5 0.80 0.80 0.00 0.00 0.00 0.03 2.1 2.1 4.0 0.0 0.00 0.00 0.03 4.0 Fit Protected Salt Ibov (prof)

Salt Ibov (prof)

Fit Permitted Salt Trow (ppm)

Adj. Flow (pph)

End Group Flow (pph)

Lane Group Flow (pph) Turn Type
Prosteded Phases
Permited Phases
Actuated Green, G (s)
Effective Green, g (s)
Actuated g/C Ratio
Clearance Time (s)
Vehicle Extension (s)
Lane Grp Cap (vph)
WS Ratio Perm v/c Ratio Uniform Delay, d1 Progression Factor Incremental Delay, d2 Lane Configurations
Traffic Volume (vph)
Future Volume (vph)
Ideal Flow (vphpl)
Total Lost time (s)
Lane Util. Factor ntersection Summary Delay (s) Level of Service Approach Delay (s) Approach LOS Heavy Vehides (%)

Britannia & RR25 BA Group - NHY

Timings 2037 Future Total AM 11: Britannia Rd & Rose Way 01-12-2024

	\	†	ţ	٠	•	
Lane Group	EBL	EBT	WBT	SBL	SBR	
Lane Configurations	*	444	4413	×	r.	
Traffic Volume (vph)	52	1065	920	22	75	
Future Volume (vph)	52	1065	920	52	75	
Turn Type	pm+pt	Ϋ́	Ϋ́	Prot	Perm	
Protected Phases	2	2	9	4		
Permitted Phases	7				4	
Detector Phase	2	7	9	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	
Total Split (%)	11.5%	61.5%	%0.09		3.5%	
Yellow Time (s)	3.0	4.0	4.0		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	
Total Lost Time (s)	3.0	0.9	0.9	2.0	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	0.02	0.28	0.26	0.34	0.35	
Control Delay	3.7	9.6	4.8	61.1	16.3	
Queue Delay	0.0	0.0	0.0	0.0	0:0	
Total Delay	3.7	9.6	4.8	61.1	16.3	
SOT	⋖	⋖	⋖	ш	В	
Approach Delay		2.6	4.8	35.2		
Approach LOS		∢	∢	۵		
Intersection Summary						
Cycle Length: 130						
Actuated Cycle Length: 130						
Offset 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green	phase 2:1	EBTL and	6:WBT,	Start of G	ue	
Natural Cycle: 85						
Control Type: Actuated-Coordinated	dinated					
Maximum v/c Ratio: 0.35						
Intersection Signal Delay: 7.1				흐	Intersection LOS: A	
Intersection Capacity Utilization 38.3%	on 38.3%			⊇	ICU Level of Service A	
Analysis Period (min) 15						

Splits and Phases: 11: Britannia Rd & Rose Way

→ O2 (R)

→ S5

→ S6 (R)

15 s

Britannia & RR25
BA Group - NHY
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Queues
11: Britannia Rd & Rose Way
01-12-2024

Lane Group EBL EBT WBT SBR Lane Group Flow (vph) 25 1065 930 55 75 We Fatio 0.05 0.28 0.34 0.35 0.35 0.35 Outh Olelay 0.0 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 50th (m) 1.7 45.9 29.2 14.3 0.0 Queue Length 50th (m) 1.7 45.9 29.1 27.8 15.3 Queue Length 50th (m) 50.0 182.4 15.7 16.0 16.0 District (m) 50.0 18.24 15.7 76.0 16.3 16.3 Base Capacity (vph) 51.7 376.1 35.2 6.0 0 0 Splinastion Cap Reductin 0 0 0 0 0 0 Skinrage Cap Reduc		•	Ť	ţ	٠	•	
25 1065 930 55 0.05 0.28 0.26 0.34 3.7 5.6 4.8 61.1 0.0 0.0 0.0 3.7 5.6 4.8 61.1 1.7 45.9 29.2 14.3 1.2 m5.2 14.3 1.2 m5.2 14.3 50.0 50.0 50.0 0 0 0.0 0 0 0.0 0 0 0.0 0 0 0.0 0 0 0.0 0 0 0.0 0 0	Lane Group	盟	EBT	WBT	SBL	SBR	
006 028 026 034 37 56 48 61.1 00 00 00 37 56 4.8 61.1 1.7 45.9 29.2 14.3) m.25 m52.9 39.1 27.8 50.0 50.0 70 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Lane Group Flow (vph)	25	1065	930	22	75	
3.7 5.6 4.8 61.1 3.7 5.6 4.8 61.1 3.7 5.6 4.8 61.1 1.7 45.9 29.2 14.3 1824 155.7 76.0 50.0 1824 155.7 76.0 50.0 1824 155.7 76.0 50.0 1824 155.7 76.0 50.0 60.0 60.0 60.0 60.0 60.0 60.0 60.0 60.0	v/c Ratio	0.05	0.28	0.26	0.34	0.35	
00 00 00 00 00 00 00 00 00 00 00 00 00	Control Delay	3.7	9.6	4.8	61.1	16.3	
3.7 5.6 4.8 61.1 m.2.5 m.2.2 9.3.1 27.8 m.2.5 m.5.2 9.3.1 27.8 182.4 155.7 76.0 50.0 0 0 0 m.0 0 0 0 0 0 0 0	Queue Delay	0.0	0.0	0.0	0.0	0.0	
) 1.7 45.9 29.2 14.3) m.25 m.52.9 33.1 27.8 50.0 18.4 155.7 76.0 50.1 376.1 35.2 62.4 n 0	Total Delay	3.7	9.6	4.8	61.1	16.3	
) m25 m529 331 27.8 1824 155.7 76.0 50.0 51.0 51.7 3761 3523 624 0 0 0 0 0 0 0 0 0.05 0.28 0.26 0.09	Queue Length 50th (m)	1.7	45.9	29.5	14.3	0.0	
182.4 155.7 76.0 50.0 51.7 376.1 352.3 624 0 0 0 0 0 0 0 0	Queue Length 95th (m)	m2.5	m52.9	39.1	27.8	15.3	
50.0 517 3761 3523 624 n 0 0 0 0 i 0 0 0 0 0.05 0.28 0.26 0.09	Internal Link Dist (m)		182.4	155.7	0.97		
517 3761 3523 624 n 0 0 0 0 l 0 0 0 0 0 0 0 0 0.05 0.28 0.26 0.09	Turn Bay Length (m)	20.0			20.0		
n 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Base Capacity (vph)	217	3761	3523	624	809	
0 0 0 0 0 0 0 0 0 0 0 0.05 0.28 0.26 0.09	Starvation Cap Reductn	0	0	0	0	0	
0 0 0 0 0 0.05 0.28 0.26 0.09	Spillback Cap Reductn	0	0	0	0	0	
0.05 0.28 0.26 0.09	Storage Cap Reductn	0	0	0	0	0	
	Reduced v/c Ratio	0.05	0.28	0.26	60.0	0.12	
Intersection Summary	Intersection Summary						

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis 11: Britannia Rd & Rose Way

2037 Future Total AM 01-12-2024

																																						∢		14.0	A		
`	SBR	ĸ.	75	75	1900	5.0	1.00	0.85	1.00	1615	1.00	1615	1.00	75	89	7	%0	Perm		4	10.8	11.8	60:0	0.9	3.0	146		00:00	0.05	54.0	1.00	0.1	54.1	۵				HCM 2000 Level of Service		ne (s)	Service		
٠	SBL	j _	22	52	1900	2.0	1.00	1.00	0.95	1805	0.95	1805	1.00	55	0	52	%0	Prot	4		10.8	11.8	0.09	0.9	3.0	163	c0.03		0.34	55.4	1.00	12	26.7	ш	22	ш		1CM 2000 Le		Sum of lost time (s)	CU Level of 8		
✓	WBR		9	9	1900								1.00	10	0	0	%0																					ľ		0)	_		
ţ	WBT	4413	920	920	1900	0.9	*0.80	1.00	1.00	4553	1.00	4553	1:00	920	0	930	%0	N	9		0.86	99.0	0.76	7.0	3.0	3467	0.20		0.27	4.6	1:00	0.5	4.8	⋖	4.8	⋖		8.2	0.30	130.0	38.3%	15	
†	EBT	₩	1065	1065	1900	0.9	*0.80	1:00	1:00	4560	1.00	4560	1:00	1065	0	1065	%0	NA	2		106.2	107.2	0.82	7.0	3.0	3760	c0.23		0.28	5.6	2.07	0.1	5.5	∢	5.5	⋖							
1	EBL	J	22	52	1900	3.0	1:00	1:00	0.95	1805	0.24	464	1:00	52	0	52	%0	pm+pt	2	2	106.2	107.2	0.82	4.0	3.0	436	0.00	0.0	90:0	2.2	2.13	0.0	4.6	⋖					city ratio		tion		
	Movement	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Ideal Flow (vphpl)	Total Lost time (s)	Lane Util. Factor	£	Fit Protected	Satd. Flow (prot)	Flt Permitted	Satd. Flow (perm)	Peak-hour factor, PHF	Adj. Flow (vph)	RTOR Reduction (vph)	Lane Group Flow (vph)	Heavy Vehicles (%)	Turn Type	Protected Phases	Permitted Phases	Actuated Green, G (s)	Effective Green, g (s)	Actuated g/C Ratio	Clearance Time (s)	Vehicle Extension (s)	Lane Grp Cap (vph)	v/s Ratio Prot	v/s Ratio Perm	v/c Ratio	Uniform Delay, d1	Progression Factor	Incremental Delay, d2	Delay (s)	Level of Service	Approach Delay (s)	Approach LOS	Intersection Summary	HCM 2000 Control Delay	HCM 2000 Volume to Capacity ratio	Actuated Cycle Length (s)	Intersection Capacity Utilization	Analysis Period (min)	c Critical Lane Group

Britannia & RR25 BA Group - NHY Page 19

Timings 1: Regional Rd 25 & Louis St Laurent Ave

2037 Future Total PM 01-12-2024

| | | 0 | 0 | _ | 0 | | 0 | | 0 | 2 | 0 | , 0 | 2 | 0 | 0 | 2 | | S | × | 0 | 0
 | က

 | 0 | 0 | 0 | _ | 0 | 0
 |
 | | | | | | | | |
|------------|-------------------------|-----------------------------|-----------------------------|----------------------------------|---|-----------------------------|-----------------------------|---|--|---|---|---|--|---|---|---|---|--|---|---
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---|---|---|---|---
--
---|---|--|---|---|---|---|--
---|--|
| SB. | ₹ | 113 | 113 | Ž | _ | | _ | | 20. | 32. | 26. | 40.0% | 4 | <u>.</u> . | ÷ | 9 | ĕ | ě | C-Ma | 26. | 0.4
 | 0.7

 | 40. | ö | 40. | _ | 39. | _
 |
 | | | | | | | | |
| SBL | * | 92 | 92 | pm+pt | _ | 9 | - | | 2.0 | 9.0 | 10.0 | 7.1% | 3.0 | 1.0 | -1.0 | 3.0 | Lead | Yes | None | 2.79 | 0.48
 | 09.0

 | 39.8 | 0.0 | 39.8 | _ | |
 |
 | | | | | | | | L. |
| NBT | 4413 | 1310 | 1310 | ≨ | 2 | | 2 | | 20.0 | 32.2 | 68.0 | 48.6% | 4.2 | 3.0 | -1.0 | 6.2 | Lag | Yes | C-Max | 65.3 | 0.47
 | 0.89

 | 40.1 | 0.0 | 40.1 | _ | 45.0 | Ω
 |
 | | | | | | | LOS: D | CU Level of Service F |
| NBL | * | 220 | 220 | pm+pt | 2 | 2 | 2 | | 2.0 | 9.0 | 22.0 | 15.7% | 3.0 | 1.0 | -1.0 | 3.0 | Lead | Yes | None | 79.3 | 0.57
 | 0.82

 | 56.9 | 0:0 | 56.9 | ш | |
 |
 | | | Green | | | | ntersection | CU Level |
| WBT | ₩ | 542 | | z | | | ∞ | | 10.0 | 30.0 | 40.0 | 28.6% | 4.0 | 3.0 | -1.0 | 0.9 | Lag | Yes | None | 31.9 | 0.23
 | 0.75

 | 22.8 | 0.0 | 22.8 | ш | 55.4 | ш
 |
 | | | , Start of | | | | _ | 2 |
| WBL | * | 365 | 365 | pm+pt | က | ∞ | က | | 10.0 | 14.0 | 32.0 | 22.9% | 3.0 | 0.0 | -1.0 | 2.0 | Lead | Yes | None | 22.7 | 0.40
 | 0.86

 | 54.7 | 0.0 | 54.7 | ۵ | |
 |
 | | | d 6:SBTL | | | | | |
| EBT | ₩ | 375 | 375 | Ϋ́ | 4 | | 4 | | 10.0 | 30.0 | 30.0 | 21.4% | 4.0 | 3.0 | -1.0 | 0.9 | Lag | Yes | None | 23.4 | 0.17
 | 0.84

 | 66.4 | 0.0 | 66.4 | ш | 59.1 | ш
 |
 | | | :NBTL an | | | | | |
| EBL | * | 205 | 202 | pm+pt | 7 | 4 | 7 | | 5.0 | 9.0 | 22.0 | 15.7% | 3.0 | 1.0 | -1.0 | 3.0 | Lead | Yes | None | 43.2 | 0.31
 | 0.68

 | 41.4 | 0.0 | 41.4 | _ | |
 |
 | | 0 | to phase 2 | | ordinated | | 46.4 | ation 93.1% |
| Lane Group | Lane Configurations | Traffic Volume (vph) | Future Volume (vph) | Turn Type | Protected Phases | Permitted Phases | Detector Phase | Switch Phase | Minimum Initial (s) | Minimum Split (s) | Total Split (s) | Total Split (%) | Yellow Time (s) | All-Red Time (s) | Lost Time Adjust (s) | Total Lost Time (s) | Lead/Lag | Lead-Lag Optimize? | Recall Mode | Act Effct Green (s) | Actuated g/C Ratio
 | v/c Ratio

 | Control Delay | Queue Delay | Total Delay | ros | Approach Delay | Approach LOS
 | Intersection Summary
 | Cycle Length: 140 | Actuated Cycle Length: 14 | Offset: 0 (0%), Referenced | Natural Cycle: 100 | Control Type: Actuated-Co | Maximum v/c Ratio: 0.89 | Intersection Signal Delay: | Intersection Capacity Utilization 93.1%
Analysis Period (min) 15 |
| | EBL EBT WBL WBT NBL NBT | EBL EBT WBL WBT NBL NBT SBL | EBL EBT WBL WBT NBL NBT SBL | EBL EBT WBL WBT NBL NBT SBL S 1 | EBL EBT WBL WBT NBL NBT SBL 205 375 385 455 220 1310 95 205 375 385 545 220 1310 95 pm+pt NA pm+pt NA pm+pt NA pm+pt | EBL EBT WBL WBT NBL NBT SBL | EBL EBT WBL WBT NBL NBT SBL | EBL EBT WBL WBT NBL NBT SBL 205 375 365 545 220 1310 95 50 50 50 50 50 50 50 50 50 50 50 50 50 | EBL EBT WBL WBT NBL NBT SBL SB
205 375 385 545 220 1310 95 113
pm+pt NA pm+pt NA pm+ | EBL EBT WBL WBT NBL NBT SBL 205 375 385 545 220 1310 95 pm+pt NA pm+pt NA pm+pt NA pm+pt 7 4 3 8 5 2 50 10.0 10.0 10.0 5.0 20.0 5.0 | EBL EBT WBL WBT NBL NBT SBL 205 375 385 545 220 1310 95 206 375 385 545 220 1310 95 pm+pt NA pm+pt NA pm+pt NA pm+pt 7 4 3 8 5 2 1 7 4 3 8 5 2 1 6 0 10.0 10.0 10.0 5.0 200 5.0 90 30.0 14.0 30.0 9.0 32.2 9.0 | EBL EBT WBL WBT NBL NBT SBL | EBL EBT WBL WBT NBL NBT SBL 205 375 365 545 220 1310 95 205 375 365 545 220 1310 95 pm+pt NA pm+pt NA pm+pt NA pm+pt 7 4 3 8 5 5 7 7 4 3 8 5 5 7 7 4 3 8 5 5 20 300 10.0 10.0 5.0 200 5.0 22.0 30.0 14.0 30.0 9.0 32.2 9.0 22.0 30.0 32.0 44.0 22.0 68.0 10.0 15.7% 21.4% 22.9% 28.6% 15.7% 48.6% 7.1% 4 | EBL EBT WBL WBT NBL NBT SBL 205 375 385 545 220 1310 95 206 375 385 545 220 1310 95 pm+pt NA pm+pt NA pm+pt NA pm+pt 7 4 3 8 5 2 1 7 4 3 8 5 2 1 50 10.0 10.0 10.0 5.0 22.0 680 10.0 22.0 30.0 32.0 40.0 22.0 680 11.0 15.7% 414% 22.9% 28.6% 15.7% 48.6% 71.0 30 4.0 3.0 4.0 3.0 4.2 30 | EBL EBT WBL WBT NBL NBT SBL 205 375 385 545 220 1310 95 205 375 385 545 220 1310 95 pm+pt NA pm+pt NA pm+pt NA pm+pt 7 4 3 8 5 2 1 5 0 10.0 10.0 10.0 5.0 22.0 68.0 10.0 22.0 30.0 14.0 30.0 9.0 32.2 9.0 15.7% 214% 22.9% 28.6% 15.7% 48.6% 71% 41.0 10 3.0 0.0 3.0 10 3.0 10 3.0 10.0 | EBL EBT WBL WBT NBL NBT SBL 205 375 365 545 220 1310 95 205 375 365 545 220 1310 95 pm+pt NA pm+pt NA pm+pt NA pm+pt 7 4 3 8 5 2 1 7 4 3 8 5 2 1 50 10.0 10.0 5.0 20.0 5.0 50 30.0 14.0 30.0 5.0 32.2 9.0 22.0 30.0 32.0 40.0 22.0 680 10.0 15.7% 214% 22.9% 28.6% 15.7% 48.6% 7.1% 4 30 4.0 3.0 3.0 3.0 10 3.0 1.0 10 30 0.0 3.0 3.0 1.0 3.0 1.0 10 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.10 11 10 11 11 11 11 11 11 11 11 11 11 11 1 | p EBL EBT WBL WBT NBL NBT SBL SBL | EBL EBT WBL WBT NBL NBT SBL 205 375 385 545 220 1310 95 205 375 385 545 220 1310 95 206 375 385 545 220 1310 95 207 370 130 130 95 208 370 140 30 90 322 90 220 300 140 300 90 322 90 220 300 320 400 220 680 100 15.74 2296 2868 15.78 4868 71% 4868 100 15.74 2296 2868 15.78 4868 100 15.75 14% 2299 2868 15.78 4868 17% 100 15.75 14% 2299 2868 15.78 4868 17% 100 15.75 14% 2296 2868 15.78 4868 100 15.75 140 30 0.0 30 10 30 10 15.75 140 30 0.0 30 10 30 10 16.75 140 30 0.0 30 10 30 10 16.75 140 30 0.0 30 10 30 10 16.75 140 30 0.0 30 10 10 10.10 110 110 110 110 110 10.10 110 110 110 110 10.10 110 110 110 110 10.10 110 110 110 110 10.10 110 110 110 110 10.10 110 110 110 110 10.10 110 110 110 110 10.10 110 110 110 110 10.10 110 110 110 110 10.10 110 110 110 110 10.10 110 110 110 110 110 10.10 110 110 110 110 110 10.10 110 110 110 110 10.10 110 110 110 110 110 10.10 110 110 110 110 110 10.10 110 110 110 110 110 110 10.10 110 110 110 110 110 110 10.10 110 110 110 110 110 110 10.10 110 110 110 110 110 110 110 10.10 110 110 110 110 110 110 110 10.10 110 110 110 110 110 110 110 10.10 110 110 110 110 110 110 110 10.10 110 110 110 110 110 110 110 10.10 110 110 110 110 110 110 110 110 10.10 110 110 110 110 110 110 110 110 11 | p EBL EBT WBL WBT NBL NBT NBL NBT NBL NBT NBL NBT NBT | p EBL EBT WBL WBT NBL NBT NBT | Photographic Part Part | p EBL EBT WBI WBT NBI NBI <th>p EBL EBT WBL WBT NBL NBT NBL NBT NBL NBT NBL NBT NBT</th> <th>p EBL EBT WBI WBT NBI NBT NBI NBT NBI NBI</th> <th> Part Part</th> <th>p EBL EBT WBI WBI NBI NBI</th> <th>p EBL EBT WBL WBT NBL NBT NBL NBT NBL NBT NBL NBT NBT</th> <th>p EBL EBT WBI MBI NBI NBI<th> Part Part</th><th>time (vph) 205 375 365 545 220 1310 95 375 365 545 220 1310 95 377 365 545 220 1310 95 377 365 545 220 1310 95 377 365 545 220 1310 95 377 365 545 220 1310 95 377 365 545 220 1310 95 377 365 545 220 1310 95 377 365 545 220 1310 95 377 365 370 370 370 370 370 370 370 370 370 370</th><th>the performancy by the performance by the performa</th><th>p EBL EBT WBL MBT NBL NBT NBT</th><th>time (vph) 205 375 365 545 220 1310 95 375 365 545 220 1310 95 375 365 545 220 1310 95 375 365 545 220 1310 95 375 365 545 220 1310 95 375 365 545 220 1310 95 375 365 545 220 1310 95 375 365 545 220 1310 95 375 365 345 220 1310 95 375 365 345 220 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320 1310 95 36 345 320 1310 95 36 34 36 3</th><th>Per Bell Bell WBT NBI NBI NBI SBI SBI Mine (vph) 205 375 365 545 220 1310 95 375 365 645 220 1310 95 375 365 645 220 1310 95 375 365 645 220 1310 95 375 365 645 220 1310 95 375 365 645 220 1310 95 375 365 645 220 1310 95 375 365 645 220 1310 95 375 365 645 220 1310 95 375 365 645 220 1310 95 375 365 645 220 1310 95 375 365 645 220 1310 95 375 365 645 220 1310 95 375 365 645 220 1310 320 14.0 30.0 14.0</th></th> | p EBL EBT WBL WBT NBL NBT NBL NBT NBL NBT NBL NBT NBT | p EBL EBT WBI WBT NBI NBT NBI NBT NBI NBI | Part Part | p EBL EBT WBI WBI NBI NBI | p EBL EBT WBL WBT NBL NBT NBL NBT NBL NBT NBL NBT NBT | p EBL EBT WBI MBI NBI NBI <th> Part Part</th> <th>time (vph) 205 375 365 545 220 1310 95 375 365 545 220 1310 95 377 365 545 220 1310 95 377 365 545 220 1310 95 377 365 545 220 1310 95 377 365 545 220 1310 95 377 365 545 220 1310 95 377 365 545 220 1310 95 377 365 545 220 1310 95 377 365 370 370 370 370 370 370 370 370 370 370</th> 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Splits and Phases. 1: Regional Rd 25 & Louis St Laurent Ave

4

10.5 | 68.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30

Britannia & RR25 BA Group - NHY

2037 Future Total PM 01-12-2024 Queues 1: Regional Rd 25 & Louis St Laurent Ave

	4	†	\	ţ	•	←	۶	→	
Lane Group	EBF	EBT	WBL	WBT	퓜	NBT	SBL	SBT	
Lane Group Flow (vph)	205	200	365	610	220	1765	92	ı	
v/c Ratio	0.68	0.84	98.0	0.75	0.82	0.89	09:0	9.76	
Control Delay	41.4	66.4	54.7	22.8	26.9	40.1	39.8		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay	41.4	66.4	54.7	25.8	56.9	40.1	39.8		
Queue Length 50th (m)	39.5	69.7	79.1	84.8	44.9	195.5	12.8		
Queue Length 95th (m)	58.3	#93.7	115.9	106.9	#81.9	#230.5	#37.1		
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)	331	620	467	865	538	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	09:0	0.76	

intersection Summary
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Synchro 11 Report Page 2

Britannia & RR25 BA Group - NHY

HCM Signalized Intersection Capacity Analysis 1: Regional Rd 25 & Louis St Laurent Ave

2037 Future Total PM 01-12-2024

	1	†	<u> </u>	>	ţ	4	•	←	•	٠	→	•
Movement	B	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	₩		۴	₩		r	441		*	441	
Traffic Volume (vph)	202	375	125	365	545	92	220	1310	455	95	1130	195
Future Volume (vph)	202	375	125	365	542	92	220	1310	455	92	1130	195
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
lotal Lost time (s)	3.0	0.0		7.0	0.0		3.0	7.0		3.0	7.0	
Lane Util. Factor	8.5	0.95		1.00	0.95		1.00	0.80		9.6	*0.80 4	
Frpb, ped/bikes	9.5	0.99		00.1	00.1		00.1	0.99		9.5	3.5	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		9.5	0.00	
<u> </u>	00.1	0.30		0.1	0.98		00.1	0.90		9.5	0.98	
Fit Protected	0.95	00.1		00.1	0.1		0.95	00.1		0.95	0.1	
Satd. Flow (prot)	1/68	3431		1899	3537		1/8/	4165		1805	4299	
FIt Permitted	0.26	1.00		0.17	1.00		0.07	1.00		0.07	0.1	
Satd. Flow (perm)	483	3431		331	3537		132	4165		2	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)	202	375	125	365	545	65	220	1310	455	92	1130	195
RTOR Reduction (vph)	0	23	0	0	7	0	0	40	0	0	5	0
Lane Group Flow (vph)	202	477	0	365	603	0	220	1725	0	92	1312	0
Confl. Peds. (#/hr)	2		2	2		2	2		2	2		2
Heavy Vehicles (%)	5%	1%	%0	%0	%0	5%	%	%9	1%	%0	4%	%0
Turn Type	pm+pt	ΑN		pm+pt	₹		pm+pt	¥		pm+pt	AN	
Protected Phases	7	4		က	∞		2	7		-	9	
Permitted Phases	4			∞			7			9		
Actuated Green, G (s)	38.1	22.4		9.09	30.9		75.2	64.3		62.6	55.7	
Effective Green, g (s)	40.1	23.4		9.13	31.9		76.2	65.3		9.49	26.7	
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	
Vehide 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	802		566	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		9.9	3.1	
Delay (s)	48.2	66.4		9.99	54.2		57.3	40.5		34.5	38.7	
Level of Service	0	ш		ш	0		ш	_		ပ		
Approach Delay (s)		61.1			22.1			45.4			38.5	
Approach LOS		ш			ш			۵			۵	
Intersection Summary												
HCM 2000 Control Delay			46.3	H	3M 2000 I	HCM 2000 Level of Service	ervice		۵			
HCM 2000 Volume to Capacity ratio	ity ratio		0.89									
Actuated Cycle Length (s)			140.0	S	Sum of lost time (s)	time (s)			18.2			
Intersection Capacity Utilization	ion		93.1%	೦	U Level o	f Service			ш			
Analysis Period (min)			15									
 Critical Lane Group 												

Britannia & RR25 BA Group - NHY

Timings 2037 Future Total PM 2: Regional Rd 25 & Whitlock Ave

→	SBT	1 4 13	1365	1365	NA	9		9		20.0	35.5	81.0	62.3%	4.2	2.3	-1.0	5.5	Lag	Yes	C-Max	91.1	0.70	0.50	10.1	0.0	10.1	a	10.2	В								
٠	SBL	F	9	09	pm+pt	-	9	-		7.0	11.0		8.5% 6	3.0	1.0	-1.0	3.0	Lead	Yes		102.0	0.78	0.34	13.0	0.0	13.0	ω										
•	NBT	4413	1985	1985	Ϋ́	5		7		20.0	35.5	81.0	62.3%	4.2	2.3	-1.0	5.5	Гад	Yes	C-Max	93.2	0.72	0.65	7.8	0.0	7.8	∢	7.7	4								
•	NBL	r	6	6	pm+pt	22	2	2		7.0	11.0	11.0	8.5%	3.0	1:0	-1.0	3.0	Lead	Yes	None	102.5	0.79	0.35	5.6	0.0	5.6	∢				ı					9	Intersection LOS: B
4	WBR	R.	75	75	Perm		∞	∞		10.0	37.5	38.0	29.5%	3.3	3.2	-1.0	5.5			None	16.6	0.13	0.29	13.0	0.0	13.0	ш				ı		of Green				tersection
ţ	WBT	*	8	40	ΑN	∞		œ		10.0	37.5	38.0	29.5%	3.3	3.2	-1.0	5.5			None	16.6	0.13	0.17	20.0	0:0	20.0	□	30.2	ပ		ı		TL, Start			-	=
•	WBL	*	52	22	Perm		∞	∞		10.0	37.5	38.0	29.5%	3.3	3.2	-1.0	5.5			None	16.6	0.13	0.15	50.2	0.0	50.2	۵				l		and 6:SB				
†	EBT	2,	9	9	Ϋ́	4		4		10.0	37.5	38.0	29.2%	3.3	3.2	-1.0	5.5			None	16.6	0.13	0.32	31.8	0.0	31.8	O	52.0	٥		ı		2:NBTL				
•	EBL	*	105	105	Perm		4	4		10.0	37.5	38.0	29.2%	3.3	3.2	-1.0	5.5			None	16.6	0.13	0.60	67.4	0:0	67.4	ш						ed to phase		ordinated	Ļ	ر ت
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	SOT	Approach Delay	Approach LOS	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 I ype: Actuated-Coordinated	Maximum v/c Ratio: 0.65	Intersection Signal Delay: 11.5

Splits and Phases: 2: Regional Rd 25 & Whitlock Ave



Britannia & RR25
BA Group - NHY
Page 4

Queues 2: Regional Rd 25 & Whitlock Ave

Lane Group EBL EBT WBL WBT NBL NBT SBL SBT Lane Group Flow (vph) 105 80 25 40 75 90 2025 60 1500 Control Delay 67.4 318 50.2 50.17 0.29 0.65 0.32 0.15 0.0	up EBL EBT 105 80 0.32 elay 67.4 31.8 elay 67.4 31.		WBR					
105 80 25 40 75 90 2025 60 60 32 0.17 0.29 0.35 0.65 0.34 0.05 0.04 0.05 0.04 0.0 <td>up Flow (vph) 105 80 0.32 0.60 0.32 elay 67.4 31.8</td> <td></td> <td>75</td> <td>NBL</td> <td>NBT</td> <td>SBL</td> <td>SBT</td> <td></td>	up Flow (vph) 105 80 0.32 0.60 0.32 elay 67.4 31.8		75	NBL	NBT	SBL	SBT	
0.60 0.32 0.15 0.17 0.29 0.35 0.65 0.34 0.7 314 0.17 0.29 0.35 0.65 0.34 0.7 318 0.5 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.60 0.32 elay 67.4 31.8		2	06	2025	09	1500	
67.4 31.8 50.2 50.0 13.0 5.6 7.8 13.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	67.4 31.8		0.29	0.35	0.65	0.34	0.50	
0.0 0.0 <td></td> <td></td> <td>13.0</td> <td>9.9</td> <td>7.8</td> <td>13.0</td> <td>10.1</td> <td></td>			13.0	9.9	7.8	13.0	10.1	
67.4 31.8 50.2 50.0 13.0 5.6 7.8 13.0 27.2 10.6 6.1 9.8 0.0 1.3 69.0 2.6 45.1 25.0 14.4 20.3 14.0 m3.4 183.5 12.6 62.9 66.0 66.0 100.0 100.0 10.0 0 0 0 0 0 0 0 0 0 0	0.0 0.0		0.0	0:0	0.0	0.0	0.0	
27.2 10.6 6.1 9.8 0.0 1.3 69.0 2.6 45.1 25.0 14.4 20.3 14.0 m.3.4 18.35 12.6 62.9 66.0 66.1 66.0 100.0 100.0 100.0 35.0 65.0 44.1 260 3106 17.8 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.31 0.18 0.08 0.07 0 0 0 0 0	67.4 31.8		13.0	9.9	7.8	13.0	10.1	
45.1 25.0 14.4 20.3 14.0 m34 1835 12.6 82.9 88.1 65.0 65.0 100.0 100.0 341 452 333 475 441 260 3106 178 0 0 0 0 0 0 0 0 0 0 0	27.2 10.6		0.0	1.3	0.69	5.6	68.3	
62.9 68.1 696.9 36.0 65.0 100.0 341 452 333 475 441 266 3706 178 0	45.1 25.0		14.0	m3.4	183.5	12.6	99.2	
35.0 65.0 65.0 100.0 100.0 100.0 341 452 333 475 441 260 3106 178 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		68.1			6.969		481.0	
341 452 333 475 441 260 3106 178 0.31 0.18 0.08 0.17 0.35 0.65 0.34	35.0		65.0	100.0		100.0		
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	341 452		4	260	3106	178	2992	
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	arvation Cap Reductn 0 0 0	0	0	0	0	0	0	
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	villback Cap Reductn 0 0 (0	0	0	0	0	0	
0.31 0.18 0.08 0.07 0.35 0.65 0.34	orage Cap Reductn 0 0 0	0	0	0	0	0	0	
Intersection Summary	0.31 0.18		0.17	0.35	0.65	0.34	0.50	
	ersection Summary							

HCM Signalized Intersection Capacity Analysis 2: Regional Rd 25 & Whitlock Ave

2037 Future Total PM 01-12-2024

Movement EB EBT EBT WB1 WB1 WB1 NB1		1	†	<i>></i>	>	ţ	4	•	•	•	٠	→	•
10	Movement	EBL	EBI	EBR	WBL	WBT	WBR	BE	NBT	NBR	SBL	SBT	SBR
105	Lane Configurations	<u></u>	¢		<u>r</u>	*	*-	je-	4413		j -	4413	
105	Traffic Volume (vph)	105	40	49	22	9	75	8	1985	40	09	1365	135
150 150	Future Volume (vph)	105	9	4	22	9	75	8	1985	40	09	1365	135
1,00	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
1,00 1,00	Total Lost time (s)	2.5	2.5		5.5	5.5	2.5	3.0	5.5		3.0	5.5	
1,00	Lane Util. Factor	1:00	1.00		1.00	1.00	1.00	1.00	*0.80		1.00	*0.80	
1,00 0.99 1,00	Frpb, ped/bikes	1.00	0.39		1:00	1:00	0.98	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	
1367 1099 1795 1900 1539 100 0.95 100 0	Fit	1:00	0.93		1.00	1.00	0.85	1.00	1.00		1.00	0.99	
1776 1699 1795 1900 1539 1787 4331 1770 4266 1367 1300	Fit Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
1,00	Satd. Flow (prot)	1776	1699		1795	1900	1539	1787	4331		1770	4266	
1367 1699 1332 1900 1539 201 4331 90 4266 100 100 100 100 100 100 100 100 100 105 40 40 25 40 10 100 100 100 105 48 0 25 40 10 90 2024 0 60 1495 106 48 0 25 40 10 90 2024 0 60 1495 107 105 48 0 25 40 10 90 2024 0 60 1495 108 108 108 108 108 108 108 109 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 1	Flt Permitted	0.73	1.00		0.70	1.00	1.00	0.11	1.00		0.05	1.00	
PHF 1:00 1:00 1:00 1:00 1:00 1:00 1:00 1:0	Satd. Flow (perm)	1367	1699		1332	1900	1539	201	4331		90	4266	
(vph) 105 40 40 25 40 75 90 1985 40 60 1365 (vph) 05 48 0 65 6 6 1495 6 1365 (vph) 1% 5% 0% 0% 0% 3% 1% 5% 0% 2% 6 (s) 1% 5% 0% 0% 0% 3% 1% 5% 0% 2% 6% (s) 1% 6% 0% 0% 3% 1% 5% 0% 1% 6%	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
(vph) 0 32 0 0 65 0 10 5 (vph) 105 48 0 5 4 0 60 1495 5 5 5 4 15 6 6 7 6 6 1495 8 1% 5% 0% 0% 3% 1% 5% 0% 2% 6% 8 1 8 2 2 1 6 6% 6% 6% 6% 6% 6% (s) 156 156 156 156 166 168 169 900 900 (s) 166 166 166 166 166 168 169 900 900 (s) 166 166 166 167 167 167 167 167 160 160 160 160 160 160 160 160 160 160 160 160 </td <td>Adj. Flow (vph)</td> <td>105</td> <td>4</td> <td>4</td> <td>52</td> <td>4</td> <td>75</td> <td>6</td> <td>1985</td> <td>40</td> <td>9</td> <td>1365</td> <td>135</td>	Adj. Flow (vph)	105	4	4	52	4	75	6	1985	40	9	1365	135
(vph) 105 48 0 25 40 10 90 2024 0 60 1495 1	RTOR Reduction (vph)	0	35	0	0	0	65	0	_	0	0	2	0
5	Lane Group Flow (vph)	105	84	0	52	9	9	8	2024	0	09	1495	0
1% 5% 0% 0% 3% 1% 5% 0% 2% 6% Perm NA Perm NA Perm Dn+pt NA Dm+pt NA	Confl. Peds. (#/hr)	5		2	2		2			2	2		
Perm NA Perm NA Perm Pract NA Perm Pract 4	Heavy Vehicles (%)	1%	2%	%0	%0	%0	3%	1%	2%	%0	5%	%9	%0
(s) 156 156 156 156 88 8 5 2 1 6 6 6 156 156 156 156 156 156 156 156	Turn Type	Perm	ΑN		Perm	ΑN	Perm	pm+pt	ΑN		pm+pt	¥	
156 156 156 156 158 98 914 96 166 166 166 166 166 1008 924 98.0 168 166 166 166 1008 924 98.0 169 169 169 169 1008 124 98.0 170 170 170 170 170 170 170 170 170 170 170 170 1242 196 128 170 170 170 170 1242 196 128 170 170 170 170 170 128 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 170 180 170 170 170 170 180 170 170 170 180 170 170 170 180 170 170 170 180 170 170 170 180 170 170 170 180 170 170 170 180 170 170 170 180 170 170 170 180 170 170 170 180 170 17	Protected Phases		4			80		2	2		~	9	
156 156 156 156 158 198 1914 1960 166 166 166 166 166 168 1988 1914 1960 0.13 0.13 0.13 0.13 0.78 0.78 0.78 130 30 30 30 30 30 30 30	Permitted Phases	4			80		∞	2			9		
166 166 166 166 166 1008 924 980 10.13	Actuated Green, G (s)	15.6	15.6		15.6	15.6	15.6	98.8	91.4		0.96	0.06	
0.13	Effective Green, g (s)	16.6	16.6		16.6	16.6	16.6	100.8	92.4		0.86	91.0	
Signature Sign	Actuated g/C Ratio	0.13	0.13		0.13	0.13	0.13	0.78	0.71		0.75	0.70	
174 216 170 242 196 288 3078 158 2 0.03 0.02 0.02 0.047 0.050 0.	Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	4.0	6.5		4.0	6.5	
174 216 170 242 196 258 3078 158 2 0.03 0.02 0.02 0.047 0.020 0.047 0.020 0.	Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
0.03	Lane Grp Cap (vph)	174	216		170	242	196	258	3078		158	2986	
A	v/s Ratio Prot		0.03			0.02		c0.02	c0.47		c0.02	0.35	
0.60 0.22 0.15 0.17 0.05 0.35 0.66 0.38 0.55 0.56 50.9 0.38 0.55 0.56 50.9 0.38 0.38 0.55 0.56 0.38 0.50 0.38 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.5	v/s Ratio Perm	90.09			0.02		0.01	0.25			0.26		
53.6 50.9 50.4 50.5 49.8 5.1 10.2 9.1 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1	v/c Ratio	0.60	0.22		0.15	0.17	0.02	0.35	99.0		0.38	0.50	
1.00 1.00 1.00 1.00 1.00 0.91 0.63 1.00 7.00 1.00 1.00 1.00 1.00 1.00 1.00	Uniform Delay, d1	53.6	50.9		50.4	50.5	49.8	2.1	10.2		9.1	9.0	
d2 5.8 0.5 0.4 0.3 0.1 0.6 0.8 1.5 5.94 51.4 50.8 50.9 49.9 5.3 7.2 10.6 E 55.9 50.3 7.2 10.6 D D D D A 7.2 E 55.9 50.3 7.2 Delay 11.9 HCM 2000 Level of Service B to Capacity ratio 0.64 Sum of lost time (s) 130.0 Sum of lost time (s) 150.0 Sum of lost time (s	Progression Factor	9:	9.		9.	9.	9.	0.91	0.63		1:00	1.00	
59.4 51.4 50.8 50.9 49.9 5.3 7.2 10.6 E D D D A A B 55.9 50.3 7.2 My Tany To Capacity ratio 0.64 gith (s) 130.0 Sum of lost time (s) 14.0 To Capacity ratio 0.64 To Capacity ratio 0.64 Whilization 72.4% ICU Level of Service C To Capacity ratio 0.64 To Capacity	Incremental Delay, d2	2.8	0.5		0.4	0.3	0.1	9.0	0.8		5.	9.0	
E D D D A A B B	Delay (s)	59.4	51.4		20.8	50.9	49.9	5.3	7.2		9.01	9.6	
55.9 50.3 7.2 E D A A Try Delay 11.9 HCM 2000 Level of Service B to Capacity ratio 0.64 Sum of lost time (s) 14.0 Of Willianton 7.2 130.0 Sum of lost time (s) 14.0 15 (CU Level of Service C) 15.0	Level of Service	ш	Ω :		Ω	0		∢	< '		m	∢ ;	
T1.9 HCM 2000 Level of Service B Co.64 ratio 0.64 CO.04 Co.04 Co.05 Co.0	Approach Delay (s)		55.9			20.3			7.2			9.6	
11.9 HCM 2000 Level of Service 10.64 Sum of lost time (s) 72.4% ICU Level of Service 15.10 A Sum of Iost time (s)	Approach LOS		ш			Ω			∢			∢	
11.9 HCM 2000 Level of Service 0.64 0.64 Sum of lost time (s) 72.4% ICU Level of Service 15	Intersection Summary												
ratio 0.64 130.0 Sum of lost time (s) 72.4% (CU Level of Service 15	HCM 2000 Control Delay			11.9	\(\)	3M 2000	Level of 3	Service		В			
130.0 Sum of lost time (s) 72.4% ICU Level of Service 15	HCM 2000 Volume to Capac	city ratio		0.64									
72.4% ICU Level of Service 15	Actuated Cycle Length (s)			130.0	S	m of lost	time (s)			14.0			
Analysis Period (min) 15	Intersection Capacity Utilizat	tion		72.4%	⊇	U Level o	f Service			ပ			
	Analysis Period (min)			15									

Critical Lane Group

Britannia & RR25 BA Group - NHY

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Timings 5: Regional Rd 25 & Etheridge Ave/Collector Road

2037 Future Total PM 01-12-2024

→	SBT	<u> ተ</u> ተጉ	1145	1145	¥	9		9		20.0	38.4	70.0	53.8%	4.2	2.2	-1.0	5.4	Lag	Yes	C-Max	81.8	0.63	0.51	8.9	0.0	8.9	∢	7.8	V										
۶	SBL	r	22	22	pm+pt	~	9	-		7.0	11.0	11.0	8.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	92.5	0.71	0.31	31.6	0.0	31.6	ပ										ر	2	
←	NBT	441	1940	1940	≨	2		2		20.0	38.4	70.0	53.8%	4.2	2.2	-1.0	5.4	Lag	Yes	C-Max	88.8	0.68	0.67	8.7	0.0	8.7	⋖	9.8	∢								ntersection LOS: B	Sel vice	
•	NBL	r	180	180	pm+pt	2	7	2		7.0	11.0			3.0	1:0	-1.0	3.0	Lead	Yes		100.3	0.77	0.55	21.3	0:0	21.3	ပ						of Green				Intersection LOS: B		
ļ	WBT	÷	0	0	ΑN	∞		œ		10.0	36.2	37.0	28.5%	3.3	5.9	-1.0	5.2	Lag	Yes	None	11.9	0.09	0.14	1.0	0.0	1.0	⋖	31.9	ပ				rL, Start o				<u>#</u> =	2	
\	WBL	<i>y</i> -	40	40	Perm		∞	œ		10.0	36.2	37.0		3.3	5.9	-1.0	5.2	Lag	Yes	None	11.9	0.09	0.33	62.8	0.0	62.8	ш						and 6:SB						
†	EBT	æ	0	0	ΑĀ	4		4		10.0	36.2			3.3	5.9	-1.0	5.2			None	21.5	0.17	0.25	2.7	0.0	2.7	∢	32.9	ပ				2:NBTL						
1	EBL	<i>y</i>	135	135	pm+pt	7	4	7		7.0	11.0		9.5%	3.0	1:0	-1.0	3.0	Lead	Yes	None	23.7	0.18	0.56	55.2	0.0	55.2	ш						ed to phase		rdinated).9 Hon 71 1%	0/1 / 1/0	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	SOT	Approach Delay	Approach LOS	Intersection Summary	Oycle 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	Analysis Period (min) 15	

Splits and Phases: 5: Regional Rd 25 & Etheridge Ave/Collector Road



Synchro 11 Report Page 7 Britannia & RR25 BA Group - NHY

2037 Future Total PM 01-12-2024 Queues 5: Regional Rd 25 & Etheridge Ave/Collector Road

	4	†	>	ţ	•	←	۶	→	
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	
Lane Group Flow (vph)	135	100	4	40	180	2005	22	1375	
v/c Ratio	0.56	0.25	0.33	0.14	0.55	29.0	0.31	0.51	
Control Delay	55.2	2.7	62.8	1.0	21.3	8.7	31.6	8.9	
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	8.9	
Queue Length 50th (m)	32.1	0.0	10.4	0.0	20.6	2.69	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		6.969	
Turn Bay Length (m)	40.0		40.0		70.0		70.0		
Base Capacity (vph)	243	645	321	211	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.

HCM Signalized Intersection Capacity Analysis 5: Regional Rd 25 & Etheridge Ave/Collector Road

2037 Future Total PM 01-12-2024

	1	†	<u> </u>	>	ţ	4	•	←	•	۶	→	•
Movement	EB	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	2,		F	£,		r	4413		r	4413	
Traffic Volume (vph)	135	0	100	40	0	40	180	1940	65	22	1145	230
Future Volume (vph)	132	0	100	40	0	40	180	1940	92	22	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	0.1	1.00		1.00	1.00		1.00	*0.80		0.0	*0.80	
Ŧ	1:00	0.85		1.00	0.85		1.00	1.00		9.	0.97	
Fit Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.0	
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		0.02	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	92	22	1145	230
RTOR Reduction (vph)	0	83	0	0	37	0	0	7	0	0	4	0
Lane Group Flow (vph)	132	17	0	40	က	0	180	2003	0	22	1361	0
Heavy Vehides (%)	3%	%0	%0	%0	%0	%0	%0	4%	%0	%0	4%	2%
Turn Type	pm+pt	NA		Perm	¥		pm+pt	¥		pm+pt	NA	
Protected Phases	7	4			∞		2	7		_	9	
Permitted Phases	4			∞			2			9		
Actuated Green, G (s)	21.7	21.7		8.9	8.9		95.7	82.8		85.5	9.62	
Effective Green, g (s)	22.7	22.7		6.6	6.6		96.7	86.8		87.5	9.08	
Actuated g/C Ratio	0.17	0.17		0.08	80:0		0.74	29.0		29.0	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		90.00	c0.46		0.02	0.32	
v/s Ratio Perm	90.00			0.03			0.36			0.22		
v/c Ratio	0.58	90:0		0.40	0.02		0.56	69.0		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		5.6	0.1		0.5	0.1		. 3	9.0	
Delay (s)	51.4	44.9		29.8	22.7		26.2	8.5		32.1	6.8	
Level of Service	۵	□		ш	ш		ပ	⋖		ပ	⋖	
Approach Delay (s)		48.6			27.8			6.6			7.8	
Approach LOS		Ω			ш			V			V	
Intersection Summary												
HCM 2000 Control Delay			12.4	ĭ	HCM 2000 Level of Service	evel of S	ervice		ш			
HCM 2000 Volume to Capacity ratio	ity ratio		89.0									
Actuated Cycle Length (s)			130.0	Sn	Sum of lost time (s)	time (s)			16.6			
Intersection Capacity Utilization	ion		71.1%	೦	U Level o	f Service			ပ			
Analysis Period (min)			15									
c Critical Lane Group												

Synchro 11 Report Page 8 Britannia & RR25 BA Group - NHY

Britannia & RR25 BA Group - NHY

Timings
7: Regional Rd 25 & Britannia Rd
01-12-2024

→	SBT	44	1055	1055	Ϋ́	9		9		20.0	49.7	54.0	41.5%	4.2	3.5	-1.0	2.9	Lag	Yes	-Max	55.8	0.43	0.59	20.6	0.0	20.6	ပ	28.1	ပ											
٠	SBL	-	175	175	Prot	-		-		7.0	11.0		9.2% 4		1.0	-1.0	3.0	Lead					0.55	75.5	0.0	75.5	ш													
—	NBT	4413	1725	1725	Ϋ́	7		7		20.0	49.7	58.0	44.6%	4.2	3.5	-1.0	6.7	Lag	Yes	:-Max	59.3	0.46	1.12	95.9	0.0	95.9	ш	92.2	ш								LOS: E	CU Level of Service F		
•	NBL	į,	275	275	Prot	2		2		7.0	11.0			3.0	1.0							0.12		62.5	0.0	62.5	ш						Green				Intersection LOS: E	J Level of		
Ļ	WBT	4413	220	220	Ϋ́	œ		œ		10.0	45.5	49.0	37.7%	4.2	3.3	-1.0	6.5	Lag	Yes	None	33.7	0.26	0.92dr	37.4	0.0	37.4	۵	63.4	ш				, Start of				Inte	ಶ	440	ight lane.
\	WBL	F	325	325	Prot	က		က		7.0	11.0	14.0	10.8%	3.0	1.0	-1.0	3.0	Lead	Yes	None	11.0	0.08				139.7	ш						nd 6:SBT							ane as a r
Ť	EBT	441	320	320	ΑĀ	4		4		10.0	45.5	46.0	35.4%	4.2	3.3	-1.0	6.5	Lag	Yes	None	28.5	0.22	0.40	41.7	0.0	41.7	_	44.2	٥				2:NBT a						der odt	though is
•	EBL	F	22	22	Prot	7		7		7.0	11.0	11.0	8.5%	3.0	1:0	-1.0	3.0	Lead	Yes	None	8.0	90.0	0.27	61.9	0.0	61.9	ш						to phase		inated			n 93.6%	dim ob	ode with
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	NOS	Approach Delay	Approach LOS	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 Capacity Utilization 93.6%	Analysis Period (min) 15	dr Detacto Right Lane. Recode with 1 though lane as a right lane.

Splits and Phases: 7: Regional Rd 25 & Britannia Rd

1 04	46 s	-	
603	14s 4	→	11s 49s
♦ Ø2 (R)	58 s	• • Ø6 (R)	54s
Ø1	12 s	\$00	16 s

Britannia & RR25 Synchro 11 Report BA Group - NHY Page 10

Queues 7: Regional Rd 25 & Britannia Rd

2037 Future Total PM 01-12-2024

20.6 20.6 20.6 20.6 46.0 56.0 292.1 SBL 175 0.55 75.5 0.0 75.5 25.4 38.7 90.0 320 0 0 0 0.55 2230 1.12 95.9 0.0 95.9 ~299.0 #351.6 NBL 275 0.66 62.5 0.0 62.5 62.5 62.5 52.7 52.7 52.7 90.0 Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum affer two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum affer two cycles.

Queue shown is maximum affer two cycles.

of Defacto Right Lane. Recode with 1 though lane as a right lane. 955 0.92dr 37.4 0.0 37.4 50.0 52.7 1483 325 1.07 1.39.7 0.0 139.7 ~51.3 120.0 305 395 0.40 41.7 0.0 41.7 35.9 44.6 377.9 1372 60.0 203 0 0 0 0 0 55 55 0.27 61.9 0.0 61.9 7.4 Control Delay

Queue Delay

Total Delay

Queue Enright 50th (m)

Queue Length 95th (m)

Internal Link Dist (m)

Turn Bay Length (m)

Base Capacity (nph)

Sanvation Cap Reduch

Spillback Cap Reduch

Sorage Cap Reduch

Sorage Cap Reduch

Reduced v/c Ratio Lane Group
Lane Group Flow (vph)

Britannia & RR25 BA Group - NHY

2037 Future Total PM 01-12-2024

HCM Signalized Intersection Capacity Analysis 7: Regional Rd 25 & Britannia Rd

			•	•		,	_	-	_	k.	•	,
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	ř	441		K.	441		<u> </u>	4413		K.	4413	
raffic Volume (vph)	22	320	42	325	220	405	275	1725	202	175	1055	22
-uture Volume (vph)	22	320	45	325	220	405	275	1725	202	175	1055	22
deal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
otal Lost time (s)	3.0	6.5		3.0	6.5		3.0	6.7		3.0	6.7	
ane Util. Factor	0.97	*0.80		0.97	*0.80		0.97	*0.80		0.97	*0.80	
t'.	1.00	0.98		9:	0.94		1.00	0.97		1.00	0.99	
Fit 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	
It 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)	22	320	45	325	220	405	275	1725	202	175	1055	55
RTOR Reduction (vph)	0	12	0	0	112	0	0	30	0	0	က	0
ane Group Flow (vph)	52	383	0	325	843	0	275	2200	0	175	1107	0
leavy Vehicles (%)	%9	%0	%0	5%	1%	1%	%0	3%	5%	1%	4%	%0
urn Type	Prot	A		Prot	AN		Prot	Ν		Prot	¥	
Protected Phases	7	4		က	∞		2	2		_	9	
Permitted Phases												
ctuated Green, G (s)	2.6	28.3		10.0	32.7		14.6	57.5		11.0	53.9	
Effective Green, g (s)	9.9	29.3		11.0	33.7		15.6	58.5		12.0	54.9	
ctuated g/C Ratio	0.02	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	
ehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
ane Grp Cap (vph)	167	1010		305	1096		420	1928		320	1841	
/s Ratio Prot	0.05	0.09		c0.09	c0.20		0.08	c0.51		0.05	0.25	
//s Ratio Perm												
/c Ratio	0.33	0.38		1.07	0.92dr		0.65	1.14		0.55	0.60	
Jniform Delay, d1	29.6	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	
ncremental Delay, d2	1.2	0.2		8.89	3.2		3.7	70.4		1.7	د .	
Jelay (s)	2.09	45.9		147.5	41.9		58.3	106.1		71.1	20.0	
evel of Service	ш	□		ட	△		ш	ш		ш	ပ	
pproach Delay (s)		45.1			68.7			100.9			27.0	
Approach LOS		Ω			ш			ш			O	
ntersection Summary												
HCM 2000 Control Delay			7.1.7	Ĭ	HCM 2000 Level of Service	Level of S	ervice		ш			
ICM 2000 Volume to Capacity ratio	ty ratio		1.01									
Actuated Cycle Length (s)			130.0	જ	Sum of lost time (s)	time (s)			19.2			
ntersection Capacity Utilization	n		93.6%	೦	ICU Level of Service	f Service			ш			
Analysis Period (min)			15									
0 - C - to - C - to - C - to - to - to -	- The	4 44.	0000	The state of the state of								

Synchro 11 Report Page 12 Britannia & RR25 BA Group - NHY

HCM Unsignalized Intersection Capacity Analysis 8: Site Dwy (South)/Site Dwy (North) & Etheridge Ave

2037 Future Total PM 01-12-2024

	4	†	<u> </u>	/	Ļ	4	•	—	•	۶	→	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Volume (veh/h)	9	100	19	135	175	100	10	0	80	22	0	9
Future Volume (Veh/h)	10	100	10	135	175	100	10	0	80	22	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	22	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	029	105	200	625	225
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	233			110			009	642	105	673	262	18
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 %	66			91			97	100	92	83	19	හි
cM capacity (veh/h)	1302			1493			367	345	922	305	367	838
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	120	410	06	65								
Volume Left	9	135	10	22								
Volume Right	9	100	80	10								
SH	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	9.6								
Control Delay (s)	0.7	3.1	10.0	18.2								
Lane LOS	⋖	∢	⋖	ပ								
Approach Delay (s)	0.7	3.1	10.0	18.2								
Approach LOS			⋖	ပ								
Intersection Summary												
Average Delay			5.0									
Intersection Capacity Utilization	tion		46.4%	೦	U Level o	ICU Level of Service			∢			
Analysis Period (min)			15									

Synchro 11 Report Page 13 Britannia & RR25 BA Group - NHY

Timings 2037 Future Total PM 10: Britannia Rd & Farmstead Dr 01-12-2024

	4	†	↓	٠	*	
Lane Group	EBL	EBT	WBT	SBL	SBR	
Lane Configurations	*	444	4413	<u>, </u>	¥.	
Traffic Volume (vph)	52	395	800	52	15	
Future Volume (vph)	52	395	800	22	15	
Turn Type	pm+pt	Ϋ́	ΑN	Prot	Perm	
Protected Phases	2	2	9	∞		
Permitted Phases	2				œ	
Detector Phase	2	5	9	œ	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	
Total Split (%)	10.5%	61.0%	20.5%		%0.63	
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	
Lost Time Adjust (s)	-1.0	-1.0	-1.0		-1.0	
Total Lost Time (s)	3.0	5.4	5.4		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	0.02	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	
SOT	⋖	∢	∢	۵	ω	
Approach Delay		2.2	4.2	41.4		
Approach LOS		∢	∢	٥		
Intersection Summary						
Cycle Length: 105						
Actuated Cycle Length: 105						
Offset 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green	phase 2:1	EBTL and	6:WBT,	Start of G	een	
Natural Cycle: 60						
Control Type: Actuated-Coordinated	linated					
Maximum v/c Ratio: 0.29						
Intersection Signal Delay: 5.5				Ī	Intersection LOS: A	
Intersection Capacity Utilization 37.2%	on 37.2%			⊴	ICU Level of Service A	
Analysis Period (min) 15						

Splits and Phases: 10: Britannia Rd & Farmstead Dr



Britannia & RR25 Synchro 11 Report BA Group - NHY Page 14

Queues 10: Britannia Rd & Farmstead Dr

•	SBR	15	80:0	19.9	0:0	19.9	0.0	6.3			574	0	0	0	0.03	
٠	SBL	55	0.29	47.2	0.0	47.2	11.1	23.1	199.3		909	0	0	0	60.0	
ļ	WBT	880	0.25	4.2	0.0	4.2	14.5	34.6	377.9		3552	0	0	0	0.25	
†	EBT	395	0.10	2.2	0.0	2.2	5.9	9.5	101.0		3822	0	0	0	0.10	
^	EBL	22	0.05	5.0	0.0	5.0	0.7	2.2		20.0	519	0	0	0	0.05	
	Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Queue Delay	Total Delay	Queue Length 50th (m)	Queue Length 95th (m)	Internal Link Dist (m)	Turn Bay Length (m)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio	Intersection Summary

HCM Signalized Intersection Capacity Analysis 10: Britannia Rd & Farmstead Dr

2037 Future Total PM 01-12-2024

																																						A		12.7	A		
•	SBR	R.	12	15	1900	4.3	1.00	0.85	1:00	1615	1.00	1615	1:00	15	4	_	%0	Perm		8	8.4	9.4	0.09	5.3	3.0	144		0.00	0.01	43.6	1.00	0.0	43.6	О				HCM 2000 Level of Service		time (s)	Service		
<u>ب</u> √	WBR SBL		80 25		1900 1900	4.3	1.00	1.00	0.95	1736	0.95		1.00 1.00		0		0% 4%	Prot	∞		8.4	9.4	0.09	5.3	3.0	155	c0:03		0.35	44.9	1.00	1.4	46.3	۵	45.8	۵		HCM 2000 L		Sum of lost time (s)	ICU Level of Service		
ţ	WBT	441		800	1900		*				1.00		1.00			ω	1%	_	9				Ŭ				c0.20		0.26		•				4.2			5.6	0.26	105.0	37.2%	15	
† *	EBL EBT	•	25 395		1900 1900				0.95 1.00		0.26 1.00	494 4560	1.00 1.00			.,	%0 %0	Z	5 2				Ĭ				0.00 00.0		0.06 0.11				1.9 2.0		2.0	A			atio				
	Movement	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Ideal Flow (vphpl)	Total Lost time (s)	Lane Util. Factor	Fr	Flt Protected	Satd. Flow (prot)	FIt Permitted	Satd. Flow (perm)	Peak-hour factor, PHF	Adj. Flow (vph)	RTOR Reduction (vph)	Lane Group Flow (vph)	Heavy Vehicles (%)		Protected Phases	Permitted Phases	Actuated Green, G (s)	Effective Green, g (s)	Actuated g/C Ratio	Clearance Time (s)	Vehicle Extension (s)	Lane Grp Cap (vph)	v/s Ratio Prot	v/s Ratio Perm	v/c Ratio	Uniform Delay, d1	Progression Factor	Incremental Delay, d2	Delay (s)	Level of Service	Approach Delay (s)	Approach LOS	Intersection Summary	HCM 2000 Control Delay	HCM 2000 Volume to Capacity ratio	Actuated Cycle Length (s)	Intersection Capacity Utilization	Analysis Period (min)	c Critical Lane Group

Britannia & RR25 BA Group - NHY Page 16

Timings 11: Britannia Rd & Rose Way

2037 Future Total PM 01-12-2024

•	SBR	r.	20	20	Perm		4	4		10.0	43.0	20.0	38.5%	3.0	3.0	-1.0	2.0			None	11.0	0.08	0.27	18.8	0.0	18.8	Ф						Green				Intersection LOS: A	ICU Level of Service A	
٠	SBL	r	30	30	Prot	4		4		10.0	43.0			3.0	3.0		2.0			None	11.0	0.08	0.20	28.7	0.0	28.7	ш	33.8	ပ				, Start of				Inte	2	
ţ	WBT	4413	1230	1230	¥	9		9		20.0	29.0			4.0	3.0	-1.0	0.9	Lag	Yes	C-Max	103.5	0.80	0.36	5.3	0.0	5.3	⋖	5.3	∢				ind 6:WBT						
†	EBT	444	920	920	Ϋ́	2		2		20.0	29.0	80.0	61.5%	4.0	3.0	-1.0	0.9			C-Max	112.4	0.86	0.24	5.6	0.0	5.6	⋖	5.6	∢				2:EBTL a						
•	EBL	jr.	8	8	bm+pt	2	2	2		7.0	11.0	15.0	11.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	114.2	0.88	0.23	3.1	0.0	3.1	∢					130	enced to phase		Coordinated	9	ly: 5.1	tilization 51.8%	10
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	SOT	Approach Delay	Approach LOS	Intersection Summary	Ovcle Lenath: 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 Capacity Utilization 51.8%	Analysis Period (min) 15

Splits and Phases: 11: Britannia Rd & Rose Way



Queues 2037 Future Total PM 11: Britannia Rd & Rose Way 01-12-2024

III: Britannia Rd & Rose way	vose v	/ay				01-12-2024
	•	†	ţ	٠	*	
Lane Group	EBL	田田	WBT	SBL	SBR	
Lane Group Flow (vph)	8	920	1290	99	50	
v/c Ratio	0.23	0.24	0.36	0.20	0.27	
Control Delay	3.1	5.6	5.3	28.7	18.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	3.1	5.6	5.3	28.7	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	97.6		
Turn Bay Length (m)	20.0			20.0		
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.

HCM Signalized Intersection Capacity Analysis 11: Britannia Rd & Rose Way

2037 Future Total PM 01-12-2024

	4	†	ţ	4	٠	•	
Movement	EBF	EBT	WBT	WBR	SBL	SBR	
Lane Configurations	*	444	443		r	¥C.	
Traffic Volume (vph)	8	920	1230	09	30	20	
Future Volume (vph)	8	920	1230	09	30	20	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	3.0	0.9	0.9		2.0	5.0	
Lane Util. Factor	1.00	*0.80	*0.80		1.00	1.00	
Ft	1.00	1.00	0.99		1.00	0.85	
Fit Protected	0.95	1.00	1.00		0.95	1.00	
Satd. Flow (prot)	1805	4560	4528		1805	1615	
Fit 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)	8	920	1230	09	30	20	
RTOR Reduction (vph)	0	0	_	0	0	47	
Lane Group Flow (vph)	8	920	1289	0	30	က	
Heavy Vehides (%)	%0	%0	%0	%0	%0	%0	
Turn Type	pm+pt	NA	NA		Prot	Perm	
Protected Phases	2	2	9		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	0.6	
Actuated g/C Ratio	0.85	0.85	0.77		0.07	20.0	
Clearance Time (s)	4.0	7.0	7.0		0.9	0.9	
Vehide 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	2.0		58.3	56.5	
Level of Service	∢	∢	V		ш	ш	
Approach Delay (s)		5.6	2.0		57.2		
Approach LOS		∢	∢		ш		
Intersection Summary							
HCM 2000 Control Delay			5.7	모	M 2000 I	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	city ratio		0.35				
Actuated Cycle Length (s)			130.0	S	Sum of lost time (s)	time (s)	14.0
Intersection Capacity Utilization	tion		51.8%	⊴	ICU Level of Service	Service	⋖
Analysis Period (min)			15				
 Critical Lane Group 							

Britannia & RR25 BA Group - NHY

> Synchro 11 Report Page 18

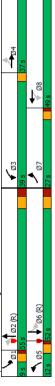
Britannia & RR25 BA Group - NHY

Timings 1: Regional Rd 25 & Louis St Laurent Ave

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	\	Ť	-	Ļ	•	-	٠	•	
Lane Group	BB	EBT	WBL	WBT	NBL	NBT	SBL	SBT	
Lane Configurations	*	₽ ₽	*	₩₽	r	4413	F	4413	
Traffic Volume (vph)	270	535	495	260	115	922	65	942	
Future Volume (vph)	270	535	495	260	115	922	92	942	
Turn Type	pm+pt	Ϋ́	pm+pt	ΑN	pm+pt	≨	pm+pt	₹	
Protected Phases	7	4	က	∞	22	7	Ψ.	9	
Permitted Phases	4		œ		2		9		
Detector Phase	7	4	က	∞	2	2	~	9	
Switch Phase									
Minimum Initial (s)	2.0	10.0	10.0	10.0	2.0	20.0	2.0	20.0	
Minimum Split (s)	0.6	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	22.0	9.0	52.0	
Total Split (%)	19.3%	26.4%	27.9%	35.0%	%9.8	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	0.9	2.0	0.9	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	6.07	4.4	40.1	39.7	43.4	36.6	43.9	
SOT	ပ	ш	ш	_	_		_	۵	
Approach Delay		29.7		9.09		43.1		43.5	
Approach LOS		ш		Ω		Ω		Ω	
Intersection Summary									
Cycle Length: 140									
Actuated Cycle Length: 140 Offset: 0 (0%) Referenced to phase 2:NBTI and 6:SBTI Start of Green	1.C asahu c	VRTI and	6:SRTI	Start of	nagr				
Natural Cycle: 90	, pridace 2.1	בור מוצ	,	Olaico	500				
Control Type: Actuated-Coordinated	dinated								
Maximum v/c Ratio: 0.94									
Intersection Signal Delay: 48.6	9.9			ᆵ	ersection	Intersection LOS: D			
processing Capacity Hillandian Up Ally				•					

Sensitivity Analysis – Extra 144 Units for North Parcel

Splits and Phases: 1: Regional Rd 25 & Louis St Laurent Ave



Synchro 11 Report Page 1 Britannia & RR25 BA Group - NHY

2032 Future Total AM 01-12-2024 Queues 1: Regional Rd 25 & Louis St Laurent Ave

	•	†	•	ţ	•	-	۶	→
Lane Group	EBF	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		32.0		65.0		80.0	
Base Capacity (vph)	481	786	248	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	0.30	0.57	0.63	0.81	0.50	0.72
Informaction Cummons								

Intersection Summary
96th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Synchro 11 Report Page 2 Britannia & RR25 BA Group - NHY

HCM Signalized Intersection Capacity Analysis 1: Regional Rd 25 & Louis St Laurent Ave

2032 Future Total AM 01-12-2024

	1	†	<u> </u>	>	ļ	4	•	←	•	٠	→	•
Movement	田田	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	y -	₽		y -	₩		je-	444		y -	444	
Traffic Volume (vph)	270	535	195	495	260	92	115	922	335	65	945	99
Future Volume (vph)	270	232	195	495	290	92	115	922	332	92	942	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
lotal Lost time (s)	3.0	0.0		7.0	0.0		3.0	7.0		3.0	7.0	
Lane Util. Factor	9.5	0.95		0.1	0.95		0.1	0.80		3.5	0.80	
Tipu, pedibines	3 5	8.6		8.6	8.5		9.6	0.0		3 5	3 5	
ripo, peu/bikes Frt	3.0	0.96		100	0.98		100	0.96		8 6	3 66	
Fit 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	260	92	115	922	335	65	945	92
RTOR Reduction (vph)	0	56	0	0	တ	0	0	4	0	0	7	0
Lane Group Flow (vph)	270	704	0	495	646	0	115	1249	0	92	1033	0
Confl. Peds. (#/hr)	2					2						
Heavy Vehides (%)	2%	2%	1%	2%	2%	%2	%9	%/	3%	2%	%/	2%
Turn Type	bm+pt	ΝΑ		pm+pt	≨		pm+pt	≨		pm+pt	Ϋ́	
Protected Phases	7	4		က	∞		വ	7		-	9	
Permitted Phases	4			∞			2			9		
Actuated Green, G (s)	47.8	30.0		67.4	42.6		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	0.3 \$	
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	00.r	1.00		0.1	00.1		1.00	00.1		9.5	00.5	
nciemental Delay, uz	t, 60	4. 0.		0.07	0.0		0.7	7.0		4. 00	3.5	
Delay (s)	0.00	9 ц		Э Э	0.60		- 00	5.0		23.50	5.0	
Approach Delay (s)	2	63 a		_	21.0		2	446		2	43.4	
Approach LOS		ш			<u> </u>							
c	ı		ı	ı		ı	ı		ı	ı		ı
intersection Surrimary												
HCM 2000 Control Delay			49.9	Ĭ	HCM 2000 Level of Service	Level of S	Service		۵			
HCM 2000 Volume to Capacity ratio	ity ratio		0.89									
Actuated Cycle Length (s)			140.0	ઝ	Sum of lost time (s)	time (s)			18.2			
Intersection Capacity Utilization	uo		95.4%	ಲ	ICU Level of Service	f Service			ш			
Analysis Period (min)			12									
c Critical Lane Group												

Britannia & RR25 BA Group - NHY

Timings 2032 Future Total AM 2: Regional Rd 25 & Whitlock Ave

	4	†	>	ţ	4	•	-	۶	→	
Lane Group	EBL	EBT	WBL	WBT	WBR	图图	NBT	SBL	SBT	
Lane Configurations	*	£	*	*	*	r	443	*	444	
Traffic Volume (vph)	145	20	20	32	92	45	1190	20	1785	
Future Volume (vph)	145	20	20	32	92	42	1190	20	1785	
Turn Type	Perm	ΑN	Perm	Ϋ́	Perm	pm+pt	¥	pm+pt	ΑN	
Protected Phases		4		80		2	2	Ψ	9	
Permitted Phases	4		∞		∞	2		9		
Detector Phase	4	4	∞	œ	∞	2	5	Ψ	9	
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	11.0	81.0		81.0	
Total Split (%)	29.2%	29.2%	29.5%		29.5%	8.5%	62.3%		62.3%	
Yellow Time (s)	3.3	3.3	3.3		3.3	3.0	4.2		4.2	
All-Red Time (s)	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	
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	3.0	5.5		5.5	
Lead/Lag						Lead	Гag		Lag	
Lead-Lag Optimize?						Yes	Yes		Yes	
Recall Mode	None	None	None	None	None	None	C-Max		C-Max	
Act Effct Green (s)	20.4	20.4	20.4	20.4	20.4	28.7	89.7	28.7	9.68	
Actuated g/C Ratio	0.16	0.16	0.16	0.16	0.16	0.76	69.0	92.0	0.69	
v/c Ratio	69.0	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	
SOT	ш	ပ	Ω	□	В	В	∢	∢	Ф	
Approach Delay		49.2		29.2			8.9		13.5	
Approach LOS		Ω		O			∢		В	
Intersection Summary										
Cvcle Lenath: 130										
Actuated Cycle Length: 130										
Offset 64 (49%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	I to phase	2:NBTL 8	IBS:9 pur	rl, Start c	f Green					
Natural Cycle: 95										
Control Type: Actuated-Coordinated	dinated									
Maximum v/c Ratio: 0.69										
Intersection Signal Delay: 14.8	æ,			ᆵ	Intersection LOS: B	LOS: B				
Intersection Capacity Utilization 75.1%	on 75.1%			೦	ICU Level of Service D	f Service	۵			
Analysis Period (min) 15										

Splits and Phases: 2. Regional Rd 25 & Whitlock Ave

Britannia & RR25
BA Group - NHY
Page 4

Queues 2: Regional Rd 25 & Whitlock Ave

2032 Future Total AM 01-12-2024

→ <i>></i> → <i>></i> → <i>→</i>	WBT WBR NBL NBT SBL SBT	95 45 1200 50	0.31 0.26 0.41 0.15	10.9 13.3 6.5 5.3	0.0 0.0 0.0 0.0	10.9 13.3 6.5 5.3	8.2 0.0 1.5 20.3 2.6 112.4	14.7 m5.8 117.8 7.2	497.5	65.0 100.0 100.0	439 435 174 2959 331 2970	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0	0.08 0.22 0.26 0.41 0.15 0.63
→	EBT WBL						18.2 12.1		2.9	65.0	431 241	0 0	0 0	0 0	0.34 0.21
\	EBL						37.5		w	35.0		0	0	0	0.44 0
	Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Queue Delay	Total Delay	Queue Length 50th (m)	Queue Length 95th (m)	Internal Link Dist (m)	Turn Bay Length (m)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio

Intersection Summary m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis 2: Regional Rd 25 & Whitlock Ave

2032 Future Total AM 01-12-2024

Continue (para)		•	†	~	>	ţ	4	•	-	•	۶	-	•
1	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
145 50 95 50 35 95 45 1190 10 50 1785	Lane Configurations	*	æ		<u>, -</u>	*	¥C	F	444		r	441	
145 50 95 50 35 95 45 190 10 50 1785 100 1900 1900 1900 1900 1900 1900 1900 1900 100 1900 1900 1900 1900 1900 1900 1900 1900 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100	Traffic Volume (vph)	145	20	92	20	32	92	42	1190	10	20	1785	100
1900 1900	Future Volume (vph)	145	22	8	20	32	8	45	1190	9	20	1785	100
1,00	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
1,00 1,00	l otal Lost time (s)	2.5	2.5		2.5	5.5	5.5	3.0	5.5		3.0	5.5	
1,00 0.99 1,00	Lane Util. Factor	1:00	1:00		9.	1.00	1.00	1.00	*0.80		1.00	*0.80	
1,00 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	Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
1333 1516 1727 1759 1455 100 0.95 100 0	Ft	1:00	0.90		1.00	1:00	0.85	1.00	1.00		1.00	0.99	
1725 1516 1727 1759 1455 1671 4290 1805 4304 1333 1516 965 1759 1455 100 100 0.01 1.00 145 50 96 50 35 45 1190 100 1.00 1.00 146 50 96 50 35 45 1190 10 50 1785 147 108 100 1.00 1.00 1.00 1.00 1.00 1.00 148 50 96 50 35 45 1190 10 50 1785 149 145 86 90 90 90 90 90 90 90 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150	Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
1,100 1,10	Satd. Flow (prot)	1725	1516		1727	1759	1455	1671	4290		1805	4304	
1333 1516 965 1759 1455 100 4290 314 4304 145 50 96 50 35 96 45 1190 100 1	Flt Permitted	0.73	1:00		0.53	1.00	1.00	90.0	1.00		0.17	1.00	
PHF 1:00 1:00 1:00 1:00 1:00 1:00 1:00 1:0	Satd. Flow (perm)	1333	1516		965	1759	1455	100	4290		314	4304	
(yph) 145 50 96 50 36 46 119 10 50 1785 (yph) 145 89 0 0 0 0 0 0 0 0 3 (yph) 145 89 0	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
vph) 0 59 0 <td>Adi. Flow (vph)</td> <td>145</td> <td>20</td> <td>99</td> <td>20</td> <td>32</td> <td>32</td> <td>42</td> <td>1190</td> <td>10</td> <td>20</td> <td>1785</td> <td>100</td>	Adi. Flow (vph)	145	20	99	20	32	32	42	1190	10	20	1785	100
(vph) 145 86 0 50 35 15 45 1200 0 50 1882 5	RTOR Reduction (vph)	0	26	0	0	0	8	0	0	0	0	က	0
5 5 5 5 5 5 5 5 5 5	Lane Group Flow (vph)	145	88	0	20	35	15	45	1200	0	20	1882	0
1	Confl. Peds. (#/hr)	2		2	2		2						
Perm NA Perm NA Perm pm+pt NA pm+pt NA Perm NA Perm Pm+pt NA Perm Parm Par	Heavy Vehicles (%)	4%	32%	1%	4%	%8	%6	8%	%9	25%	%0	2%	%/
(s) 19.4 4 8 8 5 2 1 1 4 4 8 8 2 2 6 6 (s) 19.4 19.4 19.4 19.4 33.6 87.9 33.6 (s) 20.4 20.4 20.4 20.4 32.6 88.9 33.6 0.16 0.16 0.16 0.16 0.16 0.74 0.68 0.74 (s) 3.0 3.0 3.0 3.0 3.0 3.0 3.0 (s) 2.09 2.37 151 2.76 2.28 154 29.33 30.7 3 (o) 1.0 0.06 0.05 0.01 0.20 0.01 0.01 (o) 1.0 0.06 0.38 0.31 0.07 0.20 0.01 (o) 1.0 0.10 0.10 1.0 1.0 1.0 0.2 0.02 (d) 48.7 47.1 46.7 86 9.0 5.2 (d) 49.9 50.0 13 47.3 48.8 19.9 6.5 (e) 5.7 49.9 0.13 48.8 19.9 6.5 (e) 5.7 47.1 46.7 86 9.0 5.4 (e) 6.9 9.0 5.7 (e) 7.1 40.7 86 9.0 5.7 (e) 8.9 9.0 1.3 42.1 46.7 86 9.0 5.2 (e) 9.6 0.99 1.3 42.1 46.7 86 9.0 5.2 (e) 1.0 0.4 0.1 10 0.4 0.1 0.1 10 0.4 0.3 (e) 1.3 0.2 0.1 10 0.4 0.3 (e) 2.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3 (e) 2.4 1.3 0.2 0.4 0.4 0.3 48.8 19.9 6.5 (e) 2.4 1.3 0.2 0.4 0.3 48.8 19.9 6.5 (e) 3.0 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3	Turn Type	Perm	AN		Perm	AN	Perm	pm+pt	AN		pm+pt	¥	
4 8 8 2 6 19.4 19.5 19.5 19.5 20.4 20.4 20.4 20.4 20.4 20.8 87.9 85.6 0.16 0.16 0.16 0.16 0.14 0.68 0.74 20.9 3.0 3.0 3.0 3.0 3.0 3.0 20.9 3.0 3.0 3.0 3.0 3.0 3.0 20.9 3.0 3.0 3.0 3.0 3.0 20.9 3.0 0.05 0.02 0.01 0.01 20.6 0.20 0.20 0.01 0.01 20.6 0.33 0.13 0.7 0.20 0.14 20.8 0.9 0.10 1.00 1.00 1.00 0.20 20.8 0.9 0.13 0.14 0.15 0.15 20.8 0.9 0.13 0.10 0.4 0.13 20.8 0.9 0.10 0.10 0.10 0.4 0.13 20.8 0.9 0.10 0.10 0.10 0.4 0.13 20.8 0.9 0.10 0.10 0.10 0.4 0.13 20.8 0.9 0.10 0.10 0.10 0.10 20.8 0.9 0.10 0.10 0.10 20.8 0.9 0.10 0.10 0.10 20.8 0.9 0.10 0.10 0.10 20.8 0.9 0.10 0.10 20.8 0.9 0.10 0.10 0.10 20.8 0.9 0.10 0.10 0.10 20.8 0.9 0.10 0.10 20.8 0.9 0.10 0.10 0.10 20.8 0.9 0.10 0.10 20.8 0.9 0.10 0.10 20.8 0.9 0.10 0.10 20.8 0.9 0.10 0.10 20.8 0.9 0.10 0.10 20.8 0.9 0.10 0.10 20.8 0.9 0.10 0.10 20.8 0.9 0.10 0.10 20.8 0.9 0.10 0.10 20.8 0.9 0.10 20.8 0.9 0.10 0.10 20.8 0.9 0.10 0.10 20.8 0.9 0.10 0.10 20.8 0.9 0.10 0.10 20.8 0.9 0.10 0.10 20.8 0.9 0.10 0.10 20.8 0.9 0.10 0.10 20.8 0.9 0.10 0.10 20.8 0.9 0.10 0.10 20.8 0.9 0.10 0.10 20.8 0.9 0.10 0.10 20.8 0.9 0.10 0.10 20.8 0.9 0.10 0.10 20.8 0.9 0.10 0.10 20.8 0.9 0.10 0.10 20.8 0.9 0.10 0.10 20.8 0.10 0.10 0.10 20.8 0.10 0.10 0.10 20.8 0.10 0.10 0.10 20.8 0.10 0.10	Protected Phases		4			∞		വ	2		. ~	9	
194 194 194 194 936 879 936 870 936	Permitted Phases	4			∞		00	2			9		
204 20.4 20.4 20.4 20.4 95.6 88.9 95.6 6.5 6.5 6.5 6.5 4.0 6.8 3.0 3.0 3.0 3.0 3.0 3.0 3.0 2.09 237 151 276 228 154 2933 307 3.0 0.06 0.36 0.36 0.01 0.02 0.28 0.01 0.0 0.69 0.36 0.33 0.13 0.07 0.29 0.41 0.16 0.10 0.10 1.00 1.00 1.00 1.00 1.00 0.62 0.62 1.00 9.6 0.3 0.3 0.13 0.07 0.29 0.41 0.16 0.49 0.3 0.47 47.1 46.7 86 9.0 5.2 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Actuated Green, G (s)	19.4	19.4		19.4	19.4	19.4	93.6	87.9		93.6	87.9	
0.16 0.16 0.16 0.16 0.16 0.17 0.68 0.74 3.0 3.0 3.0 3.0 3.0 3.0 237 151 276 228 154 2833 307 2.09 237 151 276 228 154 2833 307 0.06 0.05 0.05 0.02 0.02 0.01 0.01 0.09 0.39 0.33 0.07 0.02 0.01 0.01 2.09 0.39 0.31 0.07 0.20 0.01 2.09 0.39 0.31 0.07 0.20 0.01 2.09 0.39 0.31 0.07 0.20 0.01 2.09 0.39 0.33 0.7 3 0.07 0.20 0.01 2.09 0.39 0.33 0.7 3 0.07 0.20 0.01 2.09 0.39 0.39 0.07 1.00 0.20 0.05 2.00 0.00 0.00 0.00 0.00 0.00 2.00 0.00 0	Effective Green, a (s)	20.4	20.4		20.4	20.4	20.4	92.6	88.9		92.6	88.9	
6.5 6.5 6.5 6.5 6.5 6.5 4.0 6.5 4.0 3.0 3.0 3.0 3.0 3.0 2.00 237 15.1 6.2 2.002 2.33 3.0 0.06 0.34 0.05 0.01 0.20 0.08 0.36 0.01 0.07 0.29 0.04 0.10 1.00 1.00 1.00 1.00 2.20 0.62 0.10 1.00 1.00 1.00 1.00 2.20 0.62 0.10 1.00 1.00 1.00 1.00 2.20 0.62 0.10 1.00 1.00 1.00 1.00 2.20 0.62 0.10 1.00 1.00 1.00 1.00 2.20 0.62 0.10 1.00 1.00 1.00 1.00 2.20 0.62 0.10 1.00 1.00 1.00 1.00 2.20 0.62 0.10 1.00 1.00 1.00 1.00 1.00 0.10 1.00 1.00 1.00 1.00 0.10 1.00 1.00 1.00 1.00 0.10 1.00 1.00 1.00 1.00 0.10 1.00 1.00 1.00 1.00 0.10 1.00 1.00 1.00 1.00 0.10 1.00 1.00 1.00 1.00 1.00 0.10 1.00 1.00 1.00 1.00 1.00 0.10 1.00 1.00 1.00 1.00 1.00 1.00 0.10 1.00 1.00 1.00 1.00 1.00 1.00 1.	Actuated g/C Ratio	0.16	0.16		0.16	0.16	0.16	0.74	0.68		0.74	0.68	
Sign	Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	4.0	6.5		4.0	6.5	
209 237 151 276 228 154 2833 307 0.06 0.06 0.02 0.02 0.02 0.01 0.01 0.05 0.11 0.09 0.36 0.33 0.13 0.07 0.29 0.41 0.16 51.8 49.0 48.7 47.1 46.7 86 9.0 5.2 11.00 1.00 1.00 1.00 1.00 2.0 0.62 1.00 9.6 0.39 50.0 47.3 46.8 19.9 6.0 5.4 E D D D D B A A A A A A A A A A A A A A A	Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
0.06 0.02 0.02 0.08 0.01 o.01 o.01 o.00 o.03 0.01 o.01 o.02 0.03 0.01 o.01 o.02 0.03 0.01 o.01 o.02 0.03 0.01 o.02 0.02 0.01 o.01 o.02 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0	Lane Gro Cap (vph)	209	237		151	276	228	15	2933		307	2943	
0.65 0.07 0.02 0.01 0.00 0.01 0.00 0.01 0.00 0.05 0.01 0.07 0.02 0.01 0.05 0.01 0.05 0.01 0.01 0.01 0.01	v/s Ratio Prot		90:0			0.02		c0.02	0.28		0.01	c0.44	
0.69 0.36 0.33 0.13 0.07 0.29 0.41 0.16 0.16 0.10 0.10 1.00 1.00 1.00 1.0	v/s Ratio Perm	00.11			0.05		0.01	0.20			0.11		
518 490 487 47.1 467 86 90 5.2 1.00 1.00 1.00 1.00 2.20 0.62 1.00 9.6 0.9 1.3 0.2 0.1 1.0 0.3 61.4 49.9 50.0 47.3 46.8 19.9 6.0 5.4 E D D D D B A A A 55.7 47.8 6.5 E D A M 2000 Level of Service B 130.0 Sum of lost time (s) 14.0 75.1% (CU Level of Service D	v/c Ratio	0.69	0.36		0.33	0.13	0.07	0.29	0.41		0.16	0.64	
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Uniform Delay, d1	51.8	49.0		48.7	47.1	46.7	9.8	9.0		2.5	11.5	
614 499 13 02 0.1 1.0 0.4 0.3 614 499 50.0 473 468 19.9 6.0 5.4 E D D D B B 6.5 E A A A 15.6 HCM 2000 Level of Service B 75.1% ICU Level of Service D 15.1% ICU Level of Service D	Progression Factor	1.00	1:00		9:	9.	1.00	2.20	0.62		1.00	1.00	
614 499 500 473 468 199 6.0 5.4 E D D D B A A A A A S 57 408	Incremental Delay, d2	9.6	0.9		. .	0.2	0.1	0.1	0.4		0.3	- -	
E D D D B B A A A A A A A B S	Delay (s)	61.4	49.9		20.0	47.3	46.8	19.9	0.9		5.4	12.6	
55.7 47.8 6.5 E D A 15.6 HCM 2000 Level of Service B 75.1% (CU Level of Service D 75.1% (U Level of Service D	Level of Service	ш			_		_	œ	∢		⋖	മ	
15.6 HCM 2000 Level of Service 130.0 Sum of lost time (s) 75.1% ICU Level of Service 15.1% ICU Level of Service 15.1%	Approach Delay (s)		22.7			47.8			6.5			12.4	
15.6 HCM 2000 Level of Service 13.0 Sum of lost time (s) 75.1% ICU Level of Service 15.1	Approach LOS		ш						∢			Ф	
15.6 HCM 2000 Level of Service 0.63 Sum of lost time (s) 75.1% ICU Level of Service 15	Intersection Summary												
natio 0.63 130.0 Sum of lost time (s) 75.1% (CU Level of Service 15	HCM 2000 Control Delay			15.6		M 2000	Level of 5	Service		В			
130.0 Sum of lost time (s) 75.1% ICU Level of Service 15	HCM 2000 Volume to Capa	city ratio		0.63						1			
75.1% ICU Level of Service 15	Actuated Cycle Length (s)			130.0	S	m of lost	time (s)			14.0			
	Intersection Capacity Utiliza:	tion		75.1%	ಠ	U Level c	of Service			۵			
	Analysis Period (min)			15									

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HCM Unsignalized Intersection Capacity Analysis 3: Regional Rd 25 & Site Dwy (North)

2032 Future Total AM 01-12-2024

																																								ď	
																											SB3	398	0	15	1700	0.23	0:0	0:0							
•	SBR		15	15			1.00	15																			SB 2	99/	0	0	1700	0.45	0.0	0.0						ICU Level of Service	
→	SBT	4413	1915	1915	Free	%0	1.00	1915						None													SB 1	992	0	0	1700	0.45	0.0	0.0		0.0				U Level o	
←	NBT	444	1245	1245	Free	%	1.00	1245						None		199											NB 3	415	0	0	1700	0.24	0.0	0.0						2	
•	NBL		0	0			1.00	0										1930			1930	4.1		2.2	9	309	NB 2	415	0	0	1700	0.24	0.0	0.0					0.3	47.7%	15
<u>/</u>	EBR	*	09	09			1.00	09										646			646	6.9		3.3	98	419	NB 1	415	0	0	1700	0.24	0.0	0.0		0.0					
1	EBL		0	0	Stop	%0	1.00	0									0.94	2338			2209	9.9		3.5	9	98	EB 1	09	0	8	419	0.14	4.0	15.0	ပ	15.0	O			ation	
	Movement	Lane Configurations	Traffic Volume (veh/h)	Future Volume (Veh/h)	Sign Control	Grade	Peak Hour Factor	Hourly flow rate (vph)	Pedestrians	Lane Width (m)	Walking Speed (m/s)	Percent Blockage	Right turn flare (veh)	Median type	Median storage veh)	Upstream signal (m)	pX, platoon unblocked	vC, conflicting volume	vC1, stage 1 conf vol	vC2, stage 2 conf vol	vCu, unblocked vol	tC, single (s)	tC, 2 stage (s)	fF(s)	po dueue free %	cM capacity (veh/h)	Direction, Lane #	Volume Total	Volume Left	Volume Right	HSS	Volume to Capacity	Queue Length 95th (m)	Control Delay (s)	Lane LOS	Approach Delay (s)	Approach LOS	Intersection Summary	Average Delay	Intersection Capacity Utilization	Analysis Period (min)

Timings 2032 Future Total AM 5: Regional Rd 25 & Etheridge Ave/Collector Road 01-12-2024

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		.			-	-	į		
ane Group	EBL	EBT	WBL	WBT	MBL N	NBT	SBL	SBT	
ane Configurations	<u>_</u>	4	۴	4	۳	#	•	₹	
raffic Volume (vph)	185	0	92	0	2	1005	8	1880	
-uture Volume (vph)	185	0	92	0	2	1005	ස	1880	
urn Type	pm+pt	¥	Perm	¥	pm+pt	Ϋ́	Perm	Ϋ́	
Protected Phases	7	4		∞	2	2		9	
Permitted Phases	4		∞		2		9		
Detector Phase	7	4	∞	∞	S	7	9	9	
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	
otal Split (s)	12.0	49.0	37.0	37.0		81.0	70.0		
otal Split (%)	9.2%	37.7%	28.5%	28.5%		62.3%	23.8%	2	
(ellow Time (s)	3.0	3.3	3.3	3.3		4.2	4.2		
NI-Red Time (s)	1.0	5.9	2.9	5.9		2.2	2.2		
ost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0		
otal Lost Time (s)	3.0	5.2	5.2	5.2		5.4	5.4		
.ead/Lag	Lead		Lag	Lag			Lag	Lag	
ead-Lag Optimize?	Yes		Yes	Yes			Yes		
Recall Mode	None	None	None	None	None	C-Max	C-Max	ن	
Act Effet Green (s)	25.3	23.1	13.5	13.5		96.3	6.98	6.98	
Actuated g/C Ratio	0.19	0.18	0.10	0.10		0.74	0.67	0.67	
/c Ratio	0.70	0.25	0.47	0.19		0.32	0.10	0.67	
Control Delay	61.1	6.4	65.8	1.4		2.3	4.0	9.1	
λueue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
otal Delay	61.1	6.4	65.8	1.4		2.3	4.0	9.1	
SO	ш	⋖	ш	∢	_	⋖	⋖	⋖	
Approach Delay		42.5		36.3		2.0		9.1	
pproach LOS		Ω		۵		∢		∢	
ntersection Summary									
vole Length: 130									
Actuated Cycle Length: 130									
Offset 0 (0%). Referenced to phase 2:NBTL and 6:SBTL. Start of Green	phase 2:	NBTL and	6:SBTL	Start of (Green				
Natural Cycle: 110									
Control Type: Actuated-Coordinated	dinated								
Maximum v/c Ratio: 0.70									
ntersection Signal Delay: 11.4	4:			Ξ	Intersection LOS: B	LOS: B			
ntersection Capacity Utilization 72.7%	ion 72.7%			೦	CU Level of Service C	of Service	ပ		
Analysis Period (min) 15									

Splits and Phases: 5: Regional Rd 25 & Etheridge Ave/Collector Road

\$\int_{0.2}(\int\text{ (49 s}) \\
\times 0.5 (R) \\

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Queues 5: Regional Rd 25 & Etheridge Ave/Collector Road

	^	†	/	ţ	•	-	۶	→	
ane Group	EB	EBT	WBL	WBT	NBL	NBT	SBL	SBT	
ane Group Flow (vph)	185	95	65	55	70	1025	30	1945	
/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	
lueue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Fotal Delay	61.1	6.4	65.8	1.4	43.9	2.3	4.0	9.1	
lueue Length 50th (m)	44.5	0.0	16.9	0.0	9.7	9.4	6.0	150.3	
lueue Length 95th (m)	65.7	10.4	31.7	0.0	m14.9	14.5	m1.3	171.2	
nternal Link Dist (m)		53.9		63.1		108.9		175.3	
urn Bay Length (m)	40.0		40.0		70.0		70.0		
sase Capacity (vph)	263	619	322	201	174	3180	293	2889	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	
pillback Cap Reductn	0	0	0	0	0	0	0	0	
torage Cap Reductn	0	0	0	0	0	0	0	0	
teduced 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.

HCM Signalized Intersection Capacity Analysis 2032 Future Total AM 5: Regional Rd 25 & Etheridge Ave/Collector Road 01-12-2024

87 (ch	185 185	EBT	EBR	WBL	WBT	WBR	NBL	NBT	MBR	SBL	SBT	SBR
	185	æ		ļ	ŀ		١			١	***	
	8 8			-	£		-	444		r	4	
	185	0	8	89	0	55	2	1005	20	30	1880	65
		0	8	99	0	22	2	1005	50	30	1880	92
	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
	3.0	5.2		5.2	5.2		3.0	5.4		5.4	5.4	
	1.00	1.00		1.00	1:00		1.00	*0.80		1.00	*0.80	
	0.1	0.85		1.00	0.85		1.00	1.00		1.00	66.0	
	0.95	1.00		0.95	1:00		0.95	1.00		0.95	1.00	
	787	1615		1805	1615		1752	4294		1805	4320	
•	0.57	1.00		0.70	1.00		0.05	1.00		0.23	1.00	
atd. Flow (perm)	9201	1615		1321	1615		84	4294		438	4320	
eak-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
dj. Flow (vph)	185	0	93	92	0	22	2	1005	50	30	1880	65
TOR Reduction (vph)	0	11	0	0	20	0	0	τ-	0	0	7	0
ane Group Flow (vph)	185	9	0	92	2	0	2	1024	0	30	1943	0
leavy Vehicles (%)	1%	%0	%0	%0	%0	%0	3%	%9	%0	%0	2%	%9
urn Type pm	pm+pt	ΑN		Perm	A		pm+pt	A		Perm	≸	
rotected Phases	7	4			∞		2	2			9	
ermitted Phases	4			œ			5			9		
_	23.3	23.3		10.5	10.5		8 1.	94.1		84.0	84.0	
	24.3	24.3		11.5	11.5		95.1	95.1		82.0	85.0	
J	0.19	0.19		0.0	0.09		0.73	0.73		0.65	0.65	
	4.0	6.2		6.2	6.2		4.0	6.4		6.4	6.4	
ehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
ane Grp Cap (vph)	254	301		116	142		152	3141		286	2824	
	90.00	0.01			0.00		c0.03	0.24			c0.45	
/s Ratio Perm c0	90.09			0.05			0.31			0.07		
c Ratio 0	0.73	90.0		0.56	0.03		0.46	0.33		0.10	69.0	
niform Delay, d1 4	48.6	43.5		26.8	54.5		14.1	6.2		8.4	14.2	
rogression Factor	1.00	1.00		1.00	1.00		3.17	0.34		0.31	0.54	
ncremental Delay, d2	10.0	0.1		6.1	0.1		1.6	0.2		9.0	1.1	
	58.6	43.5		67.9	54.3		46.3	2.3		3.2	8.8	
evel of Service	ш	۵		ш	□		Ω	¥		∢	∢	
pproach Delay (s)		53.5			28.9			5.1			8.7	
pproach LOS		۵			ш			∢			∢	
ntersection Summary												
HCM 2000 Control Delay			12.9	욷	M 2000	HCM 2000 Level of Service	Service		В			
ICM 2000 Volume to Capacity ratio	atio		0.70									
ctuated Cycle Length (s)			130.0	Sul	Sum of lost time (s)	time (s)			16.6			
ntersection Capacity Utilization			72.7%	ಠ	J Level o	ICU Level of Service			ပ			
Analysis Period (min)			15									
Critical Lane Group												

Britannia & RR25 BA Group - NHY Page 10

HCM Unsignalized Intersection Capacity Analysis 6: Regional Rd 25 & Site Dwy (South)

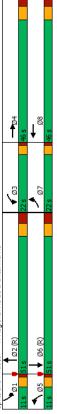
2032 Future Total AM 01-12-2024

ions (Veh/h) (Veh/h) or (vph)	EBL							
onfigurations /olume (veh/h) introl introl our Factor low rate (vph)		EBR	NBL	NBT	SBT	SBR		
folume (veh/h) /olume (Veh/h) introl our Factor low rate (vph)		¥.		444	4413			
Volume (VehVh) Introl our Factor low rate (vph) ians	0	9	0	1095	2020	20		
introl our Factor low rate (vph) ians	0	9	0	1095	2020	50		
our Factor Iow rate (vph) ians	Stop			Free	Free			
	%0			%0	%0			
	1.00	1.00	1.00	1.00	1.00	1.00		
Pedestrians	0	92	0	1095	2020	20		
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			
R	0.82	0.73	0.73					
•	2395	683	2040					
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol	451	0	1126					
tC, single (s)	8.9	6.9	4.1					
tC, 2 stage (s)								
IF (s)	3.5	3.3	2.2					
p0 queue free %	9	92	100					
cM capacity (veh/h)	443	795	428					
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	
Volume Total	99	365	365	365	808	808	424	
Volume Left	0	0	0	0	0	0	0	
ne Right	65	0	0	0	0	0	20	
	262	1700	1700	1700	1700	1700	1700	
	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)	6.6	0.0	0.0	0.0	0.0	0:0	0.0	
Lane LOS	⋖							
Approach Delay (s)	6.6	0.0			0.0			
Approach LOS	⋖							
Intersection Summary								
Average Delay			0.0					
Intersection Canacity Utilization			50 2%	2	o leve I	CLI Level of Service	A	
Analysis Period (min)			15	2	2	3		

2032 Future Total AM 01-12-2024 Timings 7: Regional Rd 25 & Britannia Rd

-	SBT	443	1670	1670	Ϋ́	9		9		20.0	49.7	51.0	39.2%	4.2	3.5	-1.0	6.7	Гag	Yes	C-Max	60.3	0.46	0.85	48.2	0.0	48.2		49.7											
۶	SBL	K	330	330	Prot	Ψ-		-		7.0	11.0	11.0	8.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	22.5	0.17	0.64	56.1	0.0	56.1	ш										L	ш	
←	NBT	4413	895	895	Ϋ́	7		2		20.0	49.7	51.0	39.2%	4.2	3.5	-1.0	6.7	Lag	Yes	C-Max	44.3	0.34	0.77	41.0	0.0	41.0	۵	41.8	٥								LOS: D	CU Level of Service E	
•	NBL	K.	20	20	Prot	2		2		7.0	11.0	11.0	8.5%	3.0	1.0							0.07				9.69	ш						Green				Intersection LOS: D) Level o	
ţ	WBT	4413	345	345	ΑΝ	∞		∞		10.0	45.5	46.0	35.4%	4.2	3.3	-1.0	6.5	Lag	Yes	None	37.2	0.29	0.38	29.3	0.0	29.3	ပ	47.8	٥				, Start of				<u>=</u> 3	2	
>	WBL	K.	430	430	Prot	က		က		7.0	11.0	22.0	16.9%	3.0	1.0	-1.0	3.0	Lead	Yes	None	18.8	0.14	0.87	9.89	0.0	9.89	ш						nd 6:SBT						
†	EBT	4413	415	415	Ϋ́	4		4		10.0	45.5	46.0	35.4%	4.2	3.3	-1.0	6.5	Lag	Yes	None	25.2	0.19	92.0	46.4	0.0	46.4	۵	47.5	٥				2:NBT						
4	EBL	K	09	09	Prot	7		7		7.0	11.0	22.0	16.9%	3.0	1.0	-1.0	3.0	Lead	Yes	None	0.6	0.07	0.26	59.9	0.0	59.9	ш						to phase		inated		200	n 83.0%	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	ROS	Approach Delay	Approach LOS	Intersection Summary	Cvcle Lenath: 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 Capacity Utilization 83.0%	Analysis Period (min) 15

603 Splits and Phases: 7: Regional Rd 25 & Britannia Rd Ø2 (R)



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Britannia & RR25 BA Group - NHY

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Queues 7: Regional Rd 25 & Britannia Rd

2032 Future Total AM 01-12-2024

→ 	r wel wet nel net sel set	430 485 50 1120	3 0.87 0.38 0.22 0.77 0.64 0.85	68.6 29.3 59.6 41.0 56.1	0.0 0.0 0.0 0.0 0.0	68.6 29.3 59.6 41.0	59.0 37.4 6.7 108.3 57.6	#86.3 51.0 13.4	182.4	120.0 90.0 90.0	503 1368 225 1464	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	
† •	EBL EBT		0.26 0.76				8.0 62.7		377.9	0.09	482 1370	0	0	0	
	Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Queue Delay	Total Delay	Queue Length 50th (m)	Queue Length 95th (m)	Internal Link Dist (m)	Turn Bay Length (m)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis 7: Regional Rd 25 & Britannia Rd

2032 Future Total AM 01-12-2024

ane Configurations 17 Telesconfigurations 17	EBT	EBR	Z X	T0///			1	NBR	00	Fac	
			V . D .	VVDI	WBR	NBL	NBT		ODL	261	SBR
	₩₽		44	4413		14	441		14	441	
	415	285	430	345	140	20	895	225	390	1670	25
1900 3.0 0.97 1.00 0.95	415	282	430	345	9 5	20	895	225	330	1670	52
3.0 0.97 1.00 0.95	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
1.00	6.5		3.0	6.5		3.0	6.7		3.0	6.7	
1.00	.0.80 *0		0.97	*0.80		0.97	*0.80		0.97	*0.80	
0.95	0.94		1.00	96.0		1.00	0.97		1.00	1.00	
	1.00		1.00	1.00		0.95	1.00		0.95	1.00	
3303	4239		3445	4307		3367	4220		3502	4320	
0.95	1.00		1.00	1.00		0.95	1.00		0.95	1.00	
	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
	415	282	430	345	140	20	892	225	390	1670	25
RTOR Reduction (vph) 0	8	0	0	23	0	0	56	0	0	_	0
ane Group Flow (vph) 60	909	0	430	427	0	20	1094	0	330	1694	0
%9	1%	4%	%/	1%	5%	4%	2%	4%	%0	2%	27%
Prot	A		Prot	A		Prot	A		Prot	¥	
7	4		က	∞		2	2		_	9	
Actuated Green, G (s) 6.6	25.0		17.8	36.2		6.3	42.5		21.5	27.7	
Effective Green, g (s) 7.6	26.0		18.8	37.2		7.3	43.5		22.5	58.7	
0	0.20		0.14	0.29		90.0	0.33		0.17	0.45	
4.0	7.5		4.0	7.5		4.0	7.7		4.0	7.7	
ehicle Extension (s) 3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
ane Gro Cap (vph) 193	847		498	1232		189	1412		909	1950	
0.02	c0.14		c0.12	0.10		0.01	0.26		c0.11	c0.39	
0.31	0.71		98.0	0.35		0.26	0.77		0.64	0.87	
58.7	48.5		54.3	36.8		28.8	38.9		20.0	32.2	
1.00	1.00		0.93	0.93		1.00	1.00		1.01	1.40	
ncremental Delay, d2 0.9	5.9		14.2	0.2		8.0	4.2		6.1	4.5	
29.6	51.4		64.7	34.3		59.5	43.1		52.6	49.4	
Ш	Ω		ш	ပ		ш	□		□	۵	
	52.1			48.6			43.8			20.0	
	Ω			۵			Ω			۵	
ntersection Summary											
HCM 2000 Control Delay		48.6	 	M 2000	HCM 2000 Level of Service	ervice		٥			
HCM 2000 Volume to Capacity ratio		0.82									
Actuated Cycle Length (s)		130.0	Su	Sum of lost time (s)	time (s)			19.2			
ntersection Capacity Utilization		83.0%	ಠ	U Level o	f Service			ш			
Analysis Period (min)		15									
Critical Lane Group											

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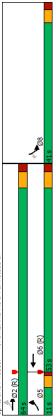
HCM Unsignalized Intersection Capacity Analysis 8: Site Dwy (South)/Site Dwy (North) & Etheridge Ave

2032 Future Total AM 01-12-2024

	4	†	<i>></i>	/	ţ	4	•	←	•	۶	→	•
Movement	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Volume (veh/h)	2	165	2	22	82	22	20	0	09	22	0	8
Future Volume (Veh/h)	2	165	2	52	82	52	20	0	09	22	0	8
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)	2	165	2	22	82	22	20	0	09	22	0	8
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			342	338	168	382	328	88
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	110			170			345	338	168	382	328	86
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 %	9			86			97	100	93	6	9	88
cM capacity (veh/h)	1493			1420			291	275	882	529	285	964
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	175	135	80	75								
Volume Left	2	22	20	22								
Volume Right	2	22	09	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	∢	∢	В	В								
Approach Delay (s)	0.2	7:	10.1	11.8								
Approach LOS			Ω	Ω								
Intersection Summary												
Average Delay			4.2									
Intersection Capacity Utilization	lon		36.0%	೦	U Level o	ICU Level of Service			∢			
Analysis Period (min)			15									

Timings 2032 Future Total AM 10: Britannia Rd & Farmstead Dr 01-12-2024

Splits and Phases: 10: Britannia Rd & Farmstead Dr



Britannia & RR25
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Queues 10: Britannia Rd & Farmstead Dr 01-12-2024

	١	Ť	ļ	٠	*	
Lane Group	EBL	EBT	WBT	SBL	SBR	
Lane Group Flow (vph)	8	029	420	06	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)	9.0	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	295	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						

HCM Signalized Intersection Capacity Analysis 10: Britannia Rd & Farmstead Dr

2032 Future Total AM 01-12-2024

	→ → EBT EBT	↑ WBT	→ WBR	JBS ◆	SBR	
← ≈	+ 029	4 ↑↑ 5	25	- 6	*- 9	
	670	395	22	6	300	
1900 19	1900	1900	1900	1900	1900	
	. 8	*0.80		6.	.00	
	1.00	0.99		1.00	0.85	
	8	1.00		0.95	1.00	
	2 2	4203		1703	1538	
787	3 5	4203		1703	1538	
	8	1.00	1.00	100	100	
20 6	029	395	52	6	8	
	0	က	0	0	27	
20 670	0	417	0	6	က	
	3%	%8	%0	%9	2%	
pm+pt \	Ϋ́	ΑN		Prot	Perm	
	7	9		∞		
2					œ	
83.5 83.5		7.97		8.6	8.6	
	2	7.77		10.8	10.8	
	0	0.74		0.10	0.10	
	6.4	6.4		5.3	5.3	
	3.0	3.0		3.0	3.0	
664 3562	32	3110		175	158	
0.00	2	0.10		c0.05		
					0.00	
	0.19	0.13		0.51	0.02	
	2.4	3.9		44.6	42.3	
1.00	1.00	1:00		1.00	1.00	
	0.1	0.1		2.5	0.0	
	2.5	4.0		47.2	45.4	
4	⋖	⋖		Δ	۵	
2	2.5	4.0		46.0		
	⋖	⋖		۵		
		7.2	ľ	3M 2000	HCM 2000 Level of Service	ervice A
HCM 2000 Volume to Capacity ratio		0.23				
		105.0	S	Sum of lost time (s)	time (s)	12.7
		33.1%	ਹ	ICU Level of Service	f Service	A
		15				

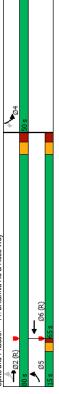
Synchro 11 Report Page 18 Britannia & RR25 BA Group - NHY

Timings 11: Britannia Rd & Rose Way

2032 Future Total AM 01-12-2024

•	SBR	¥.	75	75	Perm		4	4		10.0	43.0	20.0	38.5%	3.0	3.0	-1.0	2.0			None	11.8	60:0	0.35	16.3	0.0	16.3	В					4				Intersection LOS: A	ICU Level of Service A	
۶	SBL	r	22	22	Prot	4		4		10.0	43.0	20.0	38.5%	3.0	3.0	-1.0	2.0			None	11.8	0.09	0.34	61.1	0.0	61.1	ш	35.2	Ω			70	olait ol c			=	2	
ţ	WBT	4413	840	840	Ϋ́	9		9		20.0	29.0	65.0	20.0%	4.0	3.0	-1.0	0.9	Lag	Yes	C-Max	100.6	0.77	0.24	4.7	0.0	4.7	⋖	4.7	∢			TOWN	1 O.WD1,					
†	EBT	444	1005	1005	ΑN	7		2		20.0	29.0	80.0	61.5%	4.0	3.0	-1.0	0.9			C-Max	107.2	0.82	0.27	2.7	0.0	2.7	∢	2.7	∢			į.	בסור שונ					
1	EB	*	25	25	bm+pt	2	2	2		7.0	11.0	15.0	11.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	110.2	0.85	0.05	3.8	0.0	3.8	4					130	eu to pridse 2.	Coordinated		r: 7.2	lization 38.3%	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	SOT	Approach Delay	Approach LOS	Intersection Summary	Ovcle Length: 130	Actuated Cycle Length: 130	Oliset. O (0%), Neterieliced to priase z.c.b.i.c. and o.wb.i., start of oreeli Natural Cycle: 85	Control Type: Actuated-Coordinated	Maximim v/c Ratio: 0.35	Intersection Signal Delay: 7.2	Intersection Capacity Utilization 38.3%	Analysis Period (min) 15

Splits and Phases: 11: Britannia Rd & Rose Way



Synchro 11 Report Page 19 Britannia & RR25 BA Group - NHY

Queues 2032 Future Total AM 11: Britannia Rd & Rose Way 01-12:2024

	1	†	ţ	٠	•	
Lane Group	BB	EBT	WBT	SBL	SBR	
Lane Group Flow (vph)	25	1005	850	22	75	
v/c Ratio	0.05	0.27	0.24	0.34	0.35	
Control Delay	3.8	2.7	4.7	61.1	16.3	
Queue Delay	0.0	0.0	0.0	0.0	0:0	
Total Delay	3.8	2.7	4.7	61.1	16.3	
Queue Length 50th (m)	7.8	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	0.97		
Turn Bay Length (m)	20.0			20.0		
Base Capacity (vph)	222	3761	3523	624	809	
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	0.27	0.24	0.09	0.12	
Intersection Summary						

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis 11: Britannia Rd & Rose Way

2032 Future Total AM 01-12-2024

																																						٨		14.0	A		
•	SBR	¥.	75	75	1900	5.0	1.00	0.85	1.00	1615	1.00	1615	1.00	75	89	7	%0	Perm		4	10.8	11.8	0.09	0.9	3.0	146		0.00	0.05	54.0	1.00	0.1	54.1	O				HCM 2000 Level of Service		time (s)	of Service		
و م	WBR SBL	je.			1900 1900	2.0	1.00	1.00	0.95	1805	0.95	$\lceil \rceil$	1.00 1.00		0 0		%0 %0	Prot	4		10.8	11.8	0.09	0.9	3.0	163	c0:03		0.34	55.4	1.00	1.2	56.7	ш	55.2	ш		HCM 2000		Sum of lost time (s)	ICU Level of Service		
ţ	WBT	443			_	0.9	*			7		4	•	œ			%0	¥	9		98.0	99.0			3.0	3466	0.19		_				4		4.7	⋖		8.4	0.28	130.0	38.3%	15	
†	EBT	444		Ì	_		*			4		4		1005		=	%0	Z	2			_	_		3.0		c0.22		_		2.13		2	∢	5.6	∢							
1	EBL	-	25	25	1900	3.0	1.00	1.00	0.95	1805	0.27	515	1.00	25	0	25	%0	bm+pt	5	2	106.2	107.2	0.82	4.0	3.0	476	0.00	0.04	0.05	2.1	2.24	0.0	4.8	⋖				Á	apacity ratio	(s.	ilization		
	Movement	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Ideal Flow (vphpl)	Total Lost time (s)	Lane Util. Factor	Ē	Flt Protected	Satd. Flow (prot)	Flt Permitted	Satd. Flow (perm)	Peak-hour factor, PHF	Adj. Flow (vph)	RTOR Reduction (vph)	Lane Group Flow (vph)	Heavy Vehides (%)	Turn Type	Protected Phases	Permitted Phases	Actuated Green, G (s)	Effective Green, g (s)	Actuated g/C Ratio	Clearance Time (s)	Vehicle Extension (s)	Lane Grp Cap (vph)	v/s Ratio Prot	v/s Ratio Perm	v/c Ratio	Uniform Delay, d1	Progression Factor	Incremental Delay, d2	Delay (s)	Level of Service	Approach Delay (s)	Approach LOS	Intersection Summary	HCM 2000 Control Delay	HCM 2000 Volume to Capacity ratio	Actuated Cycle Length (s)	Intersection Capacity Utilization	Analysis Period (min)	c Critical Lane Group

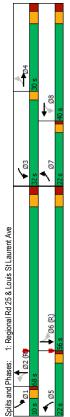
Britannia & RR25 BA Group - NHY

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Britannia & RR25 BA Group - NHY

2032 Future Total PM 01-12-2024 Timings 1: Regional Rd 25 & Louis St Laurent Ave

→	SBT	441	922	922	¥	9		9		20.0	32.2	26.0	40.0%	4.2	3.0	-1.0	6.2	Lag	Yes	C-Max	26.8	0.41	0.65	36.3	0.0	36.3	٥	36.2	٥									
٠	SBL	F	92	92	pm+pt	~	9	~		5.0	0.6	10.0	7.1%	3.0	1.0	-1.0	3.0	Lead	Yes	None	8.79	0.48	0.57	35.1	0.0	35.1	۵											ı
-	NBT	4413	1000	1000	Ä	7		7		20:0	32.2	0.89	48.6%	4.2	3.0	-1.0	6.2	Lag	Yes	C-Max	65.1	0.46	0.73	31.4	0.0	31.4	ပ	32.3	ပ								LOS: D	
•	NBL	K	220	220	pm+pt	2	2	2		2.0	0.6															38.5	٥						ireen				Intersection LOS: D	
ţ	WBT	₩	545					œ		10.0	30.0	40.0	28.6%	4.0	3.0	-1.0	0.9	Lag	Yes	None	32.2	0.23	0.74	55.3	0.0	55.3	ш	22.3	ш				Start of G				ī	
>	WBL	r	370	370	pm+pt	က	œ	က		10.0	14.0	32.0	22.9%	3.0	0.0	-1.0	5.0	Lead	Yes	None	55.9	0.40	98.0	55.3	0.0	55.3	ш						6:SBTL,					
†	EBT	₩	375		Ϋ́			4		10.0	30.0														0.0	66.4	ш	29.0	ш				BTL and					
4	EBL	je.	202	202	pm+pt	7	4	7		2.0															0.0	41.1	٥						phase 2:N		dinated		4.	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	S07	Approach Delay	Approach LOS	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	



Synchro 11 Report Page 1 Britannia & RR25 BA Group - NHY

Queues 1: Regional Rd 25 & Louis St Laurent Ave

2032 Future Total PM 01-12-2024

D	l	l	l	l	l	l	l	l	
	4	†	>	ţ	•	•	۶	→	
ane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	
ane Group Flow (vph)	205	200	370	610	220	1450	95	1150	
/c Ratio	0.67	0.84	98.0	0.74	0.74	0.73	0.57	0.65	
Sontrol Delay	41.1	66.4	55.3	55.3	38.5	31.4	35.1	36.3	
the Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
otal Delay	41.1	66.4	55.3	55.3	38.5	31.4	35.1	36.3	
Queue Length 50th (m)	39.3	2.69	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	#35.6	140.5	
nternal Link Dist (m)		126.1		117.1		481.0		113.5	
urn Bay Length (m)	0.06		35.0		65.0		80.0		
Base Capacity (vph)	333	620	468	898	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.

Synchro 11 Report Page 2 Britannia & RR25 BA Group - NHY

HCM Signalized Intersection Capacity Analysis 1: Regional Rd 25 & Louis St Laurent Ave

2032 Future Total PM 01-12-2024

Advancement EBL EBT	125 125 120 1.00 1.00 0 0 0 0 0 0 0 0 0 0 0 0 0 0	WBL 370 370 1900 1900 1900 1000 1100 1100 1100 11		WBR NBL 65 220 65 220 1900 1900 3.0 1.00 1.00 1.00 1.00 0.10 205 220 65 220 6 2 220 6 3 220 6 5 220 6 5 220 6 6 2 220 6 6 2 220 6 6 2 220 6 7 2 220 6 7 2 220 6 8 2 220 6 8 2 220 6 9 2 220 7 8 2 220 8 9 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	NBL NBL 2220	NBT 1000 11000 6.2 6.2 6.2 6.2 6.2 6.2 6.2 6.2 6.2 6.2	450 450 1900 1.00 4.50 0 0 5	SBL 95 95 95 95 100 1.00 1.00 1.00 1.00 0.95 0.08 0.08	SBT 955 955 955 955 955 955 955 955 955 95	195 195 1900 100 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
205 205 206 30 1,00 1,00 1,00 1,00 1,00 1,00 1,00 1	÷					1000 11000 6.2 6.2 0.39 1.00 1.00 1.100 1.100 1.394 6%	450 450 1900 1.00 450 0 0	95 95 95 3.0 1.00 1.00 1.00 1.00 1.00 1.00 1.00	955 955 1900 6.2 *0.80 1.00 1.00 4.286 1.00 4.286 1.00 955 1.134	195 195 100 195 0 0 0 0 0 0 5 5
205 205 30 30 1,00 1,00 1,00 1,00 1,00 2,95 1,00 2,05 2,05 2,05 2,05 2,05 2,05 2,05 2	-					1000 11900 6.2 6.2 0.39 1.00 1.00 1.100 1.100 1.39 1.39 1.394	450 450 1900 1,00 450 0 0	95 95 1900 3.0 1.00 1.00 1.00 1.00 1.00 1.00 1.0	955 1900 6.2 6.2 7.00 1.00 1.00 4.286 1.00 4.286 1.00 955 1.134	195
1900 3 0 100 1,00 1,00 1,00 1,00 1,00 1,00 1,0						1000 6.2 6.2 6.2 0.39 1.00 1.00 1.10 1.00 1.39 1.39 6%	1900 1000 1000 450 0	95 1900 3.0 3.0 1.00 1.00 1.00 1.00 1.00 1.00	955 1900 6.2 1.00 1.00 0.37 1.00 4286 1.00 955 1134	1950 1.00 1.00 0 0 0 0 0 0 0 0 0 0 0 0 0 0
1900 3.0 1.00 1.00 1.00 1.00 1.00 1.00 1.0						1900 6.2 6.2 0.39 1.00 1.00 4.13 1.00 1.00 56 6%	1.00 450 0 0	3.0 3.0 1.00 1.00 1.00 1.00 1.00 1.00 1.	1900 6.2 10.80 1.00 1.00 0.37 1.00 4286 1.00 955 16	1900
3.0 1.00 1.00 1.00 1.00 0.95 1.00 0.27 0.27 0.27 2.05 2.05 2.05 2.05 2.05 2.05 2.05 2.05				<u> </u>		6.2 0.99 1.00 0.95 1.00 4136 1.00 1.00 56 56 6%	1.00 450 0 0 5	3.0 1.00 1.00 1.00 1.00 0.95 1805 0.08	6.2 *0.80 1.00 1.00 1.00 4.286 1.00 4.286 1.00	195 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
1.00 1.00 1.00 1.00 1.00 0.27 4.96 4.96 1.00 2.05 5.5 5.5 6.7 7.7						0.80 0.99 1.00 0.95 1.00 4136 1.00 1.00 56 56 6%	1.00 450 0 0	1.00 1.00 1.00 1.00 1.00 0.08 1.00 1.00	*0.80 1.00 1.00 1.00 4.286 1.00 4.286 1.00 9.55 1.10	195
1.00 1.00 1.00 1.00 1.00 1.00 1.00 2.05 2.05 2.05 2.05 2.05 2.05 2.05 2				<u> </u>		0.99 1.00 0.95 1.00 1.00 1.00 1.00 1.394 6%	1.00 450 0 0	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 0.97 1.00 4286 1.00 4286 1.00 955 16	1.00 195 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
1.00 1.00 0.95 1.768 1.768 1.00 2.02 2.05 2.05 5.5 5.7 7.7				<u> </u>		1.00 0.95 1.00 1.00 4136 1.00 1.00 1.00 56 6%	1.00 450 0 0 0	1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00 0.97 1.00 4286 1.00 4286 1.00 955 16	1.00
100 1095 1768 1768 0.27 496 100 205 0 205 0 205 5 5 5 5 7 7						0.95 1.00 4136 1.00 1.00 56 1394 6%	1.00 450 0 0 0	1.00 0.95 1805 0.08 155	0.97 1.00 4286 1.00 4286 1.00 955 16	195 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0.98 0.27 496 1.00 205 0 205 5 5 5 5 7 7						1.00 1.00 4136 1.00 1.00 1.00 56 1394	1.00 450 0 0 0	0.95 1805 0.08 155	1.00 4286 1.00 4286 1.00 955 16	100 195 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
1768 0.27 496 1.00 205 0 0 205 5 5 5 5 7						4136 1.00 4136 1.00 1000 56 1394 6%	1.00 450 0 0 0	1805 0.08 155 1.00	4286 1.00 4286 1.00 955 16 1134	195
0.27 496 1.00 205 0 205 5 5 5 5 7				مَ ا		1.00 1.00 1.00 56 56 1394 6%	1.00 450 0 0 0	155	1.00 4286 1.00 955 16 1134	195
205 205 206 206 207 207 207 207 207 207 207 207 207 207				٥		1.00 1.00 1.00 56 56 1394 6%	1.00 450 0 0 5	155	4286 1.00 955 16 1134	1.00 1.00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
1.00 205 205 0 206 5 5 2% pm+pt		1.00 370 0 370 5 0% pm+pt		٥		1.00 1000 56 1394 6%	1.00 450 0 0 5	1.00	1.00 955 16 1134	1.00 195 0 0 0 5
205 0 0 205 5 2% pm+pt		370 0 370 5 0% pm+pt		E E		1000 56 1394 6%	450 0 0 5	,	955 16 1134	195
205		370 370 5 0% pm+pt 3		mg mg		56 1394 6%	0 0 0	92	1134	0 0 0
(vph) 205 . 5 . 5 . 5 . 5 . 5 . 5 . 5 . 5 . 5 .		370 5 0% pm+pt 3		mg mg		1394	2 0	0	1134	0%2
5 5 pm+pt 7		5 0% pm+pt 3		E.	2	%9	2	92		0%
b) 2% pm+pt 7		0% pm+pt 3		튭		%9		2		%
pm+pt 7		pm+pt 3	Š	-md	1%		%	%0	4%	
7		က	ĭ		₽	ΑĀ		pm+pt	≨	
Amilton Dhacae			œ		2	7		~	9	
4		∞			2			9		
38.1		50.9	31.2	7.	74.9	4.1		62.6	22.8	
s) 40.1		51.9	32.2	75	75.9	65.1		64.6	26.8	
0.29		0.37	0.23	Ö	0.54	0.46		0.46	0.41	
		3.0	7.0	7	4.0	7.2		4.0	7.2	
		3.0	3.0			3.0		3.0	3.0	
(vph) 293		419	813	2	583	1923		163	1738	
		c0.17	0.17	6		0.34		0.03	0.26	
		0.16		0	c0.32			0.24		
0.70		0.88	0.74	0	0.75	0.73		0.58	0.65	
40.7		38.1	20.0	22	25.1	30.2		24.5	33.6	
		1.00	1.00	-	1.00	1.00		1.00	1.00	
ncremental Delay, d2 7.1 10.0		19.2	3.7	¥	10.3	2.4		5.2	6:	
Delay (s) 47.8 66.4		57.3	53.7	**	35.4	32.6		29.7	35.5	
evel of Service D E		ш	Ω		۵	ပ		ပ	Δ	
Approach Delay (s) 61.0			55.1			33.0			35.1	
pproach LOS E			ш			ပ			٥	
ntersection Summary										
HCM 2000 Control Delay	42.6	오	HCM 2000 Level of Service	vel of Servi	es		۵			
HCM 2000 Volume to Capacity ratio	0.81									
Actuated Cycle Length (s)	140.0	Sum	Sum of lost time (s)	e (s)			18.2			
ntersection Capacity Utilization	%9'.28	O	CU Level of Service	ervice			ш			
Analysis Period (min)	15									

Britannia & RR25 BA Group - NHY

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Timings 2: Regional Rd 25 & Whitlock Ave

2032 Future Total PM 01-12-2024

→	SBT	4413	1195	1195	ΝΑ	9		9		20.0	35.5	81.0	62.3%	4.2	2.3	-1.0	5.5	Lag	Yes	C-Max	91.1	0.70	0.44	9.3	0:0	9.3	4	9.2	∢										
۶	SBL	*	9	09	pm+pt	-	9	-		7.0	11.0	11.0	8.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	101.9	0.78	0.27	6.2	0.0	6.2	∢												
←	NBT	441	1670	1670	₹	7		7		20.0	35.5	81.0	62.3%	4.2	2.3	-1.0	5.5	Lag	Yes	C-Max	93.3	0.72	0.55	6.2	0.0	6.2	∢	6.1	∢									O	
•	NBL	۳	90	90	pm+pt	2	2	2		7.0	11.0	11.0	8.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	102.6	0.79	0.30	3.5	0.0	3.5	∢										LOS: B	CU Level of Service C	
4	WBR	*	75	75	Perm		∞	∞		10.0	37.5	38.0	29.5%	3.3	3.2	-1.0	5.5			None	16.6	0.13	0.29	13.0	0.0	13.0	മ						of Green				ntersection LOS: B	U Level o	
ţ	WBT	+	40	40	Ϋ́	80		∞		10.0	37.5	38.0	29.5%	3.3	3.2	-1.0	5.5			None	16.6	0.13	0.17	20.0	0.0	20.0	_	30.2	ပ				IL, Start o				Ξ	೦	
>	WBL	۳	25	52	Perm		∞	∞		10.0	37.5	38.0	29.5%	3.3	3.2	-1.0	5.5			None	16.6	0.13	0.15	50.2	0.0	50.2	_						Ind 6:SB						
†	EBT	2	40	40	Ϋ́	4		4		10.0	37.5	38.0	29.5%	3.3	3.2	-1.0	5.5			None	16.6	0.13	0.32	31.8	0.0	31.8	ပ	52.0	_				2:NBTL a						
^	EBF	*	105	105	Perm		4	4		10.0	37.5	38.0	29.5%	3.3	3.2	-1.0	5.5			None	16.6	0.13	09:0	67.4	0.0	67.4	ш					0	ed to phase		ordinated		10.7	ation 66.3%	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	FOS	Approach Delay	Approach LOS	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 Capacity Utilization 66.3%	Analysis Period (min) 15

Splits and Phases: 2: Regional Rd 25 & Whitlock Ave



Britannia & RR25 BA Group - NHY

Queues 2: Regional Rd 25 & Whitlock Ave 01-12-2024

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	•	†	>	ţ	4	•	←	۶	→	
Lane Group	EBF	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	
Lane Group Flow (vph)	105	8	25	4	75	6	1710	99	1330	
v/c Ratio	09:0	0.32	0.15	0.17	0.29	0:30	0.55	0.27	0.44	
Control Delay	67.4	31.8	50.2	20.0	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	20.0	13.0	3.5	6.2	6.2	9.3	
Queue Length 50th (m)	27.2	10.6	6.1	8.6	0.0	1.6	26.8	5.6	29.7	
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)		67.9		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	22	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 Summany										
Intersection Summary										

Britannia & RR25
BA Group - NHY
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HCM Signalized Intersection Capacity Analysis 2: Regional Rd 25 & Whitlock Ave

2032 Future Total PM 01-12-2024

Movement EBI EBI EBI WBI	rations e (vph) hpi) te (s) cto	₩ 85 - 18	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
105 40 40 25 40 75 90 1670 40 60 1195 106 40 40 25 40 75 90 1670 40 60 1195 106 40 40 25 40 75 90 1670 40 60 1195 106 40 40 25 40 75 90 1670 40 60 1195 108 1900 1900 1900 1900 1900 1900 1900 1900 108 100 1900 1900 1900 1900 1900 1900 109 100 100 100 100 100 100 100 100 100 0.99 100 100 100 100 100 100 100 100 0.99 100 100 100 100 100 100 100 100 0.99 100 100 100 100 100 100 100 1776 1690 1795 100 100 100 100 100 100 1777 1690 1795 100 123 175 4229 177 4261 1777 1690 1790 1700 1700 100 100 100 100 1777 1690 1790 1790 1790 1700 100 100 1777 1690 1790 1790 1790 1700 100 100 1777 1690 1790 1790 1790 1700 100 100 1777 1690 1790 1790 1790 1700 1700 1700 1777 1690 1790 1790 1790 1700 1700 1777 1690 1790 1790 1790 1790 1700 1700 1777 1770 1770 1770 1770 1770 1770 1777 1770 1770 1770 1770 1770 1700 1777 1770 1770 1770 1770 1700 1777 1770 1770 1770 1770 1770 1777 1770 1770 1770 1770 1770 1777 1770 1770 1770 1770 1770 1770 1777 1770 1770 1770 1770 1770 1777 1770 1770 1770 1770 1770 1777 1770 1770 1770 1770 1770 1777 1770 1770 1770 1770 1770 1777 1770 1770 1770 1770 1770 1770 1777 1770 1770 1770 1770 1770 1770 1777 1770 1770 1770 1770 1770 1770 1777 1777 1770 1770 1770 1770 1770 1770 1770 1777 1777 1770 17	rations e (vph) hpl) hpl) e (s) ctor es es	55	•		ļ	4	١	¥	***		4		
105	e (vph) te (vph) thpl) te (s) te (s) e se	92	æ		r	-	_	-	441		-	₩.	
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1,00	es es	8	1.00		1.00	1.00	1.00	1.00	*0.80		1.00	*0.80	
1,00	Se	8	0.99		1.00	1.00	0.98	1.00	1.00		1.00	9:	
1,00		66	1.00		0.99	1.00	1.00	1.00	1.00		1.00	1.00	
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1367 1000 1000 1500			1699		1795	1900	1539	1787	4329		1770	4261	
1387 1699 1332 1900 1539 257 4329 151 4261 He 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 105 40 40 25 40 170 1.00 1.00 1.00 105 40 25 40 170 1.00 1.00 1.00 105 48 0 25 40 170 20 0 6 1324 105 48 0 25 40 170 20 0 6 1324 105 48 0 25 40 170 20 0 6 1324 106 126 156 156 156 156 156 150 0 0 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 10		73	1.00		0.70	1.00	1.00	0.14	1.00		0.08	1.00	
HF 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	,	29	1699		1332	1900	1539	257	4329		151	4261	
105		00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
ph) 0 32 0 0 65 0 1709 0 0 6 1324 6 1734 6 1324 6 1324 6 1324 6 1324 6 1324 6 1324 6 6 1324 6 6 1324 6 6 1324 6 6 1324 6 6 1324 6 6 1324 6 6 1324 6 6 1324 6 6 1324 6 6 1324 6 6 1324 6 6 1324 6 6 1324 6 6 1324 6 6 6 1324 6 6 6 1324 6 6 6 1324 6 6 6 1324 6 6 6 1324 6 6 6 6 1324 6 6 6 6 6 6 6 6 6		92	40	40	52	40	75	90	1670	40	09	1195	135
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Name		%	2%	%0	%0	%0	3%	1%	2%	%0	2%	%9	%0
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0.13 0.13 0.13 0.13 0.14 0.75 0.15 0.15 0.15 0.15 0.15 0.15 0.17 0.15 0.15 0.15 0.15 0.15 0.17 0.03 0.02 0.01 0.02 0.00 0.02 0.15 0.17 0.05 0.30 0.02 0.00 0.02 0.15 0.17 0.05 0.30 0.02 0.00 0.02 0.15 0.17 0.05 0.30 0.55 0.00 0.00 0.01 0.01 0.01 0.05 0.05 0.01 0.01 0.01 0.01 0.01 0.05 0.05 0.02 0.04 0.05 0.04 0.05 0.00 0.03 0.04 0.05 0.05 0.00 0.04 0.05 0.05 0.05 0.00 0.05 0.05 0.05 0.05 0.00 0.05 0.05 0.05 0.05 0.00 0.05 0.05 0.05 0.05 0.00 0.05 0.05 0.05 0.05 0.00 0.05 0.05 0.05 0.05 0.00 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0	s)	9.	16.6		9.91	16.6	16.6	100.9	92.5		67.6	91.0	
S		33	0.13		0.13	0.13	0.13	0.78	0.71		0.75	0.70	
174 216 170 242 196 298 3060 199 300		.5	6.5		6.5	6.5	6.5	4.0	6.5		4.0	6.5	
174 216 170 242 196 298 3080 199 0.03		0.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
0.03 0.02 0.02 0.02 0.02 0.03 0.02 0.02		74	216		170	242	196	298	3080		199	2982	
Column			0.03			0.02		c0.02	c0.39		0.02	0.31	
0.60 0.22 0.15 0.17 0.05 0.30 0.55 0.30 0.52 0.30 0.55 0.30 0.55 0.30 0.55 0.30 0.55 0.30 0.55 0.30 0.55 0.30 0.55 0.30 0.55 0.50 0.4 0.5 0.6 0.9 0.4 0.5 0.6 0.9 0.4 0.3 0.1 0.5 0.6 0.9 0.9 0.4 0.3 0.1 0.5 0.6 0.9 0.9 0.4 0.3 0.1 0.5 0.6 0.9 0.9 0.4 0.5 0.5 0.5 0.4 0.3 0.1 0.5 0.6 0.9 0.9 0.4 0.5 0.5 0.4 0.3 0.1 0.5 0.6 0.9 0.9 0.4 0.5 0.3 0.1 0.5 0.3 0.1 0.5 0.3 0.1 0.5 0.3 0.1 0.5 0.3 0.3 0.1 0.5 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3		80			0.02		0.01	0.21			0.21		
## Size \$6.9 \$6.4 \$6.5 \$4.8 \$4.4 \$8.9 \$5.8 \$6.9 \$6.4 \$6.5 \$4.0 \$6.4 \$6.5 \$6.0 \$6.0 \$6.0 \$6.0 \$6.0 \$6.0 \$6.0 \$6.0		8	0.22		0.15	0.17	0.05	0.30	0.55		0.30	0.4	
d2 1.00 1.00 1.00 1.00 1.00 6.3% 1.00 6.20 6.20 6.20 6.20 6.20 6.20 6.20 6		9.9	50.9		50.4	50.5	49.8	4.4	8.9		2.8	8.5	
d2 58 0.5 0.4 0.3 0.1 0.5 0.6 0.9 59.4 51.4 50.8 50.9 2.4 5.8 6.7 E 55.9 D D D A A A A A S 55.9 50.3 50.3 50.9 E 55.9 T		8	1.00		1.00	1.00	1.00	0.44	0.58		1.00	9:	
59.4 51.4 50.8 50.9 49.9 2.4 5.8 6.7 E D D D A A A A A A A A A A A A A A A A		80.	0.5		0.4	0.3	0.1	0.5	9.0		0.9	0.5	
### A A A A A A A A A A A A A A A A A A		4.	51.4		20.8	50.9	49.9	2.4	2.8		6.7	9.0	
55.9 50.3 5.6 E D A A Balay 11.3 HCM 2000 Level of Service 13.0 Sum of lost time (s) 14.0 Vulifization 15.0 Sum of lost time (s) 14.0 P Olitication 15.0 Sum of lost time (s) 14.0 P Olitication 15.0 Sum of lost time (s) 14.0 P Olitication 15.0 Sum of lost time (s) 14.0 P Olitication 15.0 Sum of lost time (s) 14.0 P Olitication 15.0 Sum of lost time (s) 14.0 Sum of lost time (s) 15.0 Sum of lost time (s) 16.0 Sum of lost time (s) 17.0 Sum of lost time (s) 18.0 Sum of lost time (s) 18.0 Sum of lost time (s) 19.0 Sum of lost time (s)	Level of Service	ш	۵		Ω	٥	۵	∢	∢		∢	∢	
11.3 HCM 2000 Level of Service 12.3 HCM 2000 Level of Service 0.55 Sum of lost time (s) 130.0 Sum of lost time (s) 130.1 Sum of lost time (s) 130.1 Sum of lost time (s) 130.1 Sum of lost time (s) 140.1 Sum of lost time (s) 150.1 Sum of lost time (s)	Approach Delay (s)		55.9			50.3			5.6			8.9	
11.3 HCM 2000 Level of Service 0.55 Sum of lost time (s) 2ation 66.3% ICU Level of Service 130.0	Approach LOS		ш			۵			∢			∢	
11.3 HCM 2000 Level of Service 0.55 Sum of lost time (s) 2ation 66.3% ICU Level of Service 130.0 130.0 120.0	Intersection Summary												
0.55 Sum of lost time (s) 130.0 Sum of lost time (s) zation 66.3% ICU Level of Service 15 1	HCM 2000 Control Delay			11.3	유	M 2000 I	evel of	Service		В			
h (s) 130.0 Sum of lost time (s) Utilization 66.3% ICU Level of Service	HCM 2000 Volume to Capacity ration	0		0.55									
Utilization 66.3% ICU Level of Service 15	Actuated Cycle Length (s)			130.0	Sur	m of lost	time (s)			14.0			
Analysis Period (min) 15	Intersection Capacity Utilization		_	36.3%	ರ	J Level o	f Service	_		ပ			
	Analysis Period (min)			15									

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HCM Unsignalized Intersection Capacity Analysis 2032 Future Total PM 3: Regional Rd 25 & Site Dwy (North)

																										SB3	292	0	20	1700	2.0	0.0					
*	SBR		20	20			1.00	20																		SB 2	484	0	0	1700	0.20	0.0					
→	SBT	4413	1210	1210	Free	%0	1.00	1210						None												SB 1	484	0	0	1700	0.20	0.0		0.0			
←	NBT	444	1800	1800	Free	%0	1.00	1800						None		193										NB3	009	0	0	1700	0.00	0.0					
•	NBL		0	0			1.00	0										1260		1260	4.1		2.2	100	226	NB 2	009	0	0	1700	0.00	0.0					
<i>></i>	EBR	R.	32	32			1.00	32										428		428	6.9		3.3	&	280	NB 1	009	0	0	1700	0.00	0.0		0.0			
4	EBL		0	0	Stop	%0	1.00	0									0.81	1835		1202	8.9		3.5	100	145	EB 1	35	0	8	280	0.00	11.6	а	11.6	В		
	Movement	Lane Configurations	Traffic Volume (veh/h)	Future Volume (Veh/h)	Sign Control	Grade	Peak Hour Factor	Hourly flow rate (vph)	Pedestrians	Lane Width (m)	Walking Speed (m/s)	Percent Blockage	Right tum flare (veh)	Median type	Median storage veh)	Upstream signal (m)	pX, platoon unblocked	vC, conflicting volume	vC1, stage 1 cont vol	vCu, unblocked vol	tC, single (s)	tC, 2 stage (s)	tF (s)	p0 queue free %	cM capacity (veh/h)	Direction, Lane #	Volume Total	Volume Left	Volume Right	cSH Veliment Centerity	Outline to Capacity	Control Delay (s)	Lane LOS	Approach Delay (s)	Approach LOS	Intersection Summary	

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Timings 5: Regional Rd 25 & Etheridge Ave/Collector Road

2032 Future Total PM 01-12-2024

	SBT	4₩	020	020	¥	9		9		20.0	38.4	0.0	.8%	4.2	2.2	-1.0	5.4	Lag	Yes	C-Max	83.5	.64	0.43	5.9	0.0	5.9	A	6.2	¥									
ء	SBL	_	55 1		pm+pt	_	9	-			11.0		8.5% 53				3.0			O	94.2			13.8	0:0	13.8	В										0	
←	NBT	444	1635	1635	≨	2		2		20.0	38.4	70.0	23.8%	4.2	2.2	-1.0	5.4	Lag	Yes	C-Max	88.9	0.68	0.57	9.7	0.0	9.7	∢	8.6	∢							LOS: A	CU Level of Service C	
•	NBL	<u>_</u>	195	195	pm+pt	2	2	2		7.0	11.0				1.0						100.3	0.77	0.54	16.8	0.0	16.8	В					t of Green	5			ntersection LOS: A	CU Level o	
ţ	WBT	2	0	0	¥	00		00		10.0	36.2				5.9						11.8		_		0.0	1.0	∢	31.6	ပ			RTI				= :	≚	
>	WBL	-	40	40	Perm		∞	00		10.0	36.2	37.0	28.5%	3.3	2.9	-1.0	5.2	Lag	Yes	None	11.8					62	ш					S. 9 Pue	2					
†	EBT	4	0	0	¥	4		4		10.0	36.2				2.9					None	21.4	0.16	0.11	9.0	0.0	9.0	4	39.7				2 - NRT						
4	BB	<i>y</i> -	125	125	pm+pt	7	4	7		7.0	11.0	12.0	9.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	23.6	0.18	0.52	53.8	0.0	53.8	٥					0 ced to phase	200	ordinated		9.8	ation 64.6%	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effet Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	SOT	Approach Delay	Approach LOS	Intersection Summary	Cycle Length: 130	Aduated Cycle Length: 130 Office: 1/3 (79%) Referenced to phase 2:NRTI and 6:SRTI Start of Green	Natural Cycle: 100	Control Type: Actuated-Coordinated	Maximum v/c Ratio: 0.57	Intersection Signal Delay: 9.8	Intersection Capacity Utilization 64.6%	Analysis Period (min) 15

Splits and Phases: 5: Regional Rd 25 & Etheridge Ave/Collector Road



Queues 5: Regional Rd 25 & Etheridge Ave/Collector Road 01-12-2024

	1	†	>	ţ	•	←	ၨ	-	
ane Group	BB	EBT	WBL	WBT	NBL	NBT	SBL	SBT	
ane Group Flow (vph)	125	45	40	40	195	1700	22	1190	
/c Ratio	0.52	0.11	0.32	0.14	0.54	0.57	0.26	0.43	
Sontrol Delay	53.8	9.0	62.2	1.0	16.8	9.7	13.8	5.9	
lueue Delay	0:0	0.0	0.0	0.0	0.0	0:0	0.0	0.0	
otal Delay	53.8	9.0	62.2	1.0	16.8	9.7	13.8	5.9	
Queue Length 50th (m)	29.6	0.0	10.4	0.0	13.0	27.7	2.4	2.99	
Jueue Length 95th (m)	48.0	0:0	22.4	0.0	m26.1	m68.3	8.9	79.5	
nternal Link Dist (m)		53.9		63.5		106.2		169.0	
urn Bay Length (m)	40.0		40.0		70.0		0.07		
Sase Capacity (vph)	241	654	338	518	360	2988	215	2778	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	
pillback Cap Reductn	0	0	0	0	0	0	0	0	
torage 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	
Hersection Summary									
islession seminary									

m Volume for 95th percentile queue is metered by upstream signal.

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Britannia & RR25 BA Group - NHY

HCM Signalized Intersection Capacity Analysis 5: Regional Rd 25 & Etheridge Ave/Collector Road

2032 Future Total PM 01-12-2024

0.43 12.1 0.45 0.5 5.9 81.2 82.2 0.63 6.4 3.0 2729 0.27 ₹ 8 1182 4% 55 55 3.0 3.0 11.00 0.95 0.08 151 1.00 55 0.08 89.1 89.1 0.69 4.0 3.0 191 0.02 0.29 8.4 2.35 0.8 pm+pt .00 65 0 65 900 ш 16.6 C 85.9 86.9 0.67 6.4 3.0 2918 c0.39 0.58 0.60 0.4 7.5 A 9.1 HCM 2000 Level of Service Sum of lost time (s) ICU Level of Service 40 0.02 55.7 1.00 0.1 55.8 E 57.7 8.8 9.8 0.08 6.2 3.0 121 0.00 8.8 9.8 9.8 0.08 6.2 3.0 45 45 1900 11.3 0.60 130.0 64.6% 00.1 45 0 0 0 0 21.6 22.6 0.17 6.2 3.0 280 0.00 HCM 2000 Control Delay
HCM 2000 Volume to Capacity ratio
Aduated Cycle Length (s)
Intersection Capacity Ulitzation
Analysis Period (min)
c Critical Lane Group 21.6 0.17 4.0 233 0.004 0.54 47.8 1.00 2.4 50.2 D Frit Fit Protected Satd. Flow (part) Fit Permitted Satd. Flow (perm) Adi. Flow (ph) RTOR Reduction (vph) Lane Group Flow (vph) Turn Type
Protected Phases
Permitted Phases
Actuated Green, G (s)
Effective Green, g (s)
Actuated Green, g (s)
Actuated g/C Ratio
Clearance Time (s)
Vehicle Extension (s)
Lane Grp Cap (vph)
WS Ratio Perm v/c Ratio Uniform Delay, d1 Progression Factor Incremental Delay, d2 Lane Configurations
Traffic Volume (vph)
Future Volume (vph)
Ideal Flow (vphpl)
Total Lost time (s)
Lane Util. Factor ntersection Summary Delay (s) Level of Service Approach Delay (s) Approach LOS Heavy Vehicles (%)

Britannia & RR25 Synchro 11 Report
BA Group - NHY Page 10

2032 Future Total PM 01-12-2024 HCM Unsignalized Intersection Capacity Analysis 6: Regional Rd 25 & Site Dwy (South)

																																							A
																										SB3	267	0	20	1700	0.16	0.0	0.0						
•	SBR		20	20			0.1	20																		SB 2	434	0	0	1700	0.26	0.0	0.0						Service
→	SBT	4413	1085	1085	Free	%0	1.00	1085						None		130										SB 1	434	0	0	1700	0.26	0.0	0.0		0.0				ICU Level of Service
←	NBT	444	1895	1895	Free	%0	1.00	1895						None		186										NB3	632	0	0	1200	0.37	0.0	0.0						2
•	NBL		0	0			1.00	0									0.83	1135		902	4.1		2.2	9	800	NB2	632	0	0	1700	0.37	0.0	0.0					0.1	39.9%
<i>></i>	EBR	¥.	8	4			0.1	4									0.89	38/		0	6.9		3.3	96	968	NB 1	632	0	0	1700	0.37	0.0	0:0		0:0				
4	EB		0	0	Stop	%0	1.00	0									69.0	1/42		0	8.9		3.5	9	707	EB 1	40	0	9	896	9.0	1.0	8.9	∢	8.9	∢			
	Movement	Lane Configurations	Traffic Volume (veh/h)	Future Volume (Veh/h)	Sign Control	Grade	Peak Hour Factor	Hourly flow rate (vph)	Pedestrians	Lane Width (m)	Walking Speed (m/s)	Percent Blockage	Right turn flare (veh)	Median type	Median storage veh)	Upstream signal (m)	pX, platoon unblocked	vC, conflicting volume	vC1, stage 1 conf vol	vCu, unblocked vol	tC, single (s)	tC, 2 stage (s)	tF (s)	p0 queue free %	cM capacity (veh/h)	Direction, Lane #	Volume Total	Volume Left	Volume Right	cSH	Volume to Capacity	Queue Length 95th (m)	Control Delay (s)	Lane LOS	Approach Delay (s)	Approach LOS	Intersection Summary	Average Delay	Intersection Capacity Utilization

Synchro 11 Report Page 11 Britannia & RR25 BA Group - NHY

Timings 7: Regional F

2032 Future Total PM	01-12-2024	
	al Rd 25 & Britannia Rd	

	LS LS	4	00	06	NA	9		9		0.	.7	0.	%	.2	κί	0.	6.7	Lag	Yes	ax ax	4.	15	84	છ.	0.0	8.	В	27.6	O									
→	SBL SB1	_	185 890	~	Prot	_		_			11.0 49.7		4	3.0 4.2	1.0		3.0			O	13.0 58.4		.53 0.48			74.7 18.3	ш	27										
-	NBT		1465		₹	2		2												_	60.7					44.4	۵	46.3	۵								OS: D	Service E
€	NBL	1	250	250	Prot	2		2		7.0	11.0	16.0													0:0	2.09	ш						Green				Intersection LOS: D	ICU Level of Service E
ţ	WBT	4413	200	200	Ϋ́	∞		œ		10.0	45.5	49.0	37.7%	4.2	3.3	-1.0	6.5	Lag	Yes	None	31.3	0.24	0.89dr	37.6	0.0	37.6	۵	59.3	ш				r, Start of				Ī	ੂ
/	WBL	E.	300	300	Prot	က		က		7.0	11.0	14.0								None	11.0	0.08	0.98	123.0	0.0	123.0	ш						and 6:SB1					
†	EBT	4413	320	320	¥	4		4		10.0	45.5	46.0	35.4%	4.2	3.3	-1.0	6.5	Lag	Yes	None	26.1	0.20	0.40	43.4	0.0	43.4	٥	45.6	_				e 2:NBT					
^	EBF	K.	22	20	Prot	7		7		7.0	11.0	11.0	8.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	8.0	90.0	0.25	61.4	0.0	61.4	ш						d to phas		dinated		_	on 86.2%
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	FOS	Approach Delay	Approach LOS	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 Capacity Utilization 86.2%

Splits and Phases: 7: Regional Rd 25 & Britannia Rd

100 **€** Ø3 07 * Ø6 (R) **√**

Synchro 11 Report Page 12 Britannia & RR25 BA Group - NHY

Queues 7: Regional Rd 25 & Britannia Rd

Queues 7: Regional Rd 25 & Britannia Rd	Britan	nia Rd							2032 Future Total PM 01-12-2024
	•	†	•	ţ	•	•	ၨ	→	
Lane Group	EBL	田田	WBL	WBT	B	NBT	SBL	SBT	
Lane Group Flow (vph)	20	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	2.09	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	2.09	44.4	74.7	18.3	
Queue Length 50th (m)	6.7	33.5	9.44	47.0	33.4	205.0	76.4	38.1	
Queue Length 95th (m)	13.7	42.4	#75.1	20.0	46.8	#280.5	40.3	44.6	
Internal Link Dist (m)		377.9		190.1		165.3		161.9	
Turn Bay Length (m)	0.09		120.0		90.0		0.06		
Base Capacity (vph)	203	1371	302	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	09.0	0.95	0.53	0.48	
Intersection Summary									

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.

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Britannia & RR25 BA Group - NHY

HCM Signalized Intersection Capacity Analysis 7: Regional Rd 25 & Britannia Rd

2032 Future Total PM 01-12-2024

	•	†	<i>></i>	>	ţ	4	•	←	•	۶	→	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	K.	443		K.	4413		F	4413		K.	4413	
Traffic Volume (vph)	20	320	40	300	200	380	250	1465	465	185	890	20
Future Volume (vph)	20	320	40	300	200	380	250	1465	465	185	830	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	
Ft	1.00	0.98		1.00	0.94		1.00	96.0		1.00	0.39	
Fit 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)	20	320	40	300	200	380	220	1465	465	185	830	20
RTOR Reduction (vph)	0	=	0	0	118	0	0	34	0	0	က	0
Lane Group Flow (vph)	20	349	0	300	762	0	220	1896	0	185	937	0
Heavy Vehides (%)	%9	%0	%0	7%	1%	1%	%0	3%	7%	1%	4%	%0
Turn Type	Prot	A		Prot	¥		Prot	¥		Prot	Ν	
Protected Phases	7	4		က	∞		2	7		_	9	
Permitted Phases												
Actuated Green, G (s)	9.5	25.9		10.0	30.3		14.3	58.9		12.0	9.99	
Effective Green, g (s)	9.9	56.9		11.0	31.3		15.3	59.9		13.0	9.75	
Actuated g/C Ratio	0.05	0.21		0.08	0.24		0.12	0.46		0.10	0.4	
Clearance Time (s)	4.0	7.5		4.0	7.5		4.0	7.7		4.0	7.7	
Vehide 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		80.00	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	96.0		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	8.0	
Delay (s)	60.5	44.6		124.7	45.9		57.0	47.1		6.07	17.6	
Level of Service	ш	۵		ш	Δ		ш	۵		ш	В	
Approach Delay (s)		46.5			63.7			48.3			26.4	
Approach LOS		۵			ш			۵			ပ	
Intersection Summary												
HCM 2000 Control Delay			46.8	ĭ	HCM 2000 Level of Service	evel of S	ervice		۵			
HCM 2000 Volume to Capacity ratio	y ratio		0.89									
Actuated Cycle Length (s)			130.0	Sn	Sum of lost time (s)	time (s)			19.2			
Intersection Capacity Utilization	L.		86.2%	೦	ICU Level of Service	f Service			ш			
Analysis Period (min)			15									
dr Defacto Right Lane. Recode with 1 though lane as a right lane.	ode with	1 though I	ane as a	right lane								

Britannia & RR25 BA Group - NHY

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis 2032 Future Total PM 8: Site Dwy (South)/Site Dwy (North) & Etheridge Ave

EBL EBT EBR WEL WBT WER NBL NBT NBR NBL NBT		•	†	<i>></i>	>	ţ	4	•	←	•	۶	→	•
10 100 10 85 175 75 15 0 35 15	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
10 100 10 85 175 75 15 0 35 0 95 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ane Configurations		4			4			4			4	
10 100 10 85 175 75 15 0 35 15 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	raffic Volume (veh/h)	10	100	10	82	175	75	15	0	35	35	0	10
Free Free Stop	-uture Volume (Veh/h)	9	9	9	8	175	22	5	0	32	32	0	9
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Sign Control		Free			Free			Stop			Stop	
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Srade		%0			%			%			%0	
None None None 78 175 75 15 0 35 10 10 10 10 10 10 10 10 10 10 10 10 10	Peak Hour Factor	1.00	1.00	9.	9.	1.00	0.1	0.1	1.00	1.00	1.00	1.00	1.00
None None 78 0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96	Hourly flow rate (vph)	9	100	9	82	175	75	15	0	35	35	0	9
None None 78 0.96 0.96 0.96 250 110 518 545 105 6.2 2.2 2.2 3.5 4.0 3.3 59 99 15 14 1493 455 105 105 108 131 1493 15 108 15 108 131 1493 16 108 15 10	Pedestrians												
None None 78 0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96	Lane Width (m)												
None None 78 0.96 0.96 0.96 0.96 250 110 518 545 105 6.2 2.2 2.2 3.5 4.0 3.3 99 94 97 100 96 103 131 1493 452 424 955 10 100 86 15 35 10 100 96 10 100 100 100 100 100 100 100 100 100	Walking Speed (m/s)												
None None 78 0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96	Percent Blockage												
None None 78 0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96	Right turn flare (veh)												
250 110 518 545 105 C C C C C C C C C C C C C C C C C C C	Median type		None			None							
202 110 518 545 105 105 250 110 518 545 105 250 110 518 545 105 105 202 110 480 508 105 4.1 7.1 6.5 6.2 2.2 3.5 4.0 3.3 3.9 9.9 94 97 100 96 1131 1493 50 45 105 100 10.0 6.0 10.0 10	Median storage veh)												
0.96 0.96 0.96 0.96 0.97 0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96	Jpstream signal (m)					28							
202 110 518 545 105 202 4.1 4.1 4.1 57.1 6.5 6.2 22 22 3.5 4.0 3.3 99 94 97 100 96 1331 1493 50 45 10 83 50 45 10 75 35 10 10 0.2 1.4 1.8 2.5 0,7 2.3 10.4 13.3 A A B B B 0,7 2.3 10.4 13.3 B B B 110 2.5 2.5 3.5 3.5 4.0 3.3 1493 716 477 15 35 10 4 13.3 A A B B B C A A B B B B C A A B B B B C A A B B B B C A A B B B B C A A B B B B B C A A B B B B B C A A B B B B B B C A A B B B B B B B B B B B B B B B B B	X, platoon unblocked	96.0						96.0	96.0		96.0	96.0	96.0
202	C, conflicting volume	250			110			518	545	105	545	512	212
202 110 480 508 105 4.1 4.1 7.1 6.5 6.2 2.2 2.2 3.5 4.0 3.3 99 94 97 100 96 1331 1493 452 424 965 10 86 15 35 10 10 86 15 35 10 1331 1493 76 45 10 0.01 0.06 0.07 0.09 10 0.0 0.07 0.09 10 0.7 2.3 10.4 13.3 2.6 A A B B B C.7 2.3 10.4 13.3 4 A A B B B C.7 2.3 10.4 13.3 5 C C C C C C C C C C C C C C C C C C C	C1, stage 1 conf vol												
2.2	C2, stage 2 conf vol												
4.1 4.1 7.1 6.5 6.2 2.2 2.2 3.5 4.0 3.3 6 99 94 97 100 96 Inhh) 1331 1493 85 42 424 955 # EB1 WB1 NB1 SB1 452 424 955 I 120 35 50 45 I 0 85 15 35 10 I 1331 1493 716 477 Sch 0.01 0.01 0.09 Sch 0.01 0.01 1.8 2.5 Sh A A B B B I wmary I mmary I mary I	Cu, unblocked vol	202			110			480	208	105	206	475	163
2 2 2 2 3.5 4.0 3.3 hr/s 1331 1493 452 424 955	C, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
6 99 22 22 3.5 4.0 3.3 (http://libration.com/disables) 8 12 22 3.5 4.0 3.3 (http://libration.com/disables) 8 12 1493 1493 1493 1493 1493 1493 1493 1493	C, 2 stage (s)												
Mary	F (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
Horiton Hamilton	0 dueue free %	66			ষ্ঠ			26	100	96	92	100	66
# EB1 WB1 NB1 SB1 120 335 50 45 10 85 15 35 10 85 15 35 10 85 15 35 10 85 15 35 10 87 16 47 1331 1493 716 477 25 10 4 13.3 26 10 0.07 0.09 27 2.3 10.4 13.3 28 10.4 13.3 29 25 20 0.7 2.3 10.4 13.3 20	M capacity (veh/h)	1331			1493			452	454	922	454	443	854
120 335 50 45 10 86 15 36 10 86 15 36 11 75 35 10 1331 175 37 10 1331 0.06 0.07 0.09 55th (m) 0.2 1.4 1.8 2.5 5) A A B B B Thmary (s) 0.7 2.3 10,4 13.3 Thmary 3.6 ICU Level of Service (min) 150 335 50 45 10 37.6% ICU Level of Service (min) 150 335 50 45 10 37.6% ICU Level of Service	irection Lane #	FB 1	WB 1	NB 1	SB								
10 85 15 35 10 10 10 10 10 10 10 10 10 10 10 10 10	/olume Total	120	335	20	45								
1331 1493 716 477 city 0.01 0.06 0.07 0.09 sibh (m) 0.2 1.4 1.8 2.5 s) A A B B B f(s) 0.7 2.3 10.4 13.3 f(s) 0.7 2.3 10.4 13.3 B B mmary 3.6 f(min) 15 3.7% ICU Level of Service	/olume Left	9	8	12	32								
city 0.01 0.06 0.07 0.09 Shi (m) 0.2 1.4 18 2.5 S) A A B B B Inmary 3.6 Interval of Service (min) 153 A A A B B B A A B B B A A B B B A A B B B A A B B B A A B B B A A B B B B	/olume Right	9	75	32	9								
acity 0.01 0.06 0.07 0.09 85th (m) 0.2 1.4 1.8 2.5 5) 0.7 2.3 10.4 13.3 7 (s) 0.7 2.3 10.4 13.3 B B Inmary 3.6 ICU Level of Service Imin 175	돐	1331	1493	716	477								
95th (m) 0.2 1.4 1.8 2.5 5) 0.7 2.3 10.4 13.3 7 2.3 10.4 13.3 7 2.3 10.4 13.3 8 B B mmary 3.6 ICU Level of Service (min) 15.6	/olume to Capacity	0.01	90:0	0.07	0.09								
s) 0.7 2.3 10.4 13.3 A A B B B Y(s) 0.7 2.3 10.4 13.3 mmary 3.6 mary 3.6 (min) 15.9	Queue Length 95th (m)	0.2	1.4	1.8	2.5								
(s) 0.7 2.3 10.4 13.3 mmary	Control Delay (s)	0.7	2.3	10.4	13.3								
/ (s) 0.7 2.3 10.4 13.3 B B B mnary 3.6 Front Level of Service frini) 15	ane LOS	⋖	∢	Ф	മ								
B B Timary 3.6 From ICU Level of Service frain 37.6% ICU Level of Service 15.00	Approach Delay (s)	0.7	2.3	10.4	13.3								
9 3.6 CU Level of Service 15 CO Level of Serv	pproach LOS			Ф	В								
3.6 Ulijzation 37.6% ICU Level of Service 15	ntersection Summary												
Utilization 37.6% ICU Level of Service	Average Delay			3.6									
	ntersection Capacity Utilizatio	Ē		37.6%	⊇	U Level o	f Service			∢			
	Analysis Period (min)			15									

Britannia & RR25
BA Group - NHY
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Timings 10: Britannia Rd & Farmstead Dr

2032 Future Total PM 01-12-2024

•	SBR	Y C.	20	20	Perm		8	8		10.0	15.3	41.0	39.0%	3.3	2.0	-1.0	4.3			None	11.4	0.11	0.10	18.6	0.0	18.6	В						een			Intersection LOS: A	ICU Level of Service A	
٠	SBL	<u></u>	22	22	Prot	∞		∞		10.0	15.3			3.3	2.0	-1.0	4.3			None	11.4	0.11	0.29	47.2	0.0	47.2	٥	39.6	۵				Start of Gr			Inte	ਹ	
ţ	WBT	441	720	720	Ϋ́	9		9		20.0	29.4	53.0	20.5%	4.2	2.2	-1.0	5.4	Lag	Yes	C-Max	83.6	0.80	0.23	4.1	0.0	4.1	V	4.1	∢				d 6:WBI,					
†	EBT	444	322	355	Ϋ́	2		2		20.0	29.4	64.0	61.0%	4.2	2.2	-1.0	5.4			C-Max	88.0				0.0	2.1	A	2.1	∢			i	EBIL an					
1	EBL	F	25	25	bm+pt	2	2	2		7.0	11.0	11.0	10.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	89.3	0.85	0.04	2.0	0.0	2.0	∢					1: 105	nced to phase 2	Poteniprood	J-Coolulliated	25 27. 5.6	Utilization 37.2%	15
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	SOT	Approach Delay	Approach LOS	Intersection Summary	Cycle Length: 105	Actuated Cycle Length: 105	Offset: 0 (0%), Referenced to phase 2:EB1L and 6:WB1, Start of Green	Control Type: On	Colling Type: Actuate	Maximum v/c Ratio: 0.29	Intersection Capacity Utilization 37.2%	Analysis Period (min) 15

Splits and Phases: 10: Britannia Rd & Farmstead Dr



Britannia & RR25
Syndtro 11 Report
BA Group - NHY
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2032 Future Total PM 01-12-2024 Queues 10: Britannia Rd & Farmstead Dr

555555555555555555555555555555555555555		5				
	•	†	ţ	٠	<i>*</i>	
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	1.1	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)	261	3822	3549	909	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						

Synchro 11 Report Page 17 Britannia & RR25 BA Group - NHY

HCM Signalized Intersection Capacity Analysis 10: Britannia Rd & Farmstead Dr

2032 Future Total PM 01-12-2024

•	SBR				_					Ì			_		18		%0	Perm					٥		3.0	144					_		43.6					HOIM 2000 Level of Service		Sum of lost time (s) 12.7	
) J	WBR SBL		80 55		1900 1900	4.3	1.00	1.00	0.95	1736	0.95	1736	1.00 1.00		0 0		0% 4%	Prot	8		8.4	9.4	60.0	5.3	3.0	155	c0.03		0.35	44.9	1.00	1.4	46.3	O	45.6 D		0000	HCIM 2000		Sum of lost time (s)	
†	T WBT	Γ.	5 720		_					7		4	_	72				Z	2 6						.0 3.0		8 c0.18		_		•		1.9 4.1		.9 A.1		i.	о 9.	0.24	105.0	
_T ^	EBL EBT	Γ.	25 355		1900 1900					7		1	1.00 1.00	25 355			0 %0		2		84.9 84.9				3.0 3.0		0.00 00.08		0.05 0.10		•		1.9		←				ity ratio		
	Movement	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Ideal Flow (vphpl)	Total Lost time (s)	Lane Util. Factor	Ŧ	Flt Protected	Satd. Flow (prot)	FIt Permitted	Satd. Flow (perm)	Peak-hour factor, PHF	Adj. Flow (vph)	RTOR Reduction (vph)	Lane Group Flow (vph)	Heavy Vehides (%)	Turn Type	Protected Phases	Permitted Phases	Actuated Green, G (s)	Effective Green, g (s)	Actuated g/C Ratio	Clearance Time (s)	Vehide Extension (s)	Lane Grp Cap (vph)	v/s Ratio Prot	v/s Ratio Perm	v/c Ratio	Uniform Delay, d1	Progression Factor	Incremental Delay, d2	Delay (s)	Level of Service	Approach Delay (s) Approach LOS	Interception Cummany	Intel secuoli Sullinially	HCIM 2000 CONTO Delay	HCM 2000 Volume to Capacity ratio	Actuated Cycle Length (s)	

Synchro 11 Report Page 18 Britannia & RR25 BA Group - NHY

Timings
Timings

11: Britannia Rd & Rose Way

11: Britannia Rd & Rose Way

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	^	†	Ļ	٠	`	
Lane Group	EBF	EBT	WBT	SBL	SBR	
Lane Configurations	*	+++	4413	*	R.	
Traffic Volume (vph)	8	890	1130	8	20	
Future Volume (vph)	8	830	1130	ස	20	
Turn Type	pm+pt	¥	Ϋ́	Prot	Perm	
Protected Phases	2	2	9	4		
Permitted Phases	2				4	
Detector Phase	2	5	9	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	
Total Split (%)	11.5%	61.5%	%0.09		38.5%	
Yellow Time (s)	3.0	4.0	4.0		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	0.9	0.9	2.0	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	28.7	18.8	
Queue Delay	0.0	0.0	0:0	0.0	0.0	
Total Delay	2.8	2.5	5.1	28.7	18.8	
ros	⋖	∢	⋖	ш	ш	
Approach Delay		2.5	5.1	33.8		
Approach LOS		∢	⋖	ပ		
Intersection Summary						
Cycle Length: 130						
Actuated Cycle Length: 130						
Offset 65 (50%), Referenced to phase 2:EBTL and 6:WBT, Start of Green	to phase	2:EBTL a	nd 6:WB	r, Start of	ireen	
Natural Cycle: 85						
Control Type: Actuated-Coordinated	inated					
Maximum v/c Ratio: 0.33						
Intersection Signal Delay: 5.0				重	Intersection LOS: A	
Intersection Capacity Utilization 49.8%	n 49.8%			⊇	ICU Level of Service A	
Analysis Period (min) 15						

Britannia & RR25
BA Group - NHY
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Queues 2032 Future Total PM 11: Britannia Rd & Rose Way 01-12-2024

	^	†	ţ	٠	*	
Lane Group	EBL	EBT	WBT	SBL	SBR	
Lane Group Flow (vph)	8	068	1190	30	50	
v/c Ratio	0.21	0.23	0.33	0.20	0.27	
Control Delay	2.8	5.5	5.1	28.7	18.8	
Queue Delay	0.0	0.0	0.0	0.0	0:0	
Total Delay	2.8	2.5	5.1	28.7	18.8	
Queue Length 50th (m)	5.6	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	97.6		
Turn Bay Length (m)	20.0			20.0		
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 05th perceptile allouis is motored by instructions	oli+	motoro	hymotra	apio mo		
III VOIDILIE IOI SORI PEICEII	ille drene	र गाहाताच	i ny upotit	dall oigh		

HCM Signalized Intersection Capacity Analysis 11: Britannia Rd & Rose Way

2032 Future Total PM 01-12-2024

	† 🛱	↑ WBY	√ WBR	→ ਲ	→ SBR	
	#	444		-	R.	
	830	1130	8	ළ ද	20	
	1900	1900	1900	1900	1900	
	0.9	0.9		2.0	5.0	
	%0.80	*0.80		1.00	1:00	
	1.00	0.99		1.00	0.85	
	1.00	1.00		0.95	1.00	
	4560	4526		1805	1615	
	0.1	1.00		0.95	1.00	
	4560	4526		1805	1615	
	9:	1.00	1:00	1:00	1.00	
	830	1130	9	8	20	
	0	2	0	0	47	
	890	1188	0	ၕ	ന	
	%0	%0	%0	%0	%0	
	¥	AN		Prot	Perm	
	7	9		4		
					4	
_	0.601	99.4		8.0	8.0	
_	110.0	100.4		9.0	0.6	
	0.85	0.77		0.07	20.0	
	7.0	7.0		0.9	0.9	
	3.0	3.0		3.0	3.0	
	3858	3495		124	111	
	c0.20	c0.26		c0.02		
					0.00	
	0.23	0.34		0.24	0.03	
	1.9	4.6		57.3	56.4	
	1.20	1.00		1.00	1.00	
	0.1	0.3		1.0	0.1	
	2.4	4.8		58.3	56.5	
	⋖	⋖		ш	ш	
	5.4	4.8		57.2		
	⋖	∢		ш		
		5.7	ľ	M 2000 I	HCM 2000 Level of Service	∢
		0.33				
		130.0	S	Sum of lost time (s)	time (s)	14.0
		49.8%	⊴	ICU Level of Service	Service	∢
		15				

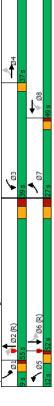
Britannia & RR25 BA Group - NHY Page 21

Timings 1: Regional Rd 25 & Louis St Laurent Ave

2037 Future Total AM ent Ave 01-12-2024

→	SBT	441	1285	1285	≨	9		9		20.0	32.2	52.0	37.1%	4.2	3.0	-1.0	6.2	Lag	Yes	C-Max	47.5	0.34	96.0	6.09	0.0	6.09	ш	29.8	ш										
۶	SBL	۴	65	65	pm+pt	_	9	Ψ		2.0	9.0	9.0	6.4%	3.0	1.0	-1.0	3.0	Lead	Yes	None	56.9	0.41	0.50	36.6	0.0	36.6	۵											L	
—	NBT	4413	1145	1145	₹	2		2		20.0	32.2	55.0	39.3%	4.2	3.0	-1.0	6.2	Lag	Yes	C-Max	52.2	0.37	0.94	53.7	0.0	53.7	0	53.4	۵								LOS: E	CU Level of Service F	
•	NBL	r	115	115	pm+pt	2	2	2		5.0	9.0	15.0	8.6%	3.0	1.0	-1.0	3.0	Lead	Yes	None	62.6	0.45	0.71	49.3	0.0	49.3	٥						Sreen				ntersection LOS: E	n Level o	
ţ	WBT	4 ₽	260	260	¥	∞		∞		10.0	30.0	49.0	32.0%	4.0	3.0	-1.0	0.9	Lag	Yes	None	46.6	0.33	0.57	40.1	0.0	40.1	٥	9.09	۵				Start of (≟ 9	2	
>	WBL	*	495	495	pm+pt	က	∞	ო		10.0	14.0	39.0	27.9%	3.0	0.0	-1.0	2.0	Lead	Yes	None	72.4	0.52	0.93	64.4	0.0	64.4	ш						6:SBTL,						
†	EBT	₽	535	535	Α̈́	4		4		10.0	30.0	37.0	26.4%	4.0	3.0	-1.0	0.9	Lag	Yes	None	31.0	0.22	0.94	6.07	0.0	70.9	ш	29.7	ш				VBTL and						
4	EB	*	270	270	pm+pt	7	4	7		2.0	0.6	27.0	19.3%	3.0	1.0	-1.0	3.0	Lead	Yes	None	52.7	0.38	0.65	29.5	0.0	29.5	ပ					0	to phase 2:h		ordinated		55.8	ation 99.0%	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	FOS	Approach Delay	Approach LOS	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 Capacity Utilization 99.0%	Analysis Period (min) 15

Splits and Phases: 1: Regional Rd 25 & Louis St Laurent Ave



2037 Future Total AM 01-12-2024 Queues 1: Regional Rd 25 & Louis St Laurent Ave

	4	†	>	ţ	•	•	۶	→	
Lane Group	EBF	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	96.0	
Control Delay	29.5	70.9	64.4	40.1	49.3	53.7	36.6	6.09	
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	6.09	
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	248	1120	<u>4</u>	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	06:0	0.57	0.70	0.94	0.50	96:0	

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.

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Britannia & RR25 BA Group - NHY

HCM Signalized Intersection Capacity Analysis 1: Regional Rd 25 & Louis St Laurent Ave

2037 Future Total AM 01-12-2024

` SBT 1285 1985 1986 1990 6.2 6.2 6.2 6.2 6.2 6.3 1.00 1.00 1.00 1.00 1.00 1.00 1.285 1285 5 1375 46.4 47.4 0.34 7.2 3.0 1432 0.32 0.96 1.00 16.0 61.3 % Y 65 65 65 3.0 1.00 1.00 1.00 0.95 1.00 1.00 65 65 50.4 0.37 4.0 3.0 113 0.02 0.19 0.58 33.6 1.00 6.9 2% pm+pt 335 335 0 3% 18.2 NBT 1145 1145 6.2 6.2 8 6.2 8 6.2 8 6.2 8 6.2 8 6.2 8 6.2 8 7 100 1.00 1.100 1.000 1 50.4 51.4 0.37 7.2 3.0 1524 c0.35 0.95 1.00 14.1 57.2 E E 56.4 % ₹ %9 58.4 59.4 0.42 4.0 3.0 160 0.26 0.72 31.8 1.00 14.3 46.1 HCM 2000 Level of Service Sum of lost time (s) ICU Level of Service 95 0 0 5 7% 95 0.57 38.4 1.00 0.6 39.0 D 51.2 ↑↑↑ 560 560 560 6.0 6.0 6.0 1.00 1.00 1.00 1.00 5427 1.00 5427 560 560 9 646 46.6 0.33 7.0 3.0 3.0 1140 0.19 % ₹ 67.4 68.4 0.49 3.0 3.0 524 0.22 0.24 41.3 1.00 26.0 67.3 2% 57.6 0.95 140.0 99.0% 195 195 1900 195 0 % 30.0 31.0 0.22 7.0 3.0 754 c0.21 535 535 535 1900 6.0 0.95 1.00 1.00 3406 1.00 1.00 1.00 26 535 535 % NA 0.93 1.00 1.00 71.8 E 62.9 2% HCM 2000 Control Delay HCM 2000 Volume to Capacity ratio ntersection Capacity Utilization Actuated Cycle Length (s) Traffic Volume (vph)
Traffic Volume (vph)
Meal Four Volume (vph)
Meal Fow (vpha)
Total Lost time (s)
Lane Vull Factor
Fig. ped/bikes
Fig. ped Permitted Phases
Actuated Green, G (s)
Effective Green, g (s)
Actuated g/C Ratio
Clearance Time (s)
Vehicle Extension (s)
Lane Gpp Cap (vph)
ws Ratio Prot
ws Ratio Prot ncremental Delay, d2 Approach Delay (s) Approach LOS Heavy Vehides (%) Turn Type Protected Phases Progression Factor Jniform Delay, d1 Delay (s) Level of Service v/c Ratio

Britannia & RR25 BA Group - NHY

Timings 2037 Future Total AM 2: Regional Rd 25 & Whitlock Ave

	4	†	•	ţ	4	•	-	۶	→	
Lane Group	EBL	EBT	WBL	WBT	WBR	图图	NBT	SBL	SBT	
Lane Configurations	*	£,	*	*	*	r	443	*	444	
Traffic Volume (vph)	145	20	20	32	92	45	1380	20	2125	
Future Volume (vph)	145	20	20	32	92	42	1380	20	2125	
Turn Type	Perm	ΑN	Perm	Α	Perm	pm+pt	ž	pm+pt	ΑN	
Protected Phases		4		∞		2	2	Ψ	9	
Permitted Phases	4		∞		∞	2		9		
Detector Phase	4	4	∞	∞	æ	2	5	Ψ	9	
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		81.0	
Total Split (%)	29.2%	29.2%	29.5%	29.5%	29.5%	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	
All-Red Time (s)	3.2	3.2	3.2	3.2	3.2	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	
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	Гag		Lag	
Lead-Lag Optimize?						Yes	Yes		Yes	
Recall Mode	None	None	None	None	None	None	C-Max		C-Max	
Act Effct Green (s)	20.4	20.4	20.4	20.4	20.4	28.7	89.7	28.7	9.68	
Actuated g/C Ratio	0.16	0.16	0.16	0.16	0.16	0.76	69.0	92.0	0.69	
v/c Ratio	69.0	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	2.7	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	2.7	16.7	
TOS SOT	ш	ပ	□	Ω	ш	ပ	∢	∢	Ф	
Approach Delay		49.2		29.2			7.4		16.4	
Approach LOS		Ω		ပ			∢		ш	
Intersection Summary										
Cycle Lenath: 130										
Actuated Cycle Length: 130										
Offset 64 (49%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	to phase	2:NBTL	Ind 6:SB1	L, Start o	of Green					
Natural Cycle: 105										
Control Type: Actuated-Coordinated	dinated									
Maximum v/c Ratio: 0.75										
Intersection Signal Delay: 16.1	_			₹	Intersection LOS: B	LOS: B				
Intersection Capacity Utilization 76.8%	%8.9½ uc			೦	ICU Level of Service D	f Service	۵			
Analysis Period (min) 15										

Splits and Phases: 2. Regional Rd 25 & Whitlock Ave

Britannia & RR25
BA Group - NHY
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Britannia & RR25 BA Group - NHY

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Queues 2: Regional Rd 25 & Whitlock Ave

2037 Future Total AM 01-12-2024

Intersection Summary
m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis 2: Regional Rd 25 & Whitlock Ave

2037 Future Total AM 01-12-2024

FBL EBT EBT WBL WBT WBR NBL NBT NBT								•				٠	
14 15 16 16 17 17 14 14 15 17 14 14 15 15 15 15 15 15	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
145 50 95 50 35 95 45 1380 10 50 2125 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 5	Lane Configurations	<u>,-</u>	æ		<u>,-</u>	*	¥	F	444		r	4413	
145 50 95 50 35 95 45 1380 10 50 2125 150 190 190 190 190 190 190 190 190 190 150 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 0.99 1.00 1.00 1.00 1.00 1.00 1.00 100 0.99 1.00 1.00 1.00 1.00 1.00 1.00 100 0.99 1.00 1.00 1.00 1.00 1.00 1.00 100 0.99 1.00 1.00 1.00 1.00 1.00 1.00 100 0.99 1.00 1.00 1.00 1.00 1.00 1.00 100 0.99 1.00 1.00 1.00 1.00 1.00 1.00 100 0.99 1.00 1.00 1.00 1.00 1.00 100 0.99 1.00 1.00 1.00 1.00 1.00 100 0.99 1.00 1.00 1.00 1.00 1.00 100 0.99 1.00 1.00 1.00 1.00 1.00 100 0.99 1.00 1.00 1.00 1.00 1.00 100 0.99 1.00 1.00 1.00 1.00 1.00 100 0.99 1.00 1.00 1.00 1.00 1.00 100 0.99 1.00 1.00 1.00 1.00 1.00 100 0.99 1.00 1.00 1.00 1.00 100 0.99 1.00 1.00 1.00 1.00 100 0.90 1.00 1.00 1.00 1.00 100 0.90 1.00 1.00 1.00 1.00 100 0.90 1.00 1.00 1.00 1.00 100 0.90 1.00 1.00 1.00 1.00 100 0.90 1.00 1.00 1.00 100 0.10 0.10 0.10 0.10 100 0.10 0.10 0.10 0.10 100 0.10 0.10 0.10 0.22 100 0.10 0.10 0.10 0.22 100 0.10 0.10 0.10 0.22 100 0.10 0.10 0.10 0.22 100 0.10 0.10 0.10 0.10 100 0.10 0.10 0.10 0.20 100 0.10 0.10 0.10 0.20 100 0.10 0.10 0.20 0.10 100 0.10 0.10 0.10 0.20 100 0.10 0.10 0.10 0.10 100 0.10 0.10 0.10 0.10 100 0.10 0.10 0.10 0.10 100 0.10 0.10 0.10 0.10 100 0.10 0.10 0.10 0.10 100 0.10 0.10 0.10 0.10 100 0.10 0.10 0.10 0.10 100 0.10 0.10 0.10 0.10 100 0.10 0.10 0.10 0.10	Traffic Volume (vph)	145	20	92	20	33	98	45	1380	10	20	2125	100
1900 1000 1000	Future Volume (vph)	145	20	92	20	32	92	45	1380	10	20	2125	100
55 55 55 55 55 30 55 1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,00 0,99 1,00 1,00 1,00 1,00 1,00 1,00 1,00 0,99 1,00 1,00 1,00 1,00 1,00 1,00 1,00 0,99 1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,00 0,99 1,00 1,00 1,00 1,00 1,00 1,00	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
1,00 1,00 1,00 1,00 1,00 1,00 0,08 1,00 0,08 1,00	Total Lost time (s)	5.5	5.5		5.5	5.5	5.5	3.0	5.5		3.0	5.5	
1,00 0.99 1,00	Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	*0.80		1.00	*0.80	
1.00 0.99 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.99 1.00 1.00 1.00 1.00 0.99 0.90	Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.98	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	
1333 1516 1727 1739 1455 1400 0.95 1.00 1.00 0.95 1.00 1.00 0.95 1.00 1.00 0.95	T.	1.00	06:0		1.00	1.00	0.85	1.00	1.00		1.00	0.99	
1725 1516 1727 1759 1455 1671 4292 1805 4310 100	Fit Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
1,00	Satd. Flow (prot)	1725	1516		1727	1759	1455	1671	4292		1805	4310	
1333 1516 966 1759 1455 79 4292 238 4310 1400 1400 1400 1400 1400 1400 1400 1400 1400 1400 1400 1400 1400 1400 1400 1400 1400 145 86 0 0 0 0 89 0 0 0 0 0 48 23% 1% 4% 8% 9% 8% 6% 25% 0% 5% 49 4 94 4 44 94 49 49	Flt Permitted	0.73	1.00		0.53	1.00	1.00	0.04	1.00		0.13	1.00	
1,00 1,00	Satd. Flow (perm)	1333	1516		965	1759	1455	79	4292		238	4310	
145 50 95 50 35 95 45 1380 10 50 2125 145 86 6 0 0 89 0 0 0 0 0 0 145 86 5 5 5 5 5 5 5 4	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
145 86 0 0 0 0 0 0 0 3 145 86 0 50 35 15 45 1390 0 0 0 0 2	Adj. Flow (vph)	145	20	92	20	32	92	45	1380	9	20	2125	100
145 86 0 50 35 15 45 1390 0 50 2222 4 5 5 5 5 5 5 5 4 7 8 8 8 8 8 8 8 8 8	RTOR Reduction (vph)	0	20	0	0	0	8	0	0	0	0	က	0
5 5 5 5 5 6 8% 6% 25% 6% 5% 4% 32% 1% 4% 8% 6% 25% 0% 5% Perm NA Perm Perm </td <td>Lane Group Flow (vph)</td> <td>145</td> <td>88</td> <td>0</td> <td>20</td> <td>35</td> <td>15</td> <td>45</td> <td>1390</td> <td>0</td> <td>20</td> <td>2222</td> <td>0</td>	Lane Group Flow (vph)	145	88	0	20	35	15	45	1390	0	20	2222	0
4% 32% 1% 4% 8% 9% 8% 6% 25% 0% 5% Perm NA	Confl. Peds. (#/hr)	2		2	2		2						
Perm NA Perm NA Perm Perm Perm Pm+pt NA pm+pt 4 4 8 8 2 2 1 4 8 8 2 2 1 4 8 8 2 2 1 194 194 194 936 879 936 104 204 204 204 204 966 889 966 104 0.16 0.16 0.16 0.74 0.68 889 966 204 204 204 204 204 966 866 <td>Heavy Vehicles (%)</td> <td>4%</td> <td>35%</td> <td>1%</td> <td>4%</td> <td>%</td> <td>%6</td> <td>%</td> <td>%9</td> <td>25%</td> <td>%0</td> <td>2%</td> <td>%</td>	Heavy Vehicles (%)	4%	35%	1%	4%	%	%6	%	%9	25%	%0	2%	%
4	Turn Type	Perm	NA		Perm	ΑN	Perm	pm+pt	Ν		pm+pt	¥	
4	Protected Phases		4			∞		2	2		Ψ-	9	
194 194 194 194 194 195 836 879 836 879 836 870 870 836 870 870 836 870 870 836 870 870 836 870 870 870 870 870 870 870 870 870 870	Permitted Phases	4			∞		∞	2			9		
204 20.4 20.4 20.4 20.4 95.6 88.9 95.6 0.16 0.16 0.16 0.16 0.16 0.14 0.05 0.16 0.16 0.16 0.16 0.14 0.05 0.20 2.37 151 2.76 2.28 140 2.935 2.56 0.06 0.36 0.02 0.02 0.01 0.06 0.36 0.33 0.13 0.07 0.02 0.07 0.08 0.33 0.13 0.07 0.32 0.14 0.08 0.36 0.33 0.13 0.07 0.32 0.01 0.09 0.30 0.10 1.00 1.00 2.23 0.04 0.09 1.3 0.2 0.1 1.2 0.5 0.04 0.10 0.10 0.10 0.22 0.14 0.10 0.10 0.10 0.22 0.14 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.10	Actuated Green, G (s)	19.4	19.4		19.4	19.4	19.4	93.6	87.9		93.6	87.9	
0.16 0.16 0.16 0.16 0.16 0.16 0.74 0.68 0.74 0.68 0.74 0.68 0.75 0.65 6.5 6.5 6.5 6.5 6.5 4.0 6.5 4.0 6.5 4.0 6.5 4.0 6.5 4.0 6.5 4.0 6.5 4.0 6.5 4.0 6.5 4.0 6.5 4.0 6.5 4.0 6.5 4.0 6.5 4.0 6.5 4.0 6.5 4.0 6.5 4.0 6.2 4.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6	Effective Green, g (s)	20.4	20.4		20.4	20.4	20.4	92.6	88.9		92.6	88.9	
6.5 6.5 6.5 6.5 6.5 6.5 4.0 6.5 4.0 203 3.0 3.0 3.0 3.0 3.0 203 2.0 3.0 3.0 3.0 3.0 203 0.06 0.02 0.02 0.02 0.06 0.08 0.01 0.07 0.02 0.08 0.08 0.01 0.07 0.02 0.09 0.08 0.01 0.07 0.02 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00	Actuated g/C Ratio	0.16	0.16		0.16	0.16	0.16	0.74	0.68		0.74	0.68	
Sign	Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	4.0	6.5		4.0	6.5	
209 237 151 276 228 140 2935 255 2 0.06 0.06 0.05 0.02 0.02 0.01 of 0.07 0.05 0.05 0.00 0.01 0.02 0.01 of 0.08 0.36 0.33 0.13 0.07 0.32 0.47 0.20 0 1.00 1.00 1.00 1.00 1.00 2.23 0.61 1.00 0.4 0.9 1.3 0.2 0.1 1.2 0.5 0.4 0.9 1.3 0.2 0.1 0.5 0.5 0.4 0.9 1.3 0.2 0.1 0.5 0.5 0.4 0.9 1.3 0.2 0.1 0.2 0.5 0.4 0.9 1.3 0.2 0.1 0.5 0.5 0.4 0.1 0.0 0.7 0.0 0.70 0.4 0.1 0.0 0.72 0.00 0.00	Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
0.06 0.02 0.02 0.01 or	Lane Grp Cap (vph)	508	237		151	276	228	140	2935		255	2947	
Columbia	v/s Ratio Prot		90.0			0.02		c0.02	0.32		0.01	c0.52	
0 69 0 36 0 33 0 13 0 07 0 32 0 47 0 20 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	v/s Ratio Perm	00.11			0.05		0.01	0.22			0.13		
518 490 48.7 47.1 46.7 130 96 5.6 10.0 1.00 1.00 1.00 1.00 1.00 2.23 0.61 1.00 1.00 1.00 1.00 2.23 0.61 1.00 1.00 1.00 1.00 1.00 2.23 0.61 1.00 1.00 1.00 1.00 1.00 1.00 1.00	v/c Ratio	0.69	0.36		0.33	0.13	0.07	0.32	0.47		0.20	0.75	
1.00 1.00 1.00 1.00 1.00 2.23 0.61 1.00 1.00 2.23 0.61 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Uniform Delay, d1	51.8	49.0		48.7	47.1	46.7	13.0	9.6		9.9	13.4	
d2 96 0.9 1.3 0.2 0.1 1.2 0.5 0.4	Progression Factor	1.00	1.00		1.00	1.00	1.00	2.23	0.61		1.00	1.00	
61.4 49.9 50.0 47.3 46.8 30.1 6.4 6.0 E D D D D C A A A A A 55.7 47.8 7.1 E D D D D C A A A A A A A A A A A A A A A	Incremental Delay, d2	9.6	6.0		1.3	0.2	0.1	1.2	0.5		0.4	1.8	
E D D D C A A A 15	Delay (s)	61.4	49.9		20.0	47.3	46.8	30.1	6.4		0.9	15.3	
### 7.1 E	Level of Service	ш	□		□	□	۵	ပ	⋖		⋖	В	
E D D A	Approach Delay (s)		22.7			47.8			7.1			15.1	
16.6 HCM 2000 Level of Service 0.72 13.0 Sum of lost time (s) 76.8% ICU Level of Service	Approach LOS		ш			□			∢			Ф	
16.6 HCM 2000 Level of Service 0.72 3.00 Sum of lost time (s) 76.8% ICU Level of Service	Intersection Summary												
0.72 130 Sum of lost time (s) 76.8% ICU Level of Service	HCM 2000 Control Delay			16.6	F	M 2000	level of	Service		В			
130.0 Sum of lost time (s) 76.8% ICU Level of Service	HCM 2000 Volume to Capa	city ratio		0.72									
zation 76.8% ICU Level of Service	Actuated Cycle Length (s)			130.0	S	m of lost	time (s)			14.0			
À	Intersection Capacity Utiliza	tion		%8.9/	0	U Level o	f Service			۵			
	Analysis Period (min)			7.									

Britannia & RR25 BA Group - NHY

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HCM Unsignalized Intersection Capacity Analysis 3: Regional Rd 25 & Site Dwy (North)

2037 Future Total AM 01-12-2024

	1	<i>></i>	•	←	→	•	
Movement	EB	EBR	NBL	NBT	SBT	SBR	
Lane Configurations		*		444	4413		
Traffic Volume (veh/h)	0	09	0	1435	2255	15	
Future Volume (Veh/h)	0	09	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	09	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)	8.9	6.9	4.1				
tC, 2 stage (s)							
fF(s)	3.5	3.3	2.2				
po queue free %	9	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	09	478	478	478	905	905	466
Volume Left	0	0	0	0	0	0	0
Volume Right	9	0	0	0	0	0	15
SH	323	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	ပ						
Approach Delay (s)	17.3	0.0			0.0		
Approach LOS	ပ						
Intersection Summary							
Average Delay			0.3				
Intersection Capacity Utilization	tion		54.3%	೨	ICU Level of Service	f Service	¥
Analysis Period (min)			15				

Timings 2037 Future Total AM 5: Regional Rd 25 & Etheridge Ave/Collector Road 01-12-2024

→	SBT	441	2220	2220	Ϋ́	9		ဖ		20.0	38.4	70.0	53.8%	4.2	2.2	-1.0	5.4	Lag	Yes	C-Max	6.98	0.67	0.79	10.4	0.0	10.4	മ	10.3	В										
۶	SBL	*	9	93	Perm		9	9		20.0	38.4	70.0	23.8%	4.2	2.2	-1.0	5.4	Lag				19.0	0.13	3.7	0.0	3.7	∢											۵	
←	NBT	441	1195	1195	Ϋ́	2		7		20.0	38.4	81.0	62.3%	4.2	2.2	-1.0	5.4			C-Max	96.3	0.74	0.38	2.3	0.0	2.3	∢	4.5	∢								LOS: B	CU Level of Service D	
•	NBL	<u>, </u>	2	2	pm+pt	2	2	2		7.0	11.0										28.7				0.0		۵						Green				Intersection LOS: B	U Level of	
ţ	WBT	2	0	0	Ϋ́	∞		∞		10.0	36.2														0:0		⋖	36.6	۵				, Start of				드	0	
>	WBL	*	65	92	Perm		∞	∞		10.0	36.2	37.0	28.5%	3.3	2.9	-1.0	5.2	Lag	Yes	None	13.5	0.10	0.47	65.8	0.0	65.8	ш						d 6:SBTL						
†	EBT	2	0	0	Ϋ́	4		4		10.0	36.2	49.0	37.7%	3.3	2.9	-1.0	5.2			None	23.1	0.18	0.25	6.9	0.0	6.9	∢	42.7	۵				NBTL an						
•	EBF	*	185	185	pm+pt	7	4	7		7.0	11.0	12.0	9.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	25.3	0.19	0.70	61.1	0.0	61.1	ш						phase 2:		dinated		Ŋ	on 79.3%	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	ros	Approach Delay	Approach LOS	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 Capacity Utilization 79.3%	Analysis Period (min) 15

Splits and Phases: 5: Regional Rd 25 & Etheridge Avel/Collector Road

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Queues 5: Regional Rd 25 & Etheridge Ave/Collector Road

	SBT	285	.79	0.4	0.0	0.4	2.2	1.9	5.3		2892	0	0	0	0.79	
→	SBL S				0:0				17	70.0		0	0	0	0.13 0	
←	NBT	1215	0.38	2.3	0.0	2.3	11.1	m15.6	108.9		3182	0	0	0	0.38	
•	NBL	20	0.41	42.9	0.0	42.9	6.7	m11.8		70.0	172	0	0	0	0.41	
ţ	WBT	22	0.21	2.0	0.0	2.0	0.0	0.7	63.1		473	0	0	0	0.12	
>	WBL	9	0.47	65.8	0.0	65.8	16.9	31.7		40.0	322	0	0	0	0.20	
†	EBT	92	0.25	6.9	0.0	6.9	0.0	11.0	53.9		617	0	0	0	0.15	
1	EBL	185	0.70	61.1	0.0	61.1	44.5	65.7		40.0	263	0	0	0	0.70	
	Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Queue Delay	Total Delay	Queue Length 50th (m)	Queue Length 95th (m)	Internal Link Dist (m)	Turn Bay Length (m)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio	

Intersection Summary m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis 2037 Future Total AM 5: Regional Rd 25 & Etheridge Ave/Collector Road 01-12-2024

Movement	`	t	>	-	,	/		-	Ĺ		•	r
185	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
188	rations	æ,		<u>_</u>	÷		jr.	4413		*	4413	
186 0 95 65 0 55 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		0	32	65	0	22	2	1195	20	30	2220	65
1900 1900 1900 1900 1900 1900 1900 1900		0	92	92	0	22	2	1195	50	30	2220	65
3.0 5.2 5.2 5.2 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.	_	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
1.00 0.85 1.00 0.85 0.95 1.00 0.85 0.95 1.00 0.85 1.00 0.85 1.00 0.85 1.00 0.85 1.00 0.85 1.00 0.85 1.00 0.85 1.00 0.85 1.00 0.95 1.00 0.70 0.70 0.70 0.70 0.70 0.70 0.70	(9	5.2		5.2	5.2		3.0	5.4		5.4	5.4	
1,00 0,85 1,00 0,85 1,00 0,85 1,00 0,95 1,00 0	1:00	0.1		0.0	1.00		1.00	*0.80		1.00	*0.80	
1787 1615		0.85		1.00	0.85		1.00	1.00		1.00	1.00	
1787 1615 1805 1615 1707 1615 1805 1615 1707 1007	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
National Color	1787	1615		1805	1615		1752	4295		1805	4323	
1076 1615 1321 1615 1615 1321 1615 1321 1615 1321 1615 1321 1615 1321 1615 1322 1323 1333 1233 13333 133333 133333 13333 13333 133333 133333 133333 133333 133333 13333	0.57	1.00		0.70	1.00		0.05	1.00		0.18	1.00	
F 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	1076	1615		1321	1615		84	4295		349	4323	
185 18 65 65 0 55 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
h) 185 18 0 65 5 0 0 1 185 18 0 65 5 5 0 0 1 18 0 65 5 5 0 0 0 18 0 0 18 0 0 18 0 0 18 0 0 18 0		0	32	92	0	22	2	1195	20	30	2220	65
h) 185 18 0 65 5 0 0 0 m		11	0	0	20	0	0	_	0	0	_	0
1% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0%		9	0	92	2	0	2	1214	0	30	2284	0
pm+pt NA Perm NA 8 8 8 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9		%0	%0	%0	%0	%0	3%	%9	%0	%0	2%	%9
7 4 8 8 8 4 4 8 8 8 5 23 23.3 10.5 10.5 24.3 24.3 11.5 11.5 11.5 24.3 24.3 11.5 11.5 11.5 4.0 6.2 6.2 6.2 3.0 3.0 3.0 3.0 3.0 0.03 0.01 11.6 14.2 0.05 0.01 0.00 0.07 0.01 0.00 2.54 3.0 0.06 0.08 0.05 0.09 0.09 2.54 3.0 0.06 0.09 0.00 2.54 3.0 0.00 2.54 3.0 0.00 2.54 3.0 0.00 2.55 0.00 2.55 0.00 2.56 0.00 2.57 0.00 2.58 0.00 2.50 0.00 2.5	ta+ma	Ą		Perm	Ā		pm+pt	ΑN		Perm	≨	
23.3		4			8		2	2			9	
23.3 23.3 10.5 10.5 10.5 10.5 10.5 10.5 10.5 10.5				œ			2			9		
24.3 24.3 115 115 0.19 0.19 0.09 0.09 4.0 6.2 6.2 6.2 3.0 3.0 3.0 3.0 3.0 0.05 0.01 116 142 0.08 0.01 0.05 0.00 0.08 0.05 0.05 0.09 1.00 0.15 0.00 1.00 2.54 3.5 56.8 54.2 1.00 0.1 6.1 0.1 6.1 0.1	23.3	23.3		10.5	10.5		¥.	₽. 1.		84.0	84.0	
0.19 0.19 0.09 0.09 4.0 6.2 6.2 6.2 3.0 3.0 3.0 3.0 3.0 254 301 116 142 0.05 0.01 0.05 0.08 0.01 0.00 0.79 0.66 0.03 0.79 0.66 0.03 0.79 0.66 0.03 0.79 0.66 0.03 0.79 0.66 0.03 0.79 0.66 0.03 0.79 0.66 0.03 0.79 0.66 0.03 0.79 0.66 0.03 0.79 0.66 0.03 0.79 0.66 0.03 0.79 0.66 0.03 0.79 0.66 0.03 0.79 0.66 0.03 0.79 0.79 0.66 0.03 0.79 0.70 0.66 0.03 0.79 0.70 0.70 0.00 0.00 0.00 0.79 0.70 0.70 0.00 0.00 0.00 0.00 0.79 0.70 0.70 0.00 0.00 0.00 0.00 0.00	24.3	24.3		11.5	11.5		95.1	95.1		85.0	85.0	
s) 4.0 6.2 6.2 6.2 7.2 7.2 6.2 6.2 6.2 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	0.19	0.19		0.09	60:0		0.73	0.73		0.65	0.65	
3.0 3.0 3.0 3.0 3.0 2.54 3.0 1.0 1.0 1.00 1.00 1.00 1.00 1.00 1.		6.2		6.2	6.2		4.0	6.4		6.4	6.4	
254 301 116 142 0.05 0.01 0.00 0.08 0.05 0.05 0.73 0.06 0.56 0.03 4.86 43.5 56.8 54.2 1.00 1.00 1.00 1.00 1.00 0.1 6.1 0.1 58.6 43.5 62.9 54.3 E D E D E 53.5 58.9 Recity ratio 0.79 12.9 HCM 2000 Level of Service 130.0 Sum of lost time (s) ration 79.3% ICU Level of Service 15.15		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
a0.05 0.01 0.00 0.00 0.00 0.00 0.00 0.00		301		116	142		152	3141		228	2826	
0.08 0.05 0.73 0.06 0.05 0.73 0.06 0.05 1.00 1.00 1.00 1.00 1.00 0.1 6.1 0.1 1.00 1.00 1.00 1.00 1.00 0.1 6.1 0.1 1.00 0.1 6.1 0.1 1.00 0.1 6.1 0.1 1.00 0.1 0.1 1.00 0.1 0.1 1.00 0.1 0.1 1.00 0.1 0.1 1.00 0.1 0.1 1.00 0.1 0.1 1.00 0.1 0.1 1.00 0.1 0.1 0.1 1.00 0.1 0.1 0.1 1.00 0.1 0.1 0.1 0.1 0.1 1.00 0.1 0.1 0.1 0.1 0.1 0.1 1.00 0.1 0.1 0.1 0.1 0.1 0.1 0.1 1.00 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1		0.01			0.00		c0.03	0.28			c0.53	
0.73 0.06 0.56 0.03 1.00 1.00 1.00 1.00 1.00 0.1 6.1 0.1 58.6 43.5 56.8 54.2 1.00 0.1 6.1 0.1 58.6 43.5 62.9 54.3 E D E D 53.5 58.9 D RAY 2000 Level of Service of Se	80.09			0.05			0.31			0.09		
48.6 43.5 56.8 54.2 1.00 1.00 1.00 1.00 0.1 6.1 0.1 88.6 43.5 62.9 54.3 E D E D E S8.9 53.5 88.9 E D E S8.9 C D E S8.9 E D C S8.9 E S8.9 C D E S8.9 E		90.0		0.56	0.03		0.46	0.39		0.13	0.81	
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00		43.5		56.8	54.2		19.2	6.5		8.5	16.5	
10.0 0.1 6.1 0.1 58.6 43.5 62.9 54.3 6 E D E D E S3.5 58.9 D E 58.9 E 12.9 HCM 2000 Level of Service of Servic		1.00		1.00	1.00		3.01	0.30		0.26	0.48	
58.6 43.5 62.9 54.3 E D E D 53.5 58.9 E D 12.9 HCM 2000 Level of Ser 12.9 HCM 2000 Level of Ser 13.0 Sum of lost time (s) ration 79.3% ICU Level of Service 15.15 Sum of lost time (s) 15.15 Sum of lost time (s) 15.15 Sum of lost time (s)	d2	0.1		6.1	0.1		1.3	0.2		0.8	6 .	
E 53.5 53.5 D 12.9 acity ratio 0.79 ration 79.3%		43.5		67.9	54.3		59.2	2.2		3.0	8.6	
53.5 D 12.9 acity ratio 0.79 130.0 ration 79.3%	ice	۵		ш	Ω		ш	⋖		∢	⋖	
12.9 12.9 0.79 130.0 130.0 ration 79.3%	lay (s)	53.5			58.9			5.3			9.7	
12.9 12.9 0.79 130.0 130.0 12.3%	S	۵			ш			⋖			⋖	
12.9 12.9 0.79 130.0 ration 79.3%	Summary											
acity ratio 0.79 130.0 ration 79.3%	ontrol Delay		12.9	오	M 2000 L	evel of S	ervice		۵			
130.0 zation 79.3% 15	olume to Capacity ratio		0.79									
Utilization 79.3%	le Length (s)		130.0	Sur	n of lost t	ime (s)			16.6			
	Sapacity Utilization	_	9.3%	ರ	J Level of	Service			۵			
	od (min)		15									
Critical Lane Group	ine Group											

Britannia & RR25
BA Group - NHY
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HCM Unsignalized Intersection Capacity Analysis 6: Regional Rd 25 & Site Dwy (South)

2037 Future Total AM 01-12-2024

Movement Lane Configurations Traffic Volume (veh/h) Future Volume (Veh/h)								
Lane Configurations Traffic Volume (veh/h) Future Volume (Veh/h)	BB	EBR	M M	NBT	SBT	SBR		
Traffic Volume (veh/h) Future Volume (Veh/h)		R.		444	4413			
Future Volume (Veh/h)	0	65	0	1285	2360	20		
	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	2/38	/6/	7380					
vC1, stage 1 conf vol								
vC2, stage 2 cont vol	•	c						
vCu, unblocked vol	0	0	10//					
tC, single (s)	8.9 9	6.9	4.1					
tC, 2 stage (s)								
(s)	3.5	3.3	2.2					
b0 queue free %	100	6	100					
cM capacity (veh/h)	763	929	406					
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	
Volume Total	92	428	428	428	944	944	492	
Volume Left	0	0	0	0	0	0	0	
Volume Right	99	0	0	0	0	0	20	
SZE	929	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	മ							
Approach Delay (s)	10.9	0.0			0.0			
Approach LOS	В							
Intersection Summary								
Average Delay			0.2					
Intersection Capacity Utilization	ation		26.7%	ੂ	ICU Level of Service	f Service		В
Analysis Period (min)			15					

2037 Future Total AM 01-12-2024 Timings 7: Regional Rd 25 & Britannia Rd

→	SBT	444	1980	1980	Ϋ́	9		9		20.0	49.7	51.0	39.5%	4.2	3.5	-1.0	6.7	Lag	Yes	C-Max	57.3	0.44	1.05	78.1	0.0	78.1	ш	75.0	ш											
۶	SBL	ř.	420	420	Prot	Ψ-		Ψ-		7.0	11.0	11.0	8.5%	3.0	1:0	-1.0	3.0	Lead	Yes	None	19.7	0.15	0.79	60.5	0.0	60.5	ш											IL.		
-	NBT	441	1070	1070	Ϋ́	7		2		20.0	49.7	51.0	39.5%	4.2	3.5	-1.0	6.7	Lag	Yes	C-Max	44.3	0.34	0.30	49.0	0.0	49.0	۵	49.5	Ω								LOS: E	ICU Level of Service F		
•	NBL	F	સ્ટ	22	Prot	ა		ည		7.0	11.0	11.0	8.5%	3.0	1.0								0.24		0.0	29.7	ш						Green				Intersection LOS: E	U Level o		
ţ	WBT	441	380	380	¥	∞		∞		10.0	45.5	46.0	35.4%	4.2	3.3	-1.0	6.5	Lag	Yes	None	39.8	0.31	0.39	29.5	0.0	29.5	ပ	51.2	۵				, Start of				ᆂ	ੂ	right lane	,
>	WBL	F	465	465	Prot	က		ო		7.0	11.0	22.0	16.9%	3.0	1.0	-1.0	3.0	Lead	Yes	None	19.0	0.15	0.92	75.9	0.0	75.9	ш						nd 6:SBT						ane as a	
†	EBT	441	455	455	¥	4		4		10.0	45.5	46.0	35.4%	4.2	3.3	-1.0	6.5	Lag	Yes	None	27.8	0.21	0.87dr	45.9	0:0	45.9	٥	47.0	۵				2:NBT a						though	
4	EBF	£	92	92	Prot	7		7		7.0	11.0	22.0	16.9%	3.0	1.0	-1.0	3.0	Lead	Yes	None	9.5	0.07	0.28	0.09	0.0	0.09	ш						to phase		inated		_	n 91.4%	ode with	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	ros	Approach Delay	Approach LOS	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 Capacity Utilization 91.4%	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

(↓⁸ **1 →** Ø7 **8**0 ↑ Ø5 V V Ø6 (R) Ø2 (R) 10

Synchro 11 Report Page 12 Britannia & RR25 BA Group - NHY

Queues 7: Regional Rd 25 & Britannia Rd

2037 Future Total AM 01-12-2024

	3T	05	05	3.1	0.0	3.1	6.7	7.4	9.1		20	0	0	0	1.05
†	SBT		1.05					#311	159.1		1907				⇌
۶	SBL	420	0.79	60.5	0.0	60.5	62.1	n#105.0		90.0	230	0	0	0	0.79
←	NBT	1315	06.0	49.0	0.0	49.0	136.9	#162.0 m#105.0	165.3		1463	0	0	0	06.0
•	NBL	22	0.24	29.7	0.0	29.7	7.4	14.3		0.06	229	0	0	0	0.24
ţ	WBT	530	0.39	29.5	0.0	29.5	45.3	55.8	182.4		1407	0	0	0	0.38
•	WBL	465	0.92	75.9	0.0	75.9	9.49	#97.3		120.0	203	0	0	0	0.92
†	EBT	770	0.87dr	45.9	0.0	45.9	70.3	83.0	377.9		1368	0	0	0	0.56
4	EBL	65	0.28	0.09	0.0	0.09	8.7	16.3		0.09	482	0	0	0	0.13
	Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Queue Delay	Total Delay	Queue Length 50th (m)	Queue Length 95th (m)	Internal Link Dist (m)	Turn Bay Length (m)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio

- Volume exceeds capacity, queue is theoretically infinite.
 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.
 Wolume for 95th percentile queue is metered by upstream signal.
 of Defacto Right Lane. Recode with 1 though lane as a right lane.

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HCM Signalized Intersection Capacity Analysis 7: Regional Rd 25 & Britannia Rd

2037 Future Total AM 01-12-2024

Movement EB EB WB WB WB WB NB NB NB NB NB NB SB SB SB SB SB SB SB SB SB S		1	†	/	>	ţ	1	•	←	•	۶	→	•
No. 1,	Movement	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
65 455 315 465 380 150 55 1070 245 420 1880 1900	Lane Configurations	£	441		K.	441		K.	4413		F	4413	
65 455 315 465 380 150 56 170 245 420 1800 1300	Traffic Volume (vph)	92	455	315	465	380	150	22	1070	245	420	1980	25
1900 1900	Future Volume (vph)	92	455	315	465	380	120	22	1070	245	420	1980	25
100 0.00 0	Ideal Flow (vpnpl)	0061	900	0061	008	900	0061	0081	0081	0061	300	0061	1900
1.00 0.94 1.00 0.96 1.00 0.97 1.00 1.00 0.98 1.00 0.95 1.00	Lane Util. Factor	0.97	*0.80		0.97	*0.80		0.97	*0.80		0.60	*0.80	
100 100	Ŧ	1.00	0.94		1:00	96:0		1.00	0.97		1.00	1.00	
3303 4238 3345 4311 3367 4229 3552 4323 (100 6)56 1100 (1)50	Fit Protected	0.95	1.00		1.00	1.00		0.95	1.00		0.95	1.00	
100 100	Satd. Flow (prot)	3303	4238		3445	4311		3367	4229		3502	4323	
5.35/3 4.248 3431 10 10	Fit Permitted	0.95	0.0		0.1	1.00		0.95	1.00		0.95	1.00	
100 100	Satd. Flow (perm)	3303	4238	5	C445	4311	5	330/	4779	5	2005	4323	00
1	Peak-hour factor, PHF	0.1	1.00	1.00	1.00 1.00	9.0	9.1	1.00	1.00	1.00	1.00	1.00	1.00 20
1	Adj. Flow (vpn)	8	00 S	<u>0</u>	co 4	000	2	8	0/0	C + 7	450	300	67
National Proof Nati	Lane Group Flow (vph)	- K	G 68	>	465	8 4	> <	o K	1202	o c	720	2007	> <
Prof. NA	Heavy Vehicles (%)	8 %	78	, %	82	1,5	%	4%	207	4%	%0	2004	27%
1	Turn Tyne	Prot	ΔN	2	Prot	ΔN	2	Prot	ΔN	2	Prot	ΝΔΝ	i
6.8 27.6 18.0 38.8 6.4 42.5 18.7 7.8 28.6 19.0 38.8 6.4 42.5 19.7 7.8 28.6 19.0 33.1 0.06 0.33 0.15 4.0 7.5 4.0 7.5 4.0 7.7 4.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 198 9.2 5.03 1.11 0.02 0.31 0.112 198 9.2 5.03 0.114 0.02 0.31 0.112 1.0 0.03 0.04 0.05 0.05 0.05 0.012 1.0 0.04 0.05 0.05 0.05 0.00 1.0 0.05 0.05 0.05 0.00 1.0 0.05 0.05 0.05 0.00 1.0 0.05 0.05 0.05 0.00 1.0 0.05 0.05 0.05 0.00 1.0 0.05 0.05 0.05 0.05 1.0 0.05 0.05 0.05 1.0 0.05 0.05 0.05 0.05 0.	Protected Phases	_	4		· m	∞		2	2		-	9	
6.8 27.6 18.0 38.8 6.4 42.5 18.7 18	Permitted Phases												
7.8 2.8.6 19.0 39.8 7.4 4.3.5 19.7 0.06 0.22 0.15 0.31 0.06 0.33 0.15 4.0 7.5 4.0 7.5 4.0 7.7 4.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 1.0 1.0 3.0 3.0 1.0 1.0 1.415 5.0 4.0 5.8 6.0.1 6.0.1 0.0.2 0.31 0.7 4.0 2.0 5.8 4.7.1 5.4.8 3.5.2 5.8.8 4.1.4 5.3.2 5.4 1.0 1.0 0.93 0.96 0.0 0.0 0.97 5.4 5.0 5.0 7.2 0.8 4.1.4 5.3.2 5.4 1.0 1.0 0.93 0.96 0.0 0.0 0.97 5.4 8.0 5.0 7.2 0.8 0.0 0.0 0.0 0.0 0.0	Actuated Green, G (s)	8.9	27.6		18.0	38.8		6.4	45.5		18.7	54.8	
0.06 0.22 0.15 0.31 0.06 0.33 0.15 4.0 7.5 4.0 7.5 4.0 7.7 4.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 4.0 1.0 0.02 6.0.1 6.0.13 0.11 0.02 0.31 6.0.12 6.0 1.0 1.0 1.0 1.0	Effective Green, g (s)	7.8	28.6		19.0	39.8		7.4	43.5		19.7	92.9	
4,0 7,5	Actuated g/C Ratio	90.0	0.22		0.15	0.31		90.0	0.33		0.15	0.43	
3.0 3.0 3.0 3.0 3.0 3.0 3.0 188 932 5.03 1319 1415 5.50 0.02 0.016 0.013 0.011 0.02 0.031 0.33 0.87ch 0.92 0.36 0.29 0.91 0.079 0.34 0.87ch 0.92 0.36 0.29 0.91 0.079 1.00 1.00 0.93 0.96 1.00 1.00 0.97 1.00 1.00 0.93 0.96 1.00 1.00 0.97 1.00 1.00 0.93 0.96 0.06 0.97 1.00 1.00 0.93 0.96 0.06 0.06 1.00 1.00 0.93 0.96 0.00 0.97 1.00 1.00 0.95 0.23 0.23 1.00 1.00 0.95 0.00 1.00 0.95 0.00 0.00 1.00 0.95 0.00 0.00 1.00 0.95 0.00 0.00 1.00 0.95 0.00 0.00 1.00 0.00 0.00 1.00 0.00 0.00 0.00 1.00 0	Clearance Time (s)	4.0	7.5		4.0	7.5		4.0	7.7		4.0	7.7	
198 932 503 1319 191 1415 530 0.02 c0.16 c0.13 0.11 0.02 0.31 0.12 c0.13 0.33 0.87dr 0.92 0.36 0.29 0.91 0.79 586 47.1 54.8 35.2 58.8 41.4 53.2 1.0 1.00 1.00 0.93 0.96 1.00 1.00 0.97 1.0 2.2 0.0 1.00 1.00 0.97 59.6 50.0 73.3 33.8 59.6 52.0 57.2 E D E C E D E C E D E C E D E C E D E C E D E E C E D E E D E E C E E D E E C E E D E E D E E C E E D E E C E E D E E C E E D E E E D E E C E E D E E C E E D E E C E E D E E C E E D E E D E E E D E E E D E E E D E E E D E E E D E E E D E E E D E E E D E E E D E E E D E E E D E E E D E E E D E E E D E E E D E E E D E E E D E E E D E E E	Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
0.02 c0.16 c0.13 0.11 0.02 0.31 c0.12 c 0.33 087dr 0.92 0.36 0.29 0.91 0.79 5.86 47.1 54.8 35.2 58.8 41.4 53.2 1.00 1.00 0.93 0.96 1.00 1.00 0.97 1.10 2.9 2.5 0.2 0.8 10.6 5.4 5.96 50.0 73.3 38.8 59.6 5.0 57.2 E D E C E D E 5.07 52.3 E D E 1.00 0.95 D HCM 2000 Level of Service E 1.00 0.95 Sum of lost time (s) 19.2 Dulization 15.0 HCM 2000 Level of Service F 1.50 Sum of lost time (s) 19.2 He (s) 14% ICM Level of Service F 1.50 Sum of lost time (s) 19.2 He (s) 14% ICM Level of Service F 1.50 C E C E D E 1.50 1.50 1.50 1.50 1.50 1.50 1.50 1.50	Lane Grp Cap (vph)	198	932		503	1319		191	1415		230	1855	
0.33 0.87dr 0.92 0.36 0.29 0.91 0.79 5.8.6 47.1 54.8 35.2 58.8 41.4 53.2 1.00 1.00 0.93 0.96 1.00 1.00 0.97 2.1 2.9 2.5.5 0.2 0.8 10.6 5.4 5.96 5.00 7.3 3.8 59.6 5.0 57.2 F D E C E D F Instance 67.7 HCM 2000 Level of Service E E C Instantor 130.0 Sum of lost time (s) 19.2 F Instantor 11.4% ICU Level of Service F F	v/s Ratio Prot	0.02	c0.16		c0.13	0.11		0.02	0.31		c0.12	c0.46	
0.33 0.87dr 0.92 0.36 0.29 0.91 0.79 5.86 47.1 5.48 3.52 5.88 41.4 5.3.2 1.00 1.00 0.93 0.96 1.00 1.00 0.97 2 1.0 2.9 22.5 0.2 0.8 10.6 5.4 5.96 5.00 73.3 3.8 5.96 5.20 5.7.2 E D E C E D D E E D D D D D E E C C C C C C C C C C C C C C C	v/s Ratio Perm												
58.6 47.1 54.8 35.2 56.8 41.4 53.2 1.00 1.00 0.93 0.96 1.00 1.00 0.97 1.0 2.2 0.8 0.8 0.8 0.90 0.97 1.0 2.2 0.8 0.8 0.8 0.8 0.97 5.9 50.0 73.3 33.8 59.6 52.0 57.2 E D E C E D E 50.7 52.3 52.3 52.3 1.0 5.0 HCM 2000 Level of Service E Capacity ratio 0.95 Sum of lost time (s) 19.2 1.1 0.0 Sum of lost time (s) 19.2 1.2 15.	v/c Ratio	0.33	0.87dr		0.92	0.36		0.29	0.91		0.79	1.08	
100 100 0.93 0.96 1.00 1.00 0.97 1.0 2.9 2.5 0.2 0.8 10.6 5.4 1.0 2.9 73.3 3.8 596 5.0 57.2 E D E C E D E 50.7 52.3 50.2 50.3 D D E 189 189 18(s) 130.0 Sum of lost time (s) 19.2 Utilization 0.95 Sum of lost time (s) 19.2 Utilization 15.5 Sum of lost time (s) 19.2	Uniform Delay, d1	58.6	47.1		54.8	35.2		28.8	41.4		53.2	37.1	
1.0 2.9 22.5 0.2 0.8 10.6 5.4 10.5 5.4 10.5 5.4 10.5 5.4 10.5 5.2 0.2 0.8 10.6 5.4 10.5 5.2 0.2 0.8 10.6 5.4 10.5 5.2 0.2 0.8 10.6 5.2 0.5 5.2 0.2 0.5 5.2 0.2 0.5 5.2 0.2 0.5 5.2 0.2 0.2 0.2 0.2 0.2 0.2 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3	Progression Factor	1.00	1:00		0.93	96.0		1.00	1.00		0.97	1.34	
596 500 733 338 596 520 57.2	Incremental Delay, d2	0.1	2.9		22.5	0.2		0.8	10.6		5.4	43.5	
E D E C E D E D E E D E	Delay (s)	29.6	20.0		73.3	33.8		29.6	52.0		57.2	93.3	
50.7 52.3 52.3 D D D D D D Edition of the control of Service of	Level of Service	ш	ם ְ		ш	ပ		ш	۵ ا		ш	_	
D D D D D D D D D D D D D D D D D D D	Approach Delay (s)		20.7			52.3			52.3			87.0	
89y 67.0 HCM 2000 Level of Service Capacity ratio 0.95 Sum of lost time (s) 130.0 Sum of lost time (s) 14% ICU Level of Service 15 recode with 1 though lane as a right lane.	Approach LOS		_			Ω			_			ட	
slay 67.0 HCM 2000 Level of Service Capacity ratio 0.95 Sun of lost time (s) h (s) 130.0 Sun of lost time (s) Unitization 91.4% ICU Level of Service 15 15 15 ne. Recode with 1 though lane as a right lane. 15	Intersection Summary												
Capacity ratio 0.95 Sum of lost time (s) h (s) 130.0 Sum of lost time (s) Utilization 91.4% ICU Level of Service 15 he. Recode with 1 though lane as a right lane.	HCM 2000 Control Delay			0.79	Í	CM 2000	Level of 5	Service		ш			
h (s) 1300 Sun of lost time (s) Utilization 91.4% ICU Level of Service 15 ne. Recode with 1 though lane as a right lane.	HCM 2000 Volume to Capac	ity ratio		0.95									
Utilization 91.4% 15 ne. Recode with 1 though lane as a right la	Actuated Cycle Length (s)			130.0	S	um of lost	time (s)			19.2			
Analysis Period (min) dr Defacto Right Lane. Recode with 1 though lane as a right lane.	Intersection Capacity Utilizati	ion		91.4%	2	:U Level o	of Service			ш			
dr Defacto Right Lane. Recode with 1 though lane as a right lane.	Analysis Period (min)			15									
	dr Defacto Right Lane. Re-	code with	1 though	lane as a	right lan	ത്							

Critical Lane Group

Synchro 11 Report Page 14 Britannia & RR25 BA Group - NHY

HCM Unsignalized Intersection Capacity Analysis 8: Site Dwy (South)/Site Dwy (North) & Etheridge Ave

2037 Future Total AM

3.3 964 98 Stop 0 0% 1.00 4.0 100 582 328 6.5 328 55 92 385 385 3.5 90 529 09 3.3 93 882 00.1 168 168 338 4.0 100 575 338 3.5 97 591 202 20 20 345 7.1 25 25 1.00 None 78 25 1.00 170 2.2 98 1420 75 75 20 602 0.12 3.4 11.8 B 1.00 80 20 60 60 0.10 2.7 10.1 B B † 165 165 1.00 165 None 135 25 25 1420 0.02 0.4 1.5 5 0.00 0.1 0.2 0.2 0.2 1.00 110 2.2 100 1493 Lane Configurations
Traffic Volume (vehin)
Sign Control
Grade
Peak Hour Factor
Hourly flow rate (vehin)
Pedestrians
Lane Width (m)
Walking Speed (m/s)
Percent Blockage
Right turn flare (veh)
Median type
Median storage veh)
Lystream signal (m)
C, conflicting volume
VC1, stage 1 conf vol
C, stage 2 conf vol
C, stage 2 conf vol
C, stage 6 conf vol
C, stage 7 conf vol
C, stage 6 conf vol
C, stage 6 conf vol
C, stage 7 conf vol
C, stage 6 conf vol
C, stage 7 conf vol
C, stage 6 conf vol
C, stage 7 conf vol
C, stage 6 conf vol
C, stage 7 conf vol
C, stage 8 conf vol
C, stage 9 conf vol
C, stage 9 conf vol Direction, Lane #
Volume Total
Volume Left
SAH
Volume Right
SAH
Volume to Capacity
Queue Length 95th (m)
Control Delay (s)
Lane LOS

Synchro 11 Report Page 15 Britannia & RR25 BA Group - NHY

ICU Level of Service

4.2 36.0% 15

Average Delay Intersection Capacity Utilization Analysis Period (min)

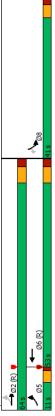
Approach Delay (s) Approach LOS

Timings 2037 Future Total AM 10: Britannia Rd & Farmstead Dr 01-12-2024

745 435 90 30 NA NA Prot Perm 2 6 8 8 2 6 8 8 2 6 8 8 2 8 8 2 2 2 2 2 2 0 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	435 90 30 NA Prof Perm 6 8 8 6 8 8 20.0 10.0 10.0 29.4 15.3 15.3 2.2 2.0 2.0 5.4 4.3 4.3 1.0 -1.0 5.4 4.3 4.3 1.8 0.78 0.12 0.12 0.14 0.00 0.0 4.4 4.90 15.4 0.0 0.0 0.0 4.4 4.0 6 A D B 4	435 90 30 NA Prof Perm 6 8 8 6 8 8 20.0 10.0 10.0 28.4 15.3 15.3 53.0 41.0 41.0 59.5% 39.0% 39.0% 4.2 2.0 2.0 -1.0 -1.0 -1.0 -1.8 12.8 0.78 0.12 0.12 0.14 0.43 0.14 4.4 49.0 15.4 0.0 0.0 0.0 4.4 40.6 A D B 4.4 40.6 A D B 4.4 40.6 A D CU Lovel of Service A Intersection LOS:
2 6 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	2 6 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	2 6 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8
2 6 8 8 2.0 20.0 10.0 10.0 3.4 29.4 15.3 15.3 4.0 53.0 41.0 41.0 9.8 50.5% 39.0% 39.0% 2.2 2.2 2.0 2.0 1.0 -1.0 -1.0 -1.0 5.4 5.4 4.3 4.3 Yes 1.8 C-Max None None 6.7 82.3 12.8 12.8 6.8 8.4 49.0 15.4 A A D B 2.8 4.4 40.6 A A D B 2.8 4.4 40.6 A A D B 2.8 4.4 40.6 A A D B 2.9 4.4 40.6 A A D B 2.9 4.4 40.6 A A D B 2.9 4.4 40.6 A A D B 3.0 6.0 0.0 0.0 3.0 0.0 0.0 0.0 4.0 0.0 0.0 0.0 5.4 4.4 40.6 A A D B 5.5 4.4 40.6 A A D B 5.6 4.8 40.6 A A D B 5.7 5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4	2 6 8 8 80.0 20.0 10.0 10.0 9.4 29.4 15.3 15.3 4.0 53.0 41.0 41.0 0% 50.5% 39.0% 39.0% 1.0 -1.0 -1.0 -1.0 5.4 4.3 4.3 4.3 1.2 2.2 2.0 2.0 1.0 -1.0 -1.0 -1.0 5.4 4.3 4.3 4.3 1.2 2.2 2.0 2.0 1.0 -1.0 1.0 1.0 1.0 -1.0 1.0 1.0 2.8 4.4 4.9 0.15.4 0.0 0.0 0.0 2.8 4.4 4.9 0.15.4 0.0 0.0 0.0 2.8 4.4 4.0 6 0.0 0.0 0.0 0.0 2.8 4.4 4.0 6 0.0 0.0 0.0 0.0 2.8 4.0 0.0 0.0 0.0 2.8 4.0 0.0 0.0 0.0 2.8 4.0 0.0 0.0 0.0 2.8 4.0 0.0 0.0 0.0 2.8 4.0 0.0 0.0 0.0 2.8 4.0 0.0 0.0 0.0 2.8 4.0 0.0 0.0 0.0 2.8 4.0 0.0 0.0 0.0 2.8 4.0 0.0	2 6 8 8 60 20.0 10.0 10.0 9.4 29.4 15.3 15.3 4.0 53.0 41.0 41.0 9% 50.5% 39.0% 39.0% 50.5% 39.0% 33.3 2.2 2.2 2.0 2.0 1.0 -1.0 -1.0 -1.0 5.4 4.4 4.3 4.3 2.8 4.4 49.0 15.4 2.8 4.4 49.0 15.4 2.8 4.4 49.0 15.4 2.8 4.4 49.0 15.4 2.8 4.4 49.0 15.4 2.8 4.4 49.0 15.4 2.8 4.4 49.0 15.4 2.8 4.4 49.0 15.4 2.8 4.4 49.0 15.4 2.8 A.A D B 2.8 4.4 49.0 15.4 2.8 A.A D B 2.8 A.A D A B 2.8 A.A B B 2.8 A.A B B 3.9 C.B B 3.0 C.B B 4.4 A.B B 4.4 A.B B 4.4 A.B B 4.4 A.B B 5.0 C.B B 5
200 200 100 100 294 294 153 153 163 153 163 153 164 294 153 153 165 50.5% 39.0% 42 42 33 33 33 22 22 20 20 20 20 21 -1.0 -1.0 -1.0 54 54 43 43 186 7 82.3 128 128 187 82.3 128 128 188 7 82.3 128 128 189 0.14 49.0 154 28 44 49.0 154 28 44 40.6 28 44 40.6 28 44 40.6 31 And 6:WBT, Start of Green	0.0 20.0 10.0 10.0 10.0 10.0 10.0 10.0 1	0.0 20.0 10.0 10.0 10.0 10.0 10.0 10.0 1
42 4.4 4.90 15.4 15.3 15.3 15.3 15.3 15.3 15.3 15.3 15.3	24. 23. 41.0 41.0 0% 50.5% 39.0% 39.0% 42 42 33 33.3 42 42 2. 2.0 2.0 1.0 -1.0 -1.0 -1.0 5-4 4.3 4.3 1.8 0.12 1.8 0.12 1.8 0.14 2.8 4.4 49.0 15.4 2.8 4.4 40.6 A D B 3.8 0.18 0.19 3.9 0.10 3.9 0.10 3.0 0.0 0.0 0.0 3.0 0.0 0.0 0.0 3.0 0.0 0.0 0.0 3.0 0.0 0.0 0.0 3.0 0.0 0.0 0.0 3.0 0.0 0.0 0.0 3.0 0.0 0.0 0.0 3.0 0.0 0.0 0.0 3.0 0.0 0.0 0.0 3.0 0.0 0.0 0.0 3.0 0.0 0.0 0.0 3.0 0.0 0.0 0.0 3.0 0.0 0.0 0.0 3.0 0.0 0.0 0.0 3.0 0.0 0.0 0.0 3.0 0.0 0.0 0.0 0.0 3.0 0.0 0.0 0.0 0.0 3.0 0.0 0.0 0.0 0.0 3.0 0.0 0.0 0.0 0.0 3.0 0.0 0.0 0.0 0.0 3.0 0.0 0.0 0.0 0.0 3.0 0.0 0.0 0.0 0.0 3.0 0.0 0.0 0.0 0.0 0.0 3.0 0.0 0.0 0.0 0.0	14.0 53.0 41.0 41.0 41.0 41.0 45.0 55.5 39.0% 39
61.0% 50.5% 39.0% 39.0% 4.2 4.2 3.3 3.3 4.4 4.2 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 4.3 4.3 4.3 4.3 4.3 4.3 4.3 4.3 4.3 4.3	10% 50.5% 39.0% 39.0% 4.2 4.2 3.3 3.3 4.2 4.2 3.3 3.3 4.2 4.2 4.2 3.3 3.3 4.2 4.2 4.3 4.3 4.3 4.3 4.3 4.3 4.3 4.3 4.3 4.3	0% 50.5% 39.0% 39.0% 42 33 33 42 22 22 20 20 20 20 20 20 20 20 20 20 20
4.2 4.2 3.3 3.3 2.2 2.0 2.0 2.2 2.0 2.0 2.0 2.0 5.4 5.4 4.3 4.3 Lag Nax C-Max None None 86.7 82.3 12.8 12.8 86.7 82.3 12.8 12.8 0.20 0.14 0.43 0.14 0.8 0.76 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	4.2 4.2 3.3 3.3 4.2 2.2 2.0 2.0 4.3 4.3 4.3 5.4 5.4 4.3 4.3 4.8 5.4 4.3 4.3 4.8 5.4 4.3 4.3 4.8 5.4 4.3 4.3 4.8 6.12 1.28 6.2 6.12 1.28 6.2 6.14 6.12 1.28 6.0 0.0 0.0 0.0 6.0 0.0 0.0 0.0 0.0 6.0 0.0 0.0 0.0 0.0 6.0 0.0 0.0 0.0 0.0 6.0 0.0 0.0 0.0 0.0 6.0 0.0 0.0 0.0 0.0 6.0 0.0 0.0 0.0 0.0 6.0 0.0 0.0 0.0 0.0 6.0 0.0 0.0 0.0 0.0 0.0 6.0 0.0 0.0 0.0 0.0 0.0 6.0 0.0 0.0 0.0 0.0 0.0 6.0 0.0 0.0 0.0 0.0 0.0 0.0 6.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 6.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	4.2
-1.0 -1.0 -1.0 -1.0 -1.0 -1.0 -1.0 -1.0	-1.0 -1.0 -1.0 -1.0 5.4 4.3 4.3 4.3 4.3 4.3 4.3 4.3 4.3 4.3 4	1.0 -1.0 -1.0 -1.0 1.0
54 54 4.3 4.3 Lag Yes Yes -Max C-Max None None 86.7 82.3 12.8 12.8 0.20 0.12 0.12 0.20 0.0 0.0 0.0 0.0 0.0 0.0 0.0 2.8 4.4 49.0 15.4 A A D B 2.8 4.4 40.6 A A D B 3.TL and 6.WBT, Start of Green	5.4 5.4 4.3 4.3 Lag Yes Max C-Max None None 887 82.3 12.8 12.8 0.20 0.14 0.43 0.14 2.8 4.4 49.0 15.4 A A 49.0 15.4 A A 40.6 A A D B 2.8 4.4 40.6 A A D A A D A A A D A A A D A A A D A A A D A A A D A A A D A A A D A A A D A A A D A A A D B A A A D B A A D B A A D B A A D B A A D B A A D B A A D B A A D B A A D B A A D B A A D B A A D B A A D B A A D B A A D B A D D B A D D B A D D B A D D B A D D B A D D B	5.4 5.4 4.3 4.3 Leg Yes None None None 187 82.3 12.8 12.8 12.8 12.8 12.8 12.8 12.8 12.8
Lag Yes None None 86.7 82.3 12.8 12.8 0.12 0.12 0.20 0.14 0.43 0.14 0.10 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Lag Ves None No	Lag
Yes Max C-Max None None 86.7 82.3 12.8 12.8 0.83 0.78 0.12 0.12 0.20 0.14 0.43 0.14 2.8 44 49.0 15.4 A A D B 2.8 4.4 40.6 A A D SIL and 6:WBT, Start of Green	Max C-Max None None 86.7 82.3 12.8 12.8 0.83 0.76 0.12 0.14 2.8 0.44 49.0 15.4 0.0 0.0 0.0 0.0 2.8 4.4 49.0 15.4 A A D B 2.8 A 4 40.6 A A D C 3.8 A A D C 3.8 A A D C 4.8 A D C 5.8 A	As X None None (6.7 82.3 12.8 12.8 12.8 12.8 12.8 12.8 12.8 12.8
Max C-Max None None 86.7 82.3 12.8 12.8 0.83 0.78 0.12 0.12 0.20 0.14 0.43 0.14 0.0 0.0 0.0 0.0 0.0 0.0 2.8 4.4 49.0 15.4 A A D B 2.8 4.4 40.6 A A D B 3.12 A A D B 3.12 A A B B 4.4 A B B 5.12 A B B 5.13 A B B 5.14 A B B 5.15 A B B	Max C-Max None None 867 82 128 128 0.83 0.78 0.12 0.12 0.20 0.14 0.43 0.14 0.0 0.0 0.0 2.8 4.4 49.0 15.4 A A D B A A D B A A D A D B A A D A D B A A D A D A A D A D A A D A D B A A D A D B A A D A D B B A A D B B A A D B B A A D B B A A D B B A A D B B A A D B B A A D B B A A D B B A A D B B A A D B B A A D B B A A D B B A B D B B B B B B B B B B B B B B B B B B	Alax C-Max None None None None R57 823 128 128 128 128 128 128 128 128 129 129 129 129 129 129 129 129 129 129
08.1 02.3 12.6 12.6 08.3 01.4 0.43 0.14 0.12 0.12 0.20 0.14 0.43 0.14 2.8 44 49.0 15.4 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	08.1 0.23 12.6 12.6 0.83 0.14 0.43 0.14 0.43 0.14 0.43 0.14 0.00 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	120 0.14 0.43 0.14 0.12 0.12 0.12 0.14 0.43 0.14 0.43 0.14 0.00 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0
0.20 0.14 0.43 0.14 2.8 4.4 4.90 15.4 0.0 0.0 0.0 0.0 2.8 4.4 4.90 15.4 A A D B 2.8 4.4 4.06 A A D 3.1Land 6.WBT, Start of Green	0.20 0.14 0.43 0.14 2.8 4.4 490 15.4 0.0 0.0 0.0 2.8 4.4 490 15.4 A D B 2.8 4.4 40.6 A D D 3.0 1.4 0.0 A D 4.0 1.4 0.0 A D 5.0 1.4 0.0 B D 6.0 1.4 0.0 B D 7.1 and 6.WBT, Start of Green	1.20 0.14 0.43 0.14 2.8 4.4 49.0 15.4 2.8 4.4 49.0 15.4 2.8 4.4 40.6 2.8 4.4 40.6 3.8 4.4 40.6 3.8 A.A D I. and 6.WBT, Start of Green CU Level of Service A
2.8 4.4 49.0 15.4 0.0 0.0 0.0 0.0 2.8 4.4 49.0 15.4 A A D B 2.8 4.4 40.6 A A D 3.1Land 6.WBT, Start of Green	28 4.4 49.0 15.4 0.0 0.0 0.0 2.8 4.4 40.6 A D B 2.8 4.4 40.6 A D D B 3.1 and 6:WBT, Start of Green	2.8 4.4 49.0 15.4 0.0 0.0 0.0 0.0 0.0 0.0 2.8 4.4 40.6 2.8 4.4 40.6 A D B 2.8 A D B 2.8 A C D B A D C C Level of Service A
0.0 0.0 0.0 0.0 2.8 4.4 4.9.0 15.4 2.8 4.4 4.0.6 A A D B B D	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 2.8 4.4 49.0 15.4 4.0 15.4 4.0 15.4 4.0 15.4 4.0 15.4 4.0 15.4 4.0 15.4 4.0 15.4 4.0 15.4 4.0 15.4 4.0 15.4 15.5 15.5 15.5 15.5 15.5 15.5 15.5
28 44 490 154 A A D B 28 44 406 A A D 31L and 6:WBT, Start of Green	28	2.8
2.8	A A D B 2.8 4.4 40.6 A A D TL and 6:WBT, Start of Green Intersection LOS: A	A A D B A A A D A A D Intersection LOS: A ICU Level of Service A
28	ZS 4.4 40.6 A A D TL and 6:WBT, Start of Green	2.8 4.4 40.5 A A D Land 6.WBT, Start of Green Intersection LOS: A IOU Level of Service A
TL and 6:WBT, Start of Green	TL and 6:WBT, Start of Green	TL and 6:WBT, Start of Green Intersection LOS: A ICU Level of Service A
TL and 6:WBT, Start of Green	TL and 6:WBT, Start of Green	IL and 6:WBT, Start of Green Intersection LOS: A ICU Level of Service A
TL and 6:WBT, Start of Green	TL and 6:WBT, Start of Green	TL and 6:WBT, Start of Green Intersection LOS: A ICU Level of Service A
TL and 6:WBT, Start of Green	TL and 6:WBT, Start of Green Intersection LOS: A	T. and 6:WBT, Start of Green Intersection LOS: A ICU Level of Service A
IL and 6:WB I , Start of Green	IL and 6:WB I , Start of Green Intersection LOS: A	L and 6:WB I, Start of Green Intersection LOS: A ICU Level of Service A
	Intersection LOS: A	Intersection LOS: A ICU Level of Service A
	Intersection LOS: A	Intersection LOS: A ICU Level of Service A
	Intersection LOS: A	Intersection LOS: A ICU Level of Service A
	Intersection LOS: A	Intersection LOS: A ICU Level of Service A

Intersection Summary

Splits and Phases: 10: Britannia Rd & Farmstead Dr



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 Queues

 10: Britannia Rd & Farmstead Dr

 Inmediate
 Lane Group
 EBI
 EBI
 FBI
 SBI
 SBI

 Lane Group
 EBI
 EBI
 FBI
 SBI
 SBI

 Lane Group Flow (vph)
 20
 745
 460
 90
 30

 Ve Ratio
 Control Delay
 24
 2.8
 4.4
 490
 15.4

 Queue Delay
 24
 2.8
 4.4
 490
 15.4

 Queue Length Soth (m)
 2.8
 1.2
 7.3
 18.4
 0.0

 Queue Length Soth (m)
 2.8
 1.2
 7.3
 18.4
 0.0

 Queue Length (m)
 2.8
 1.8
 0.0
 0.0
 0.0

 Queue Length (m)
 2.3
 1.1
 19.7
 33.1
 8.5
 1.1

 Lun Bay Length (m)
 2.8
 3.65
 35.6
 55.7
 1.1
 1.1
 1.2
 1.2
 1.2
 1.2
 1.2
 1.2
 1.2
 1.2
 1.2
 1.2
 1.2

HCM Signalized Intersection Capacity Analysis 10: Britannia Rd & Farmstead Dr

2037 Future Total AM 01-12-2024

, –	▼ ■	† 🛱	↓ WBT	√ WBR	≯ RS	SBR	
*		##	444		*	*-	
8 8		745	435	55 x	සි ද	8 8	
1900		1900	1900	1900	1900	1900	
3.0		5.4	5.4		4.3	4.3	
0.1		*0.80	*0.80		0.0	9.0	
0.00		9.5	0.99		0.0 8 8	0.82	
1656		4427	4205		1703	1538	
0.43		1.00	1.00		0.95	1:00	
752		4427	4205		1703	1538	
1.00		1.00	1.00	1.00	1.00	1.00	
20		745	435	52	06	90	
0		0	7	0	0	27	
20		745	458	0	6	က	
%6		3%	8%	%0	%9	2%	
pm+pt		NA	Ν		Prot	Perm	
S		5	9		∞		
7						∞	
83.5		83.5	7.97		8.6	8.6	
84.5		84.5	7.77		10.8	10.8	
0.80		0.80	0.74		0.10	0.10	
4.0		6.4	6.4		5.3	5.3	
3.0		3.0	3.0		3.0	3.0	
637		3562	3111		175	158	
0.00		c0.17	0.11		c0.05		
0.02						0.00	
0.03		0.21	0.15		0.51	0.02	
2.1		2.4	4.0		44.6	42.3	
1.00		1:00	1.00		1.00	1.00	
0.0		0.1	0.1		2.5	0.0	
2.1		2.5	4.1		47.2	45.4	
∢		⋖	∢		Ω	۵	
		2.5	4.1		46.0		
		⋖	4		Ω		
			6.9	ľ	M 2000 L	HCM 2000 Level of Service	Service A
HCM 2000 Volume to Capacity ratio			0.25				
			105.0	S	Sum of lost time (s)	time (s)	12.7
ntersection Capacity Utilization			33.1%	ಠ	ICU Level of Service	f Service	٧
			15				

Britannia & RR25 BA Group - NHY Page 18

Timings

11: Britannia Rd & Rose Way

11: 2024

•	SBR	r_	75	75	Perm		4	4		10.0	43.0	20.0	38.5%	3.0	3.0	-1.0	2.0			None	11.8	60.0	0.35	16.3	0.0	16.3	В									Intersection LOS: A	ICU Level of Service A	
۶	SBL	*	22	22	Prot	4		4		10.0	43.0	20.0	38.5%	3.0	3.0	-1.0	2.0			None	11.8	0.09	0.34	61.1	0.0	61.1	ш	35.2	Ω			de 4 cto	סומון חו פ			프	೨	
ţ	WBT	443	920	920	¥	9		9		20.0	29.0	65.0	20.0%	4.0	3.0	-1.0	0.9	Lag	Yes	C-Max	100.6	0.77	0.26	4.8	0.0	4.8	∢	4.8	∢			TOWNS	, O.WBI,					
†	EBT	444	1095	1095	Ϋ́	2		2		20.0	29.0	80.0	61.5%	4.0	3.0	-1.0	0.9			C-Max	107.2	0.82	0.29	5.5	0.0	5.5	⋖	5.5	∢			ITG						
1	BB	*	25	25	bm+pt	2	2	2		7.0	11.0	15.0	11.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	110.2	0.85	0.05	3.6	0.0	3.6	∢					130	au to pridate 2.	Coordinated		7:7.0	ization 38.7%	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	SOT	Approach Delay	Approach LOS	Intersection Summary	Cycle Lenath: 130	Actuated Cycle Length: 130	Observed 0.0% , referenced to priase zero in and owner, start of green Natural Cycle: 85	Control Type: Actuated-Coordinated	Maximum v/c Ratio: 0.35	Intersection Signal Delay: 7.0	Intersection Capacity Utilization 38.7%	Analysis Period (min) 15

Splits and Phases: 11: Britannia Rd & Rose Way



Queues 2037 Future Total AM 11: Britannia Rd & Rose Way 01-12-2024

Lane Group EBL EBT WBT SBL SBR Lane Group Flow (vph) 25 1095 930 55 75 Vic Ratio 0.05 0.29 0.26 0.34 0.35 Control Delay 36 5.5 4.8 61.1 16.3 Coute Delay 0.0 0.0 0.0 0.0 0.0 Queue Delay 36 5.5 4.8 61.1 16.3 Queue Delay 36 5.5 4.8 61.1 16.3 Queue Length Soft (m) 7.7 4.60 2.92 14.3 0.0 Queue Length Soft (m) 7.0 17 4.60 2.92 14.3 0.0 Queue Length Soft (m) 50.0 182.4 155.7 76.0 18.3 18.3 18.3 18.3 Turn Bay Length (m) 50.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 <th></th> <th>4</th> <th>†</th> <th>ţ</th> <th>٠</th> <th>*</th>		4	†	ţ	٠	*
25 1095 930 55 0.05 0.29 0.28 0.34 3.6 5.5 4.8 61.1 1.7 46.0 292 14.3 11.7 46.0 292 17.8 182.4 155.7 6.0 50.0 51.0 0 0 10 0 0 0 10 0 0 0 10 0 0 0 10 0 0 0	Lane Group	盟	EB	WBT	SBL	SBR
0.05 0.29 0.26 0.34 3.6 5.5 4.8 61.1 0.0 0.0 0.0 0.0 3.6 5.5 4.8 61.1 1.7 46.0 29.2 14.3 m2.4 m62.8 39.1 27.8 50.0 39.1 27.8 50.0 39.1 27.8 50.0 39.1 27.8 60.0 0 0 0 0 0 0 0 0.05 0.29 0.28 0.29	Lane Group Flow (vph)	22	1095	930	22	75
3.6 5.5 4.8 61.1 3.6 5.5 4.8 61.1 3.6 5.5 4.8 61.1 1.7 46.0 29.2 14.3 m2.4 m52.8 39.1 27.8 50.0 50.0 517 3761 3523 624 0 0 0 0 0 0 0 0.05 0.29 0.28 0.09	v/c Ratio	0.02	0.29	0.26	0.34	0.35
0.0 0.0 0.0 0.0 3.6 5.5 4.8 61.1 1.7 46.0 29.2 14.3 m.2.4 m52.8 39.1 27.8 50.0 50.0 0 0 0 0 0.05 0.29 0.20	Control Delay	3.6	5.5	4.8	61.1	16.3
3.6 5.5 4.8 61.1 1.7 46.0 29.2 14.3 m.24 m52.8 39.1 27.8 182.4 185.7 66.0 50.0 50.0 0 0 0 0 0 0 0 0.05 0.29 0.26 0.09	Queue Delay	0.0	0.0	0.0	0.0	0.0
1.7 46.0 29.2 14.3 m2.4 m52.8 39.1 27.8 182.4 155.7 76.0 50.0 50.0 517 3761 3523 624 0 0 0 0 0 0 0 0 0 0 0	Total Delay	3.6	5.5	4.8	61.1	16.3
m2.4 m52.8 39.1 27.8 182.4 155.7 76.0 50.0 51.7 3761 3523 624 0 0 0 0 0 0 0 0	Queue Length 50th (m)	1.7	46.0	29.5	14.3	0.0
182.4 155.7 76.0 50.0 50.0 67.7 3761 3523 624 0 0 0 0 0 0 0 0 0 0 0 0.05 0.29 0.26 0.09	Queue Length 95th (m)	m2.4	m52.8	39.1	27.8	15.3
50.0 517 3761 3523 624 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.05 0.29 0.26 0.09	Internal Link Dist (m)		182.4	155.7	0.97	
517 3761 3523 624 0 0 0 0 0 0 0 0 0 0 0 0 0.05 0.29 0.26 0.09	Turn Bay Length (m)	20.0			20.0	
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.05 0.29 0.26 0.09	Base Capacity (vph)	517	3761	3523	624	809
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Starvation Cap Reductn	0	0	0	0	0
0 0 0 0 0.05 0.29 0.26 0.09	Spillback Cap Reductn	0	0	0	0	0
0.05 0.29 0.26 0.09	Storage Cap Reductn	0	0	0	0	0
	Reduced v/c Ratio	0.02	0.29	0.26	0.09	0.12
Intersection Summary	Intersection Summary					

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis 11: Britannia Rd & Rose Way

2037 Future Total AM 01-12-2024

																																						A		14.0	А		
•	SBR	R.	75	75	1900	5.0	1.00	0.85	1.00	1615	1.00	1615	1.00	75	89	7	%0	Perm		4	10.8	11.8	60:0	0.0	3.0	146		0.00	0.05	54.0	1.00	0.1	54.1	D				HCM 2000 Level of Service			Service		
) J	WBR SBL	*	10 55		1900 1900	2.0	1.00	1.00	0.95	1805	0.95		_	10 55	0 0		%0 %0	Prot	4		10.8	11.8	60:0	0.9	3.0	163	c0.03		0.34	55.4	1.00	1.2	29.7	ш	55.2	ш		HCM 2000 L		Sum of lost time (s)	ICU Level of Service		
↓	EBT WBT	•			_		*		1.00 1.00			4	•	1095 920		1095 930	%0 %0	NA NA	2 6							.,	c0.24 0.20		J		2.01 1.00		4		5.4 4.8	A A		8.1	0:30	130.0	38.7%	15	
4	EBL	<i>y</i> -	25	25	1900	3.0	1.00	1.00	0.95	1805	0.24	464	1.00	25			%0	pm+pt	2	2	106.2	107.2	0.82	4.0	3.0	436	0.00	0.04	90.0	2.2	2.06	0.0	4.5	A				av	Sapacity ratio	(s)	tilization		
	Movement	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Ideal Flow (vphpl)	Total Lost time (s)	Lane Util. Factor	Ē	Flt Protected	Satd. Flow (prot)	Flt Permitted	Satd. Flow (perm)	Peak-hour factor, PHF	Adj. Flow (vph)	RTOR Reduction (vph)	Lane Group Flow (vph)	Heavy Vehides (%)	Turn Type	Protected Phases	Permitted Phases	Actuated Green, G (s)	Effective Green, g (s)	Actuated g/C Ratio	Clearance Time (s)	Vehicle Extension (s)	Lane Grp Cap (vph)	v/s Ratio Prot	v/s Ratio Perm	v/c Ratio	Uniform Delay, d1	Progression Factor	Incremental Delay, d2	Delay (s)	Level of Service	Approach Delay (s)	Approach LOS	Intersection Summary	HCM 2000 Control Delay	HCM 2000 Volume to Capacity ratio	Actuated Cycle Length (s)	Intersection Capacity Utilization	Analysis Period (min)	c Critical Lane Group

Britannia & RR25 BA Group - NHY

> Synchro 11 Report Page 20

Britannia & RR25 BA Group - NHY

2037 Future Total PM 01-12-2024 Timings 1: Regional Rd 25 & Louis St Laurent Ave

→	SBT	4413	1135	1135	A	9		9		20:0	32.2	26.0	40.0%	4.2	3.0	-1.0	6.2	Lag	Yes	C-Max	56.4	0.40	0.76	40.3	0.0	40.3	٥	40.3	۵										
۶	SBL	<i>y</i> -	92	92	pm+pt	-	9	~		2.0	0.6	10.0	7.1%	3.0	1.0	-1.0	3.0	Lead	Yes	None	67.3	0.48	0.61	40.5	0.0	40.5	٥											ᄔ	
←	NBT	444	1305	1305	ΑN	2		2		20.0	32.2	0.89	48.6%	4.2	3.0	-1.0	6.2	Lag	Yes	C-Max	65.1	0.46	0.89	39.9	0:0	39.9	٥	45.0	٥								LOS: D	ICU Level of Service F	
•	NBL	<i>y</i> -	220	220	pm+pt	2	2	2		2.0	9.0	22.0	15.7%	3.0	1.0	-1.0	3.0	Lead	Yes	None	79.1	0.56	0.82	58.3	0.0	58.3	ш						Green				Intersection LOS: D	U Level o	
ţ	WBT	₩.	545	545	ΑN	∞		80		10.0	30.0	40.0	28.6%	4.0	3.0	-1.0	0.9	Lag	Yes	None	32.2	0.23	0.74	55.3	0:0	55.3	ш	55.3	ш				Start of				드	ੁ	
>	WBL	*	370	370	pm+pt	က	∞	က		10.0	14.0	32.0	22.9%	3.0	0.0	-1.0	2.0	Lead	Yes	None	55.9	0.40	0.86	55.3	0.0	55.3	ш						d 6:SBTL						
†	EBT	₩.	375	375	Ϋ́	4		4		10.0	30.0	30.0	21.4%	4.0	3.0	-1.0	0.9	Lag	Yes	None	23.4	0.17	0.84	66.4	0.0	66.4	ш	29.0	ш				NBTL an						
4	EBF	*	202	202	pm+pt	7	4	7		2.0	9.0	22.0	15.7%	3.0	1.0	-1.0	3.0	Lead	Yes	None	43.1	0.31	0.67	41.1	0.0	41.1	_						phase 2:		dinated		4	on 93.2%	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	SOT	Approach Delay	Approach LOS	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 Capacity Utilization 93.2%	Analysis Period (min) 15

Synchro 11 Report Page 1 • * Ø6 (R) Britannia & RR25 BA Group - NHY \$ 005

Splits and Phases: 1: Regional Rd 25 & Louis St Laurent Ave

№ 02 (R)

Queues

2037 Future Total PM 01-12-2024

onal Kd 25 & Louis St Laurent Ave		→ ≠ ←
1: Regi	1: Regional Rd 25 & Louis St Laurent Ave	¥ +

→	SBT	1330	92.0	40.3	0.0	40.3	45.0	171.5	13.5		1744	0	0	0	92.0
٠	SBL	l	0.61					#37.1 1	_	80.0	. 157	0	0	0	0.61
-	NBT		0.89				193.6		481.0		1977	0	0	0	0.89
•	NBL	220	0.82	58.3	0.0	58.3	45.6	#82.9		65.0	297	0	0	0	0.74
ţ	WBT	610	0.74	55.3	0.0	55.3	84.4	106.9	117.1		898	0	0	0	0.70
•	WBL	370	98.0	55.3	0.0	55.3	80.3	117.9		32.0	468	0	0	0	0.79
†	EBT	200	0.84	66.4	0.0	66.4	69.7	#93.7	126.1		620	0	0	0	0.81
•	EBL	202	0.67	41.1	0.0	41.1	39.3	58.3		0.06	333	0	0	0	0.62
	Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Queue Delay	Total Delay	Queue Length 50th (m)	Queue Length 95th (m)	Internal Link Dist (m)	Turn Bay Length (m)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio

Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Synchro 11 Report Page 2 Britannia & RR25 BA Group - NHY

HCM Signalized Intersection Capacity Analysis 1: Regional Rd 25 & Louis St Laurent Ave

2037 Future Total PM 01-12-2024

FBL FBT FBR WBL WBT WBR NBL NBT NBR SBL SBT	Movement Lane Configurations Traffic Volume (vph)	표	FRT	ממ	IZ/V	WRT			-	adiv	5	CRT	CBD
205 375 125 370 545 65 220 1305 450 95 1135 205 370 545 65 220 1305 450 95 1135 205 370 545 65 220 1305 450 95 1135 205 370 545 65 220 1305 450 95 1135 2135 370 545 65 220 1305 450 95 1135 370 60 1300 1300 1300 1300 1300 1300 1300	Lane Configurations Traffic Volume (vph)	1	5	בסק	VVDL	-	WBR	NBL	NBI	רסאו	Z D D	5	כפור
205 375 125 370 545 65 220 1305 450 95 1135 1900 1900 1900 1900 1900 1900 1900 190	Traffic Volume (vph)	*	₩		<u>, </u>	₩.		F	441		۴	441	
206 375 125 370 545 65 220 1305 450 95 1135 30 6.0 1300 1900 1900 1900 1900 1900 1900 190	() (202	375	125	370	545	92	220	1305	420	92	1135	195
1900 1900	Future Volume (vph)	202	375	125	370	545	92	220	1305	420	92	1135	195
100 0.35	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
1,00 0,95	Total Lost time (s)	3.0	0.9		5.0	0.9		3.0	6.2		3.0	6.2	
1,00 0.99 1,00 1,00 1,00 0.99 1,10 1,00	Lane Util. Factor	1.00	0.95		1:00	0.95		1:00	*0.80		1.00	*0.80	
1,00	Frpb, ped/bikes	1.00	0.99		1:00	9.		9:	0.99		1.00	1.00	
1,00 0.96 1,00 0.96 1,00 0.96 1,00 0.96 1,00 0.96 1,00 0.96 1,00 0.96 1,00 0.96 1,00 0.96 1,00 0.96 1,00 0.96 1,00 0.96 1,00 0.96 1,00	Flpb, ped/bikes	1.0	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
1768 1,00	Fit	1.00	96:0		1.00	0.98		1.00	96.0		1.00	0.98	
1766 3431 1899 3537 1787 4165 1805 4300 496	Fit Protected	0.95	1.00		1.00	1.00		0.95	1.00		0.95	1.00	
0.27 1,00 0.17 1,00 0.07 1,00 0.07 1,00 <th< td=""><td>Satd. Flow (prot)</td><td>1768</td><td>3431</td><td></td><td>1899</td><td>3537</td><td></td><td>1787</td><td>4165</td><td></td><td>1805</td><td>4300</td><td></td></th<>	Satd. Flow (prot)	1768	3431		1899	3537		1787	4165		1805	4300	
496 3431 3537 129 4165 136 430 1.00 </td <td>Fit Permitted</td> <td>0.27</td> <td>1.00</td> <td></td> <td>0.17</td> <td>1.00</td> <td></td> <td>0.07</td> <td>1.00</td> <td></td> <td>0.07</td> <td>1.00</td> <td></td>	Fit Permitted	0.27	1.00		0.17	1.00		0.07	1.00		0.07	1.00	
1.00	Satd. Flow (perm)	496	3431		331	3537		129	4165		135	4300	
205 375 125 370 545 66 220 1305 450 95 1135 20	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
10 10 10 10 10 10 10 10	Adi. Flow (vph)	202	375	125	370	545	92	220	1305	450	92	1135	195
205 477 0 370 603 0 220 1715 0 95 1317 2% 1% 0% 0% 0% 2% 1% 0% 4% pm+pt 1% 0% 0% 2% 1% 0% 4% pm+pt 1% 0% 0% 2% 1% 0% 4% 4 8 8 5 1 6 6 1 6 6 4 4% 6% 1% 0% 4% 1 6 6 1 6 6 1 6 6 1 6 6 4 6 4 6 6 4 6 6 1 6 6 4 6 6 4 6	RTOR Reduction (vph)	0	23	0	0	7	0	0	40	0	0	13	0
5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 7 4 7 4 4 7 4 4 7 4 4 7 4 4 7 4 4 7 4 4 7 4 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 7 7	Lane Group Flow (vph)	205	477	0	370	603	0	220	1715	0	95	1317	0
2% 1% 0% 0% 2% 1% 6% 4% 4% Pm+pt NA NA pm+pt NA NA NA NA NA NA </td <td>Confl Peds (#/hr)</td> <td>2 10</td> <td></td> <td>י ער</td> <td></td> <td></td> <td>י ער</td> <td>7</td> <td>2</td> <td>, LC</td> <td>2 40</td> <td></td> <td>ייי</td>	Confl Peds (#/hr)	2 10		י ער			י ער	7	2	, LC	2 40		ייי
PM+PI	Heavy Vehicles (%)	2%	1%	%0	%0	%0	%	%	%9	, %	%	4%	0%
The color of the	Turn Tyne	tu-ma	ΔN	2	tu-mu	ΔN	2	tu-mu	ΝΔΝ	2	tu-mu	Ν	S
4 8 7 2 6 6 6 6 6 6 6 6 6	Protected Phases	7	4		4 ~	α		נ	0			٧.	
18	Domitted Dhases		+		0	0		י כ	7		- 4	>	
181 22.4 50.9 51.2 75.9 64.1 64.2 40.1 22.4 51.9 51.2 75.9 64.1 64.2 60.29 0.17 0.37 0.23 0.54 0.46 0.46 30 30 30 70 30 30 30 30	Permitted Priases	4 .	,		0 0	2		7 7	3		0		
10	Actuated Green, G (s)	38.1	22.4		20.9	312		74.9	2 <u>4</u>		62.2	55.4	
0.29 0.17 0.37 0.23 0.54 0.46 0.46 0.46 0.46 0.40 0.40 0.40 0.4	Effective Green, g (s)	40.1	23.4		51.9	32.2		75.9	65.1		64.2	56.4	
10	Actuated g/C Ratio	0.29	0.17		0.37	0.23		0.54	0.46		0.46	0.40	
3.0 3.0	Clearance Time (s)	4.0	7.0		3.0	7.0		4.0	7.2		4.0	7.2	
283 573 419 813 266 1936 154	Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
0.08 c.0.14 c.0.17 c.0.10 c.0.41 c.0.03 0.12	Lane Grp Cap (vph)	293	573		419	813		265	1936		154	1732	
0.12 0.16 0.35 0.25 0.70 0.83 0.24 0.35 0.25 0.70 0.83 0.24 0.35 0.62 0.70 0.83 0.84 0.74 0.83 0.89 0.62 0.70 0.83 0.84 0.74 0.89 0.62 0.70 0.84 0.84 0.84 0.84 0.70 0.84 0.84 0.84 0.84 0.70 0.84 0.84 0.84 0.84 0.70 0.84 0.84 0.8	v/s Ratio Prot	0.08	c0.14		c0.17	0.17		c0.10	c0.41		0.03	0.31	
0.70 0.83 0.88 0.74 0.83 0.89 0.62	v/s Ratio Perm	0.12			0.16			0.35			0.25		
40.7 56.4 38.1 50.0 39.4 34.1 28.0 d2 7.1 10.0 1.00 1.00 1.00 1.00 1.00 d2 7.1 10.0 1.00 1.00 1.00 1.00 1.00 d2 7.1 10.0 1.00 1.00 1.00 1.00 d2 7.1 10.0 1.00 1.00 1.00 D2 7.1 10.0 1.00 1.00 1.00 D3 7.2 3.7 88.7 40.5 35.1 E D E E D E D D D D D D D D D D D D D	v/c Ratio	0.70	0.83		0.88	0.74		0.83	0.89		0.62	92.0	
1,00 1,00	Uniform Delay, d1	40.7	56.4		38.1	20.0		39.4	¥.		28.0	36.0	
d2 7.1 10.0 19.2 3.7 19.3 6.4 7.2 47.8 66.4 57.3 53.7 58.7 40.5 35.1 5.1 40.5 35.1 57.1 58.7 40.5 35.1 57.1 58.7 40.5 35.1 57.1 58.7 40.5 35.1 57.1 58.7 40.5 35.1 57.1 58.7 40.5 35.1 57.1 58.7 58.7 58.7 40.5 35.1 57.1 58.7 58.7 58.7 58.7 58.7 58.7 58.7 58.7	Progression Factor	1.00	1.00		1.00	1.00		1:00	1.00		1.00	1.00	
47.8 66.4 57.3 53.7 58.7 40.5 35.1	Incremental Delay, d2	7.1	10.0		19.2	3.7		19.3	6.4		7.2	3.2	
D E E D E D D 61.0 55.1 42.5 E D D 70.0 42.5 Delay 46.5 HCM 2000 Level of Service D 71.0 Sum of lost time (s) 18.2 72.1 140.0 Sum of Service D 73.2 HCM 2000 Level of Service D 74.0 Level of Service F 75.1 140.0 Sum of lost time (s) 18.2 76.1 140.0 Sum of Service F	Delay (s)	47.8	66.4		57.3	53.7		28.7	40.5		35.1	39.5	
61.0 55.1 42.5 E E E D Delay 46.5 HCM 2000 Level of Service D to Capacity ratio 0.89 Sum of lost time (s) 18.2 Of Williadion 93.2% ICU Level of Service F n) 140.0 Sum of lost time (s) 18.2 n) 15 ICU Level of Service F	Level of Service	□	ш		ш	Δ		ш	۵		Ω	□	
E E E D D	Approach Delay (s)		61.0			55.1			45.5			38.9	
46.5 HCM 2000 Level of Service 0.89 Our of lost time (s) zation 93.2% ICU Level of Service	Approach LOS		ш			ш			۵			_	
46.5 HCM 2000 Level of Service pacity ratio 0.89 Sum of lost time (s) zation 93.2% ICU Level of Service	Intersection Summary												
pacity ratio 0.89) 140.0 Sum of lost time (s) zation 93.2% ICU Level of Service	HCM 2000 Control Delay			46.5	오	M 2000	Level of S	Service		٥			
h (s) 140.0 Sum of lost time (s) Utilization 93.2% ICU Level of Service	HCM 2000 Volume to Capac	ity ratio		0.89									
Utilization 93.2% ICU Level of Service	Actuated Cycle Length (s)			140.0	Su	m of lost	time (s)			18.2			
15	Intersection Capacity Utilizati	ioi		93.2%	ಶ	J Level o	f Service			ш			
	Analysis Period (min)			15									

Critical Lane Group

Britannia & RR25 BA Group - NHY

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Timings 2: Regional Rd 25 & Whitlock Ave

2037 Future Total PM 01-12-2024

→	SBT	4413	1375	1375	Α A	9		9		20.0	35.5	81.0	62.3%	4.2	2.3	-1.0	5.5	Lag	Yes	C-Max	91.1	0.70	0.50	10.1	0:0	10.1	В	10.2	В										
۶	SBL	*	09	90	pm+pt	-	9	-		7.0	11.0	11.0	8.5%	3.0	1:0	-1.0	3.0	Lead	Yes	None	102.0	0.78	0.34	12.6	0.0	12.6	В												
←	NBT	4413	1975	1975	≨	2		2		20.0	35.5	81.0	62.3%	4.2	2.3	-1.0	5.5	Lag	Yes	C-Max	93.2	0.72	0.65	7.9	0.0	7.9	⋖	7.8	∢									ပ	
•	NBL	je-	06	90	pm+pt	2	2	2		7.0	11.0			3.0				Lead	Yes	None	102.5	0.79	0.35	0.9	0.0	0.9	⋖										LOS: B	CU Level of Service C	
4	WBR	*	75	75	Perm		∞	∞		10.0	37.5	38.0	29.5%	3.3	3.2	-1.0	5.5			None	16.6	0.13	0.29	13.0	0.0	13.0	മ						of Green				Intersection LOS: B	U Level o	
ţ	WBT	*	40	40	¥	∞		∞		10.0	37.5	38.0	29.5%	3.3	3.2	-1.0	5.5			None	16.6	0.13	0.17	20.0	0.0	20.0	۵	30.2	ပ				IL, Start				≟	≗	
>	WBL	*	25	52	Perm		∞	∞		10.0	37.5	38.0	29.5%	3.3	3.2	-1.0	5.5			None	16.6	0.13	0.15	50.2	0.0	50.2	_						Ind 6:SB7						
†	EBT	æ	40	40	¥	4		4		10.0	37.5	38.0	29.5%	3.3	3.2	-1.0	5.5			None	16.6	0.13	0.32	31.8	0.0	31.8	ပ	52.0	۵				2:NBTL a						
•	EBL	#	105	105	Perm		4	4		10.0	37.5	38.0	29.5%	3.3	3.2	-1.0	5.5			None	16.6	0.13	09.0	67.4	0.0	67.4	ш						to phase		dinated		9	on 72.2%	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	ros	Approach Delay	Approach LOS	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 Capacity Utilization 72.2%	Analysis Period (min) 15

Splits and Phases: 2: Regional Rd 25 & Whitlock Ave



Britannia & RR25 BA Group - NHY

2037 Future Total PM 01-12-2024 Queues 2: Regional Rd 25 & Whitlock Ave

	١	t	*		,	_	_	•	+	
Lane Group	BB	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	
Lane Group Flow (vph)	105	8	22	40	75	6	2015	9	1510	
v/c Ratio	09:0	0.32	0.15	0.17	0.29	0.35	0.65	0.34	0.50	
Control Delay	67.4	31.8	50.2	20.0	13.0	0.9	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	20.0	13.0	0.9	7.9	12.6	10.1	
Queue Length 50th (m)	27.2	10.6	6.1	8.6	0.0	ر د:	69.4	5.6	0.69	
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)		65.9		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.

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Britannia & RR25 BA Group - NHY

HCM Signalized Intersection Capacity Analysis 2: Regional Rd 25 & Whitlock Ave

2037 Future Total PM 01-12-2024

	4	†	<i>></i>	•	ţ	4	•	-	•	٠	→	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SB	SBT	SBR
Lane Configurations	*	æ		<u>, </u>	*	*	r	4413		r	441	
Traffic Volume (vph)	105	40	40	25	40	75	90	1975	40	09	1375	135
Future Volume (vph)	105	40	40	52	40	75	6	1975	40	09	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	2.5	3.0	2.5		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	0.39	1.00		0.99	1.00	1.00	1.00	1.00		1.00	1:00	
퍞	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		95	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	22	40	75	90	1975	40	09	1375	135
RTOR Reduction (vph)	0 10	32	0	0 10	0 0	65	0 8	- 500	0	0 8	5	0
Confl Bods (#hr)	3 4	1	5 14	2 4	\$	2 4	200	±107	.	8	202	
Ulama Vehiclas (9/)	, ý	/02	ò	ò	òò	٥ /	70,	/02	2	o è	6	òò
Heavy Vehicles (%)	%	2%	%0	%0	%	3%	% .	%6	%n	%7.	%9	%
Turn Type	Ferm	Š,		Ferm	≨ '	Fem	pm+pt	≨ '		pm+pt	¥ °	
Protected Phases		4		•	œ	•	ဂ (7			٥	
Permitted Phases	4			∞		∞ .	2			9		
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	
Vehide 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	0.08			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	2.8	0.5		0.4	0.3	0.1	9.0	0.8		1.5	9.0	
Delay (s)	59.4	51.4		20.8	50.9	49.9	5.9	7.3		10.5	9.6	
Level of Service	ш	_		_	۵	۵	∢	⋖		ш	∢	
Approach Delay (s)		55.9			50.3			7.2			9.7	
Approach LOS		ш			۵			∢			∢	
Intersection Summary												
HCM 2000 Control Delay			11.9	H	M 2000	HCM 2000 Level of Service	Service		ď			
HCM 2000 Volume to Capacity ratio	v ratio		0.63	2		5			1			
Actuated Cycle Length (s)			130.0	S	Sum of lost time (s)	fime (s)			14.0			
Intersection Capacity Utilization	5		72 2%	₫	l evel o	CLI Level of Service			C			
Analysis Period (min)			15	2					,			
Chianysis I end (IIIII)			2									
c Crilical Larle Group												

Britannia & RR25 BA Group - NHY

HCM Unsignalized Intersection Capacity Analysis 2037 Future Total PM 3: Regional Rd 25 & Site Dwy (North)

																																								٥	;
																											SB3	328	0	20	1700	0.19	0.0	0.0					l		
*	SBR		20	20			1.00	20																			SB 2	929	0	0	1700	0.33	0:0	0:0					l	Service	3
→	SBT	4413	1390	1390	Free	%0	1.00	1390						None													SB 1	226	0	0	1700	0.33	0.0	0.0		0.0			l	CILL avail of Service	2
+	NBT	444	2105	2105	Free	%0	1.00	2105						None		193											NB3	702	0	0	1700	0.41	0.0	0.0					l	2	2
•	NBL		0	0			1.00	0										1440			1440	4.1		2.2	9	477	NB 2	702	0	0	1700	0.41	0.0	0.0					0	44 0%	7
>	EBR	*	32	32			0.1	32										488		001	488	6.9		3.3	ස	231	NB 1	702	0	0	1700	0.41	0.0	0.0		0.0			l		
4	EBL		0	0	Stop	%0	1.00	0									0.73	2117		C C	1250	8.9		3.5	9	123	EB 1	32	0	33	531	0.0	1.7	12.3	ш	12.3	В				
	Movement	Lane Configurations	Traffic Volume (veh/h)	Future Volume (Veh/h)	Sign Control	Grade	Peak Hour Factor	Hourly flow rate (vph)	Pedestrians	Lane Width (m)	Walking Speed (m/s)	Percent Blockage	Right tum flare (veh)	Median type	Median storage veh)	Upstream signal (m)	pX, platoon unblocked	vC, conflicting volume	vC1, stage 1 conf vol	vC2, stage 2 conf vol	vCu, unblocked vol	tC, single (s)	tC, 2 stage (s)	tF (s)	p0 queue free %	cM capacity (veh/h)	Direction, Lane #	Volume Total	Volume Left	Volume Right	cSH	Volume to Capacity	Queue Length 95th (m)	Control Delay (s)	Lane LOS	Approach Delay (s)	Approach LOS	Intersection Summary	Average Delay	Intersection Canacity I Hilization	mersection departity ountained

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Timings 5: Regional Rd 25 & Etheridge Ave/Collector Road

2037 Future Total PM 01-12-2024

→	SBT	4413	1230	1230	₹	9		9		20.0	38.4	70.0	53.8%	4.2	2.2	-1.0	5.4	Lag	Yes	C-Max	80.4	0.62	0.51	8.7	0:0	7.8	∢	8.7	∢										
٠	SBL	, -	22	22	pm+pt	_	9	-		7.0	11.0	11.0	8.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	91.1	0.70	0.31	31.7	0.0	31.7	ပ											O	
—	NBT	441	1940	1940	≨	7		7		20.0	38.4	70.0	53.8%	4.2	2.2	-1.0	5.4	Lag	Yes	C-Max	88.9	0.68	0.67	8.7	0.0	8.7	∢	10.0	മ								LOS: B	CU Level of Service C	
•	NBL	, -	195	195	pm+pt	2	2	2		7.0	11.0	11.0	8.5%	3.0	1:0	-1.0	3.0	Lead	Yes	None	100.4	0.77	0.57	23.3	0.0	23.3	ပ						of Green				ntersection LOS: B	U Level of	
ţ	WBT	æ	0	0	ΑN	∞		œ		10.0	36.2	37.0	28.5%	3.3	5.9	-1.0	5.2	Lag	Yes	None	11.8	0.09	0.14	1:0	0.0	1.0	∢	31.6	O				TL, Start				Ĭ	⊴	
\	WBL	<u>,-</u>	40	40	Perm		∞	∞		10.0	36.2	37.0	28.5%	3.3	5.9	-1.0	5.2	Lag	Yes	None	11.8	0.09	0.32	62.2	0.0	62.2	ш						and 6:SB						
†	EBT	æ,	0	0	ΑN	4		4		10.0	36.2					-1.0	5.2			None	21.4	0.16	0.12	9.0	0.0	9.0	∢	39.7	Ω				2:NBTL						
4	EBL	J	125	125	pm+pt	7	4	7		7.0	11.0								Yes	None	23.6	0.18	0.52	53.8	0.0	53.8	۵						ed to phase		ordinated		1.3	tion 70.5%	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	ros	Approach Delay	Approach LOS	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 Capacity Utilization 70.5%	Analysis Period (min) 15

Splits and Phases: 5: Regional Rd 25 & Etheridge Ave/Collector Road



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Queues 2037 Future Total PM 5: Regional Rd 25 & Etheridge Ave/Collector Road 01-12-2024

	•	•		-	-		٠	
EBL	EE	WBL	WBT	BE	NBT	SBL	SBT	
125	45	4	40	195	2005	22	1370	
0.52	0.12	0.32	0.14	0.57	0.67	0.31	0.51	
53.8	9.0	62.2	1.0	23.3	8.7	31.7	7.8	
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
53.8	9.0	62.2	1.0	23.3	8.7	31.7	7.8	
59.6	0.0	10.4	0.0	25.5	70.2	3.3	92.6	
48.0	0.0	22.4	0.0	m27.5	m66.1	15.2	115.7	
	53.9		63.5		106.2		169.0	
40.0		40.0		0.07		70.0		
241	638	338	513	344	2990	177	2684	
0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	
0.52	0.07	0.12	0.08	0.57	0.67	0.31	0.51	
	125 0.52 53.8 0.0 53.8 29.6 48.0 0 0 0 0 0 0		45 0.12 0.0 0.0 0.0 0.0 53.9 638 0 0 0	45 40 0.12 0.32 0.6 62.2 0.0 10.4 0.0 22.4 0.0 22.4 40.0 638 338 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	45 40 40 0.12 0.32 0.14 0.06 622 1.0 0.0 0.0 104 0.0 0.0 224 0.0 m 53.9 63.5 63.5 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	45 40 40 195 0.12 0.32 0.14 0.57 0.6 62.2 1.0 23.3 0.0 10.4 0.0 25.5 0.0 22.4 0.0 m27.5 n 53.9 63.8 513 344 0	45 40 40 195 2005 0.12 622 10 233 8.7 3 0.6 622 10 233 8.7 3 0.0 10.4 0.0 25.5 70.2 0.0 22.4 0.0 m27.5 m66.1 1 53.9 63.8 513 344 2990 0	45 40 40 195 2005 55 0.12 0.32 0.14 0.57 0.67 0.31 0.6 622 1.0 23.3 8.7 31.7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis 5: Regional Rd 25 & Etheridge Ave/Collector Road

Capacity Analysis 2037 Future Total PM e Ave/Collector Road 01-12-2024

	1	†	<u>/</u>	>	ļ	4	•	←	•	۶	→	•
Movement	EB	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	2,		r	£,		r	4413		*	4413	
Traffic Volume (vph)	125	0	45	40	0	40	195	1940	65	22	1230	140
Future Volume (vph)	125	0	42	40	0	40	195	1940	65	22	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	
Ft	1.00	0.85		1.00	0.85		1.00	1.00		1.00	0.98	
Fit 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		0.02	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	22	1230	140
RTOR Reduction (vph)	0	37	0	0	37	0	0	7	0	0	7	0
Lane Group Flow (vph)	125	∞	0	40	က	0	195	2003	0	22	1363	0
Heavy Vehicles (%)	3%	%0	%0	%0	%0	%0	%0	4%	%0	%0	4%	2%
Turn Type	pm+pt	NA		Perm	M		pm+pt	¥		pm+pt	NA	
Protected Phases	7	4			∞		2	7		-	9	
Permitted Phases	4			∞			2			9		
Actuated Green, G (s)	21.6	21.6		8.8	8.8		92.8	85.9		84.1	78.2	
Effective Green, g (s)	22.6	22.6		8.6	8.6		8.96	86.9		86.1	79.2	
Actuated g/C Ratio	0.17	0.17		0.08	0.08		0.74	29.0		99.0	0.61	
Clearance Time (s)	4.0	6.2		6.2	6.2		4.0	6.4		4.0	6.4	
Vehide 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		157	2635	
v/s Ratio Prot	c0.04	0.00			0.00		90.00	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	69.0		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		0.5	0.1		1.3	0.7	
Delay (s)	50.2	44.6		9.69	55.8		25.6	8.5		32.0	7.8	
Level of Service	۵	□		ш	ш		ပ	⋖		ပ	∢	
Approach Delay (s)		48.7			27.7			10.0			8.7	
Approach LOS		Ω			ш			ш			∢	
Intersection Summary												
HCM 2000 Control Delay			12.2	Ĭ	HCM 2000 Level of Service	evel of S	ervice		8			
HCM 2000 Volume to Capacity ratio	ty ratio		19.0						ı			
Actuated Cycle Length (s)			130.0	Sn	Sum of lost time (s)	time (s)			16.6			
Intersection Capacity Utilization Analysis Period (min)	Б		70.5%	೦	ICU Level of Service	f Service			O			
c Critical Lane Group			!									

Synchro 11 Report Britannia & RR25
Page 9 BA Group - NHY

Britannia & RR25 BA Group - NHY

2037 Future Total PM 01-12-2024 HCM Unsignalized Intersection Capacity Analysis 6: Regional Rd 25 & Site Dwy (South)

	4	<i>></i>	•	←	→	•	
Movement	盟	EBR	NBL	NBT	SBT	SBR	
Lane Configurations		*		444	4413		
Traffic Volume (veh/h)	0	9	0	2200	1265	20	
Future Volume (Veh/h)	0	4	0	2200	1265	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	9	0	2200	1265	20	
Pedestrians							
Lane Width (m)							
Walking Speed (m/s)							
Percent Blockage							
Right tum flare (veh)							
Median type				None	None		
Median storage veh)							
Upstream signal (m)				186	130		
pX, platoon unblocked	29.0	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)	8.9	6.9	4.1				
tC, 2 stage (s)							
tF (s)	3.5	3.3	2.2				
p0 queue free %	9	8	9				
cM capacity (veh/h)	069	920	750				
Direction, Lane #	EB 1	NB 1	NB 2	NB3	SB 1	SB 2	SB 3
Volume Total	40	733	733	733	206	909	303
Volume Left	0	0	0	0	0	0	0
Volume Right	9	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)	Ξ:	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	∢						
Approach Delay (s)	9.1	0:0			0.0		
Approach LOS	∢						
Intersection Summary							
Average Delay			0.1				
Intersection Capacity Utilization	L		45.8%	0	ICU Level of Service	Service	A
Analysis Period (min)			15				

Synchro 11 Report Page 11 Britannia & RR25 BA Group - NHY

Timings 7: Regional Rd 25 & Britannia Rd

2037 Future Total PM 01-12-2024

→	SBT	ተቶኑ	1055	1055	¥	9		9		20.0	49.7	54.0	41.5%	4.2	3.5	-1.0	2.9	Lag	Yes	C-Max	55.7	0.43	0.59	20.5	0:0	20.5	ပ	28.8	ပ		
۶	SBL	14	195	195	Prot	-		-		7.0	11.0	12.0	9.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	12.7	0.10	0.58	76.2	0.0	76.2	ш				
←	NBT	444	1735	1735	≨	2		5		20.0	49.7	58.0	44.6%	4.2	3.5	-1.0	6.7	Lag	Yes	C-Max	58.6	0.45	1.14	104.0	0.0	104.0	ш	99.5	ш		
•	NBL	14	275	275	Prot	2		2		7.0	11.0	16.0	12.3%	3.0	1.0	-1.0	3.0	Lead	Yes	None	15.6	0.12	99.0	62.6	0.0	62.6	ш				
ţ	WBT	441	220	220	¥	80		∞		10.0	45.5	49.0	37.7%	4.2	3.3	-1.0	6.5	Lag	Yes	None	33.7	0.26	0.92dr	37.3	0.0	37.3	۵	63.2	ш		
>	WBL	1	325	325	Prot	က		က		7.0	11.0	14.0	10.8%	3.0	1.0	-1.0	3.0	Lead	Yes	None	11.0	0.08	1.07	139.7	0.0	139.7	ш				
†	EBT	441	320	320	¥	4		4		10.0	45.5	46.0	35.4%	4.2	3.3	-1.0	6.5	Lag	Yes	None	28.5	0.22	0.40	41.6	0.0	41.6	۵	44.1	۵		
•	EBL	1	22	22	Prot	7		7		7.0	11.0	11.0	8.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	8.0	90.0	0.27	61.9	0.0	61.9	ш				
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	ros	Approach Delay	Approach LOS	Intersection Summary	III di sectioni caminiai y

Actualed Cycle Length: 130
Actualed Cycle Length: 130
Actualed Cycle Length: 130
Offset: 104 (80%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Next 104 (80%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Offset: 105
Control Type: Actualed-Coordinated
Maximum vic Patio: 1.14
Intersection Signal Delay: 70.0
Intersection Capacity Utilization 93.9%
Analysis Period (min) 15
or Defacto Right Lane. Recode with 1 though lane as a right lane.

Intersection LOS: E ICU Level of Service F

100 **€**Ø3 ₹ 007 Splits and Phases: 7: Regional Rd 25 & Britannia Rd ▼ Ø6 (R) Ø2 (R) **\$**002

Synchro 11 Report Page 12 Britannia & RR25 BA Group - NHY

2037 Future Total PM 01-12-2024 Queues 7: Regional Rd 25 & Britannia Rd

	•	†	•	ţ	•	•	۶	→	
Lane Group	EBL	EBT	WBL	WBT	퓜	NBT	SBL	SBT	
Lane Group Flow (vph)	55	395	325	096	275	2240	195	1110	
v/c Ratio	0.27	0.40	1.07	0.92dr	99.0	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	20.0	36.7	~305.7	28.5	44.6	
Queue Length 95th (m)	14.6	44.5	#83.6	52.7	52.7	#354.0	45.0	55.2	
Internal Link Dist (m)		377.9		190.1		165.3		161.9	
Turn Bay Length (m)	0.09		120.0		90.0		0.06		
Base Capacity (vph)	203	1372	302	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	
Information Cummons									

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.

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Britannia & RR25 BA Group - NHY

HCM Signalized Intersection Capacity Analysis 7: Regional Rd 25 & Britannia Rd

2037 Future Total PM 01-12-2024

	4	†	<i>></i>	>	ţ	4	•	•	•	٠	→	`*
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	K.	443		K.	4413		K.	4413		F	4413	
Traffic Volume (vph)	22	320	45	325	220	410	275	1735	202	195	1055	22
Future Volume (vph)	22	320	45	325	220	410	275	1735	202	195	1055	52
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	
Ī	1.00	0.98		1.00	0.94		1.00	0.97		1.00	0.99	
Fit 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)	22	320	42	325	220	410	275	1735	202	195	1055	22
RTOR Reduction (vph)	0	12	0	0	113	0	0	30	0	0	က	0
Lane Group Flow (vph)	52	383	0	325	842	0	275	2210	0	195	1107	0
Heavy Vehides (%)	%9	%0	%0	2%	1%	1%	%0	3%	2%	1%	4%	%0
Turn Type	Prot	ΑN		Prot	¥		Prot	¥		Prot	Α	
Protected Phases	7	4		က	∞		2	2		_	9	
Permitted Phases												
Actuated Green, G (s)	9.9	28.3		10.0	32.7		14.6	26.8		11.7	53.9	
Effective Green, g (s)	9.9	29.3		11.0	33.7		15.6	9.79		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	60.0		60.00	c0.20		c0.08	c0.52		90.0	0.25	
v/s Ratio Perm												
v/c Ratio	0.33	0.38		1.07	0.92dr		0.65	1.16		0.58	09.0	
Uniform Delay, d1	29.6	42.7		59.5	44.6		54.6	36.1		26.1	29.1	
Progression Factor	1.00	1.00		1.32	0.87		1.00	1.00		1.24	0.64	
Incremental Delay, d2	12	0.2		8.8	3.3		3.7	78.1		5.1	 	
Delay (s)	2.09	45.9		147.4	42.1		58.3	114.2		71.7	19.8	
Level of Service	ш	□		ш	۵		ш	ш		ш	Ф	
Approach Delay (s)		45.1			2.89			108.1			27.6	
Approach LOS		Ω			ш			ш			O	
Intersection Summary												
HCM 2000 Control Delay			75.0	ĭ	HCM 2000 Level of Service	evel of S	ervice		ш			
HCM 2000 Volume to Capacity ratio	y ratio		1.01									
Actuated Cycle Length (s)			130.0	Sn	Sum of lost time (s)	time (s)			19.2			
Intersection Capacity Utilization	<u>_</u>		93.9%	೦	ICU Level of Service	Service			ш			
Analysis Period (min)			15									
dr Defacto Right Lane. Recode with 1 though lane as a right lane	ode with	1 though I	ane as a r	ight lane								

Synchro 11 Report Page 14 Britannia & RR25 BA Group - NHY

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis 2037 Future Total PM 8: Site Dwy (South)/Site Dwy (North) & Etheridge Ave

FBL FBT FBR WBL WBT WBR NBL NBT NBR SBL 10 100 10 85 175 75 15 0 35 35 10 100 10 85 175 75 15 0 35 35 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 35 35 222 22 22 35 42 35 42 224 250 110 85 175 77 6.5 6.2 7.1 225 22 22 3.5 4.0 3.3 3.5 240 241 242 424 355 424 355 424 250 250 250 250 250 250 250 250 250 250 250 250 250 250 250 25		4	†	<i>></i>	>	ţ	4	•	←	•	۶	→	•
10 100 10 88 175 75 15 0 35 35 35 16 10 100 100 10 85 175 75 15 0 35 35 35 35 10 100 10 85 175 75 15 0 35 35 35 35 10 100 10 86 175 75 15 0 35 35 35 35 10 10 100 100 100 100 100 100 100 100	ovement	EB	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
10 100 10 85 175 75 15 0 35 35 75 15 0 0 35 35 35 10 100 100 100 100 100 100 100 100 100	ine Configurations		4			4			4			4	
10 100 10 85 175 75 15 0 35 35 Free Free Stop	affic Volume (veh/h)	9	100	19	82	175	75	15	0	35	35	.0	10
Free Free Stop Free Stop 1.00 1	ıture Volume (Veh/h)	9	100	9	82	175	75	12	0	35	35	0	10
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	gn Control		Free			Free			Stop			Stop	
100 100 100 100 100 100 100 100 100 100	ade		%0			%0			%0			%0	
10 100 10 85 175 75 15 0 35 35 None None None None None None 110 120 202 110 222 323 411 411 411 421 428 428 429 424 425 424 426 426 427 428 428 428 428 428 428 428	eak 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
None None 78 0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96	ourly flow rate (vph)	9	100	9	83	175	75	15	0	32	32	0	9
None None 78 0.96 0.96 0.96 0.96 250 110 518 545 105 542 22 22 22 3.5 4.0 3.3 3.5 99 94 97 100 96 92 131 1420 335 50 424 120 335 50 410 33 35 100 10 0.00 0.00 0.00 0.00 0.00 0.00 0	edestrians												
None None 78 0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96	ine Width (m)												
None None 78 0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96	alking Speed (m/s)												
None 78 0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96	ercent Blockage												
None	ght tum flare (veh)												
0.96 0.06 0.71 0.96 0.97 7.1 6.5 6.2 7.1 1.1 0.96 0.96 9.2 7.1 0.96 0.96 9.2 7.1 0.96 0.2 7.1 0.96 0.2 7.1 0.96 0.2 7.1 0.96 0.2 7.1 0.96 0.2 0.7 0.96 0.7 0.96 0.7 0.96 0.7 0.99 0.7 0.99 0.7 0.99 0.7 0.99 0.7 0.99 0.7 0.99 0.7 0.99 0.7 0.99 0.7 0.99 0.7 0.99 0.7	edian type		None			None							
250	edian storage veh)												
0.96 0.7 0.96 0.	ostream signal (m)					82							
250 110 518 545 105 202 110 480 508 105 22 2 2 3.5 4.0 3.3 99 94 97 100 96 11331 1493 746 477 0 85 15 35 10 10 85 15 35 10 0 10 10 10 10 10 10 0 10 10 10 10 10 10 0 10 10 10 10 10 10 0 10 10 10 10 10 10 0 10 10 10 10 10 10 10 0 10 10 10 10 10 10 0 10 10 10 10 10 10 0 10 10 10 10 10 10 0 10 10 10 10 10 10 10 0 10 10 10 10 10 10 0 10 10 10 10 10 10 0 10 10 10 10 10 10 0 10 10 10 10 10 10 0 10 10 10 10 10 10 0 10 10 10 10 10 10 0 10 10 10 10 10 10 0 10 10 10 10 10 10 0 10 10 10 10 10 10 0 10 10 10 10 10 10 10 0 10 10 10 10 10 10 10 10 10 0 10 10 10 10 10 10 10 10 10 10 10 10 10	, platoon unblocked	96.0						96:0	96.0		96.0	96.0	96.0
202 110 480 508 105 4.1 4.1 7.1 6.5 6.2 2.2 2.2 3.5 4.0 3.3 99 94 97 100 96 133 493 50 45 100 335 50 45 10 85 15 35 10 10 05 0.07 0.09 0.2 1.4 1.8 2.5 0.7 2.3 10.4 13.3 A A B B B B B C.7 2.3 10.4 13.3 A A A B B B C.7 2.3 10.4 13.3 A A A B B B C.7 2.3 10.4 13.3 A A A B B B C.7 2.3 10.4 13.3 A A A B B B C.7 2.3 10.4 13.3 A A A B B B C.7 2.3 10.4 13.3 A A A B B B C.7 2.3 10.4 13.3 B B B C.7 2.3 10.4 13.3 A A A B B B C.7 2.3 10.4 13.3 A A A B B B C.7 2.3 10.4 13.3 A A A B B B C.7 2.3 10.4 13.3 A A A B B B C.7 2.3 10.4 13.3 A A A B B B C.7 2.3 10.4 13.3 A A A B B B C.7 2.3 10.4 13.3 A A A B B B C.7 2.3 10.4 13.3 A A A B B B C.7 2.3 10.4 13.3 B B B C.8 2.4 40.0 50.0 C.8 1.4 10.3 B B B C.8 2.4 10.0 50.0 C.8 1.4 10.3 B B B C.8 2.4 10.0 50.0 C.8 1.4 10.3 C.8 2.4 10.0 50.0 C.8 1.4 10.0 50.0	; conflicting volume	250			110			218	545	105	545	512	212
202 110 480 508 105 4.1 4.1 4.1 7.1 6.5 6.2 22 3.5 4.0 3.3 99 94 94 97 100 96 1331 1493 50 45 10 85 15 35 10 131 1493 75 10 0.01 0.06 0.07 0.09 0.2 1.4 1.8 2.5 0.7 2.3 10.4 13.3 0.7 2.3 10.4 13.3 0.7 2.3 10.4 13.3 0.7 2.3 6.6 ICU Level of Service A 15 4.1 1.8 2.5 0.7 2.3 10.4 13.3 0.7 2.3 10.4 13.3 0.7 2.3 10.4 13.3 0.7 2.3 10.4 13.3 0.7 2.3 10.4 13.3 0.7 2.3 10.4 13.3 0.7 2.3 10.4 13.3 0.7 2.5 6.6 ICU Level of Service A	:1, stage 1 conf vol												
202 110 480 508 105 4.1 4.1 4.1 7.1 6.5 6.2 2.2 2.2 3.5 4.0 3.3 99 94 97 100 96 1331 1493 746 45 10 85 15 35 10 10 75 35 10 10 10 05 007 009 0.2 1.4 1.8 2.5 0.7 2.3 10.4 13.3 A A B B B 0.7 2.3 10.4 13.3 A A A B B B 0.7 2.3 10.4 13.3 A A A B B B 0.7 2.3 10.4 13.3 A A A B B B 0.7 2.3 10.4 13.3 A A A B B B 0.7 2.3 10.4 13.3 A A A A B B B 0.7 2.3 10.4 13.3 A A A A B B B 0.7 2.3 10.4 13.3 A A A A B B B 0.7 2.3 10.4 13.3 A A A A B B B 0.7 2.5 0.7 2.3 10.4 13.3 A A A A B B B 0.7 2.5 0.7 2.3 10.4 13.3 A A A A A A B B B 0.7 2.5 0.7 2.3 10.4 13.3 A A A A A A B B B 0.7 2.5 0.7 2.3 10.4 13.3 A A A A A A A A A A A A A A A A A A A	2, stage 2 conf vol												
4.1 4.1 7.1 6.5 6.2 2.2 2.2 3.5 4.0 3.3 99	u, unblocked vol	202			110			480	208	105	206	475	163
2.2 3.5 4.0 3.3 99 94 97 100 96 133 99 94 97 100 96 96 94 97 100 96 96 94 97 100 96 96 96 96 96 96 96 96 96 96 96 96 96	single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
22 3.5 4.0 3.3 3.9 99 99 94 95 100 96 131 1483 452 424 955 4 100 96 131 120 335 50 45 100 131 1493 1493 452 424 955 4 100 96 100 100 100 100 100 100 100 100 100 10	, 2 stage (s)												
99 94 97 100 96 1331 1493 181 881 120 335 50 45 10 85 15 35 10 1331 1493 716 477 0.01 0.05 0.07 0.09 0.2 1.4 1.8 2.5 0.7 2.3 10.4 13.3 A A B B B 0.7 2.3 10.4 13.3 A A A B B B 0.7 2.3 10.4 13.3 A A A B B B 0.7 2.3 10.4 13.3 A A A B B B 0.7 2.3 10.4 13.3 A A A A B B B 0.7 2.3 10.4 13.3 A A A B B B 0.7 2.3 10.4 13.3 A A A B B B 0.7 2.3 10.4 13.3 A A A A B B B 0.7 2.3 10.4 13.3 A A A A B B B 0.7 2.3 10.4 13.3 A A A A B B B 0.7 2.3 10.4 13.3 A A A A B B B 0.7 2.3 10.4 13.3 A A A A B B B 0.7 2.3 10.4 13.3 A A A A B B B 0.7 2.3 10.4 13.3 A A A A A B B B 0.7 2.3 10.4 13.3 A A A A B B B 0.7 2.3 10.4 13.3 A A A A A A A A A A A A A A A A A A A	(s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
1331 1483 452 424 955 428 42	dnene free %	66			ᆶ			26	100	96	92	100	66
EB1 WB1 NB1 SB1 120 335 50 45 10 86 15 35 10 86 15 35 10 87 14 1331 1493 716 477 0.01 0.06 0.07 0.09 0.7 2.3 10.4 13.3 A A B B B 0.7 2.3 10.4 13.3 B B B B B B COT	l capacity (veh/h)	1331			1493			452	424	922	424	443	854
120 335 50 45 10 85 15 35 10 85 15 35 10 86 15 35 10 0.01 0.06 0.07 0.09 0.7 2.3 10.4 13.3 A A B B B 0.7 2.3 10.4 13.3 B B B 3.6 ICU Level of Service	ection, Lane #	EB 1	WB1	NB 1	SB 1								
10 86 15 35 10 1731 1433 716 477 0.01 0.06 0.07 0.09 0.7 2.3 10.4 13.3 A A B B B B B B B B B B B B B B B B B	lume Total	120	335	20	45								
10 75 35 10 1331 1493 716 477 0.01 0.06 0.07 0.09 0.2 1.4 1.8 2.5 0.7 2.3 10.4 13.3 A A B B B 0.7 2.3 10.4 13.3 B B B B 3.6 ICU Level of Service	lume Left	9	82	15	32								
1331 1493 716 477 0.01 0.06 0.07 0.09 0.01 14 18 2.5 0.7 2.3 10.4 13.3 A A B B B 0.7 2.3 10.4 13.3 B B B 3.6 Rization 37.6% ICU Level of Service	lume Right	9	75	32	9								
0.01 0.06 0.07 0.09 0.2 1.4 1.8 2.5 0.7 2.3 10.4 13.3 A A B B B 0.7 2.3 10.4 13.3 B B B 3.6 ICU Level of Service	I	1331	1493	716	477								
02 14 18 25 0.7 2.3 10.4 13.3 A A B B B 0.7 2.3 10.4 13.3 B B B 8 B 8 B 8 B 13.3 A A B B B 9 B 14.13.3 B B B 15.5 B B B 16.5 B B B 17.5 B B B 18.5 B B B B 18.5 B B B B 18.5 B B B B B 18.5 B B B B B B 18.5 B B B B B B B B 18.5 B B B B B B B B B B B B B B B B B B B	lume to Capacity	0.01	90:0	0.07	0.09								
0.7 2.3 10.4 13.3 A A B B B B B B B Any 3.6% ICU Level of Service	iene Length 95th (m)	0.5	7.	1.8	2.5								
A A B B 0.7 2.3 10.4 13.3 any 3.6 10.1 Level of Service	introl Delay (s)	0.7	2.3	10.4	13.3								
9.7 2.3 10.4 13.3 B B B N 3.6 ICU Level of Service 15.7 6% ICU Level of Service	ne LOS	∢	∢	Ф	ω								
B B mmary 36 1CU Level of Service 1fmin) 15	proach Delay (s)	0.7	2.3	10.4	13.3								
mmany 3.6 ICU Level of Service 15 min 15	proach LOS			В	В								
3.6 pacity Ulitzation 37.6% ICU Level of Service	tersection Summary												
37.6% ICU Level of Service	erage Delay			3.6									
	ersection Capacity Utilizatio	nc		37.6%	೦	U Level o	f Service			∢			
	Analysis Period (min)			15									

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Timings 10: Britannia Rd & Farmstead Dr

2037 Future Total PM 01-12-2024

•	SBR	Y C.	20	20	Perm		8	8		10.0	15.3	41.0	39.0%	3.3	2.0	-1.0	4.3			None	11.4	0.11	0.10	18.6	0.0	18.6	В						een			Intersection LOS: A	ICU Level of Service A	
٠	SBL	<u>,-</u>	22	22	Prot	∞		∞		10.0	15.3			3.3	2.0	-1.0	4.3			None	11.4	0.11	0.29	47.2	0.0	47.2	۵	39.6	Ω				अवार व ज			Inte	ਹ	
ļ	WBT	441	800	800	ΑN	9		9		20.0	29.4	53.0	20.5%	4.2	2.2	-1.0	5.4	Lag	Yes	C-Max	83.6	0.80	0.25	4.2	0.0	4.2	∢	4.2	∢			-	d 6:WBI,					
†	EBT	444	395	395	Ϋ́	2		2			29.4		61.0%	4.2	2.2	-1.0	5.4			ن	88.0		0.10		0.0	2.2	∢	2.2	∢			Ē	EBILan					
4	EBL	<i>y</i> -	25	25	pm+pt	5	2	5		7.0	11.0	11.0	10.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	89.3	0.85	0.05	2.0	0.0	2.0	A			Α		th: 105	enced to phase 2	bataniprood ba	ed-Cooldinated	J.29 play: 5.5	Utilization 37.2%	15
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	SOT	Approach Delay	Approach LOS	Intersection Summary	Cycle Length: 105	Actuated Cycle Length: 105	Office (10 (0%), Referenced to phase 2:EBIL and 6:WBI, Start of Green	Control Type: Action	Control Type: Actualeu-Coolunialeu	Maximum v/c Ratio: 0.29	Intersection Capacity Utilization 37.2%	Analysis Period (min) 15

Splits and Phases: 10: Britannia Rd & Farmstead Dr



Britannia & RR25
Synchro 11 Report
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Queues 2037 Future Total PM 10: Britannia Rd & Farmstead Dr 01-12-2024

	•	†	ţ	٠	•	
Lane Group	EB	EBT	WBT	SBL	SBR	
Lane Group Flow (vph)	25	395	880	55	20	
v/c Ratio	0.02	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	9.5	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	909	277	
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						

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Britannia & RR25 BA Group - NHY

HCM Signalized Intersection Capacity Analysis 10: Britannia Rd & Farmstead Dr

2037 Future Total PM 01-12-2024

Lane Configurations Traffic Volume (vph) Future Volume (vph) Ideal Flow (vphp) Ideal Lost time (s)	ב	- E	_ M M	WBR	SBL	SBR	
Traffic Volume (vph) Future Volume (vph) Ideal Flow (vphpl) Arial Lost time (s)	K	***	441		K	*	
Future Volume (vph) Ideal Flow (vphpl) Total Lost time (s)	25	395	800	80	22	20	
Ideal Flow (vphpl)	22	395	800	80	22	20	
Total Lost time (s)	1900	1900	1900	1900	1900	1900	
000000000000000000000000000000000000000	3.0	5.4	5.4		4.3	4.3	
Lane Util. Factor	1.00	*0.80	*0.80		1.00	1.00	
표	1.00	1.00	0.99		1.00	0.85	
Fit 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)	22	395	800	80	22	20	
RTOR Reduction (vph)	0	0	4	0	0	18	
Lane Group Flow (vph)	52	395	928	0	22	2	
Heavy Vehides (%)	%0	%0	%	%0	4%	%0	
Turn Type	pm+pt	A	Ν		Prot	Perm	
Protected Phases	2	2	9		∞		
Permitted Phases	2					8	
Actuated Green, G (s)	84.9	84.9	78.1		8.4	8.4	
Effective Green, g (s)	85.9	82.9	79.1		9.4	9.4	
Actuated g/C Ratio	0.82	0.82	0.75		0.09	60:0	
Clearance Time (s)	4.0	6.4	6.4		5.3	5.3	
Vehide 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	60.00	c0.20		c0.03		
v/s Ratio Perm	0.04					0.00	
v/c Ratio	90:0	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	∢	⋖	∢		Δ	۵	
Approach Delay (s)		5.0	4.2		45.6		
Approach LOS		⋖	⋖		۵		
Intersection Summary							
HCM 2000 Control Delay			5.8	¥	M 2000 I	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	y ratio		0.26				
Actuated Cycle Length (s)			105.0	Su	Sum of lost time (s)	time (s)	12.7
Intersection Capacity Utilization	L.		37.2%	ੂ	ICU Level of Service	f Service	∢
Analysis Period (min)			15				

Timings 2037 Future Total PM 11: Britannia Rd & Rose Way 01-12-2024

11: Britannia Kd & Kose way	Rose W	/ay				0.1-12-2024
	1	†	ţ	۶	`	
Lane Group	B	EBT	WBT	SBL	SBR	
Lane Configurations	*	**	4413	<u>, , , , , , , , , , , , , , , , , , , </u>	¥.	
Traffic Volume (vph)	8	970	1235	8	.20	
Future Volume (vph)	8	970	1235	93	20	
Turn Type	pm+pt	¥	Ϋ́	Prot	Perm	
Protected Phases	2	7	9	4		
Permitted Phases	2				4	
Detector Phase	2	2	9	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	20.0	50.0	
Total Split (%)	11.5%	61.5%	20.0%	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	0.9	0.9	2.0	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	5.6	5.3	28.7	18.8	
Queue Delay	0:0	0.0	0.0	0.0	0.0	
Total Delay	3.0	5.6	5.3	28.7	18.8	
SOT	∢	∢	∢	ш	В	
Approach Delay		5.6	5.3	33.8		
Approach LOS		∢	∢	ပ		
Intersection Summary						
Cycle Length: 130						
Actuated Cycle Length: 130	0					
Offset. 65 (50%), Referenced to phase 2:EBTL and 6:WBT, Start of Green	ed to phase	2:EBTL	and 6:WB	T, Start of	Green	
Natural Cycle: 85						
Control Type: Actuated-Coordinated	ordinated					
Maximum v/c Ratio: 0.36						
Intersection Signal Delay: 5.1	5.1			☱	Intersection LOS: A	
Intersection Capacity Utilization 51.9%	ation 51.9%			೦	ICU Level of Service A	
Analysis Period (min) 15						

Splits and Phases: 11: Britannia Rd & Rose Way

202 (R)

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206 (R)

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Britannia & RR25
BA Group - NHY
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Queues 2037 Future Total PM 11: Britannia Rd & Rose Way 01-12-2024

Lane Group EBL EBT WBT SBL SBR Lane Group Flow (vph) 80 970 1295 30 50 w(Ratio 0.23 0.25 0.36 0.27 0.27 Control Delay 3.0 2.6 5.3 8.7 18.8 Queue Delay 3.0 2.6 5.3 58.7 18.8 Queue Length Soft (m) 7.7 0.0 0.0 0.0 Queue Length Soft (m) 7.7 0.0 0.0 Queue Length Soft (m) 7.7 0.0 0.0 Intra Bay Length (m) 5.0 18.0 13.0 Intra Bay Length (m) 5.0 2.6 5.3 San Sees Capacity (vph) 392 3941 3607 624 Slarvation Cap Reductin 0 0 0 0 Spilback Cap Reductin 0 0 0 0 Spilback Cap Reductin 0 0 0 0 Spilback Cap Reductin 0 0	Flow (vph)				
90 970 1295 30 023 0.25 0.36 0.20 3.0 2.6 5.3 58.7 0.0 0.0 0.0 0.0 3.0 2.6 5.3 58.7 10 2.8 21.4 45.0 7.7 10 20.1 148.0 92.6 50.0 50.0 10 0 0 0 10 0		EBT	WBT	SBL	SBR
9.23 0.26 0.36 0.20 3.0 2.6 5.3 88.7 0.0 0.0 0.0 0.0 3.0 2.6 5.3 58.7 10 2.8 21.4 45.0 7.7 10 7.7 148.0 92.6 50.0 3941 3607 624 10 0 0 0 10 0 10 0		920	1295	30	50
3.0 2.6 5.3 58.7 (10.0 c) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.		0.25	0.36	0.20	0.27
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0		5.6	5.3	28.7	18.8
3.0 2.6 5.3 58.7 (1.5) (0.0	0.0	0.0	0.0
) 2.8 21.4 45.0 7.7 (1.4 m24.2 53.4 18.0 50.0 50.0 392 3941 3607 624 10.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		5.6	5.3	28.7	18.8
) m4.1 m24.2 53.4 18.0 190.1 148.0 92.6 50.0 382 3941 3607 624 10 0 0 0 10 0 0 0	2.8	21.4	45.0	7.7	0.0
50.0 50.0 30.2 30.2 30.2 30.0 50.0	m4.1	m24.2	53.4	18.0	13.0
50.0 392 3941 3607 624 In 0 0 0 0 1 0 0 0 0 0.20 0.25 0.36 0.05	Internal Link Dist (m)	190.1	148.0	97.6	
392 3941 3607 624 n 0 0 0 0 0 0 0 0 0 0 0 0 0.20 0.25 0.36 0.05				20.0	
n 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		3941	3607	624	591
0.20 0.25 0.36 0.05	Starvation Cap Reductn 0	0	0	0	0
0 0 0 0 0 0.20 0.25 0.36 0.05	Spillback Cap Reductn 0	0	0	0	0
0.20 0.25 0.36 0.05	Storage Cap Reductn 0	0	0	0	0
Intersection Summary		0.25	0.36	0.05	0.08
	Intersection Summary				
V-1	, ()		1		

HCM Signalized Intersection Capacity Analysis 11: Britannia Rd & Rose Way

2037 Future Total PM 01-12-2024

Medical English Medical En		\	Ť	ļ	1	٠	•	
		EBF	EBT	WBT	WBR	SBL	SBR	
80 970 1235 60 30 50 1900 1900 1900 1900 1900 1900 3.0 6.0 6.0 5.0 5.0 1.00 1900 1900 1900 1900 1900 3.0 6.0 6.0 5.0 5.0 1.00 1.00 0.99 1.00 0.85 0.95 1.00 1.00 0.95 1.00 1805 4560 4528 1805 1615 0.15 1.00 1.00 1.00 1.00 1.00 0.15 1.00 1.00 1.00 1.00 1.00 0.15 1.00 1.00 1.00 1.00 1.00 0.16 1.00 1.00 1.00 1.00 1.00 0.17 1235 60 30 50 0.00 0.00 0.00 0.00 0.00 0.00 0.00	rations	-	444	444		<u>,-</u>	R.	
88 977 1235 60 30 50 1900 1900 1900 1900 1900 1900 3 0 6 0 6 0 1.00 0.99 0.09 0.00 0.085 0.95 1.00 0.09 0.095 1.00 1.00 0.099 0.095 1.00 1.00 0.095 0.10 1.00 1.00 0.095 0.10 1.00 1.00 0.095 0.10 1.00 1.00 0.095 0.10 1.00 1.00 0.095 0.10 1.00 1.00 0.095 0.10 1.00 1.00 0.095 0.10 1.00 1.00 0.095 0.10 1.00 1.00 0.095 0.10 1.00 1.00 0.095 0.10 1.00 1.00 0.095 0.10 0.10 1.00 0.095 0.10 0.10 1.00 0.007 0.10 0.10 0.007 0.10 0.10 0.007 0.10 0.10 0.007 0.10 0.10 0.007 0.10 0.10 0.007 0.10 0.10 0.007 0.10 0.10 0.007 0.10 0.10 0.007 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.10	e (vbh)	8	970	1235	9	8	20	
1900 1900 1900 1900 1900 1900 1900 1900	e (vph)	8	970	1235	09	99	20	
3.0 6.0 6.0 5.0 5.0 5.0 1.00 1.00 1.00 1.00 1.00	ohpl)	1900	1900	1900	1900	1900	1900	
1.00 1.00 0.099 1.00 0.085 0.095 1.00 0.085 0.095 1.00 0.085 0.095 1.00 0.085 0.095 1.00 0.085 0.095 1.00 0.085 0.095 1.00 0.085 0.095 0.00 0.095 1.00 0.095 1.00 0.095 0.00 0.095 0.00 0.095 0.00 0.095 0.00 0.095 0.00 0.00	e (s)	3.0	0.9	0.9		2.0	2.0	
1.00 1.00 0.99 1.00 0.85 1.00 1.00 0.99 1.00 0.85 1.805 4560 4528 1805 1615 287 4560 4528 1805 1615 280 970 1234 0.00 0.00 80 970 1234 0.00 47 80 970 1294 0.00 47 80 970 1294 0.00 47 80 970 1294 0.00 47 80 970 1294 0.00 98 80	tor	1.0	*0.80	*0.80		1.00	1.00	
0.95 1.00 0.95 1.00 0.95 1.00 0.180 0.180 0.190 0.190 0.190 0.190 0.190 0.190 0.190 0.190 0.190 0.190 0.190 0.190 0.190 0.190 0.100 0.100 0.190		1.00	1.00	0.39		1.00	0.85	
1805 4560 4528 1805 1615 0.15 1,00 1,00 0,00 0,00 1,00 0,00 1,00 0,00 1,00 0,00 1,00		0.95	1:00	1.00		0.95	1.00	
0.15 1,00 0,15 1,00 0,15 1,00 0,15 1,00 0,15 1,00 1,00	rot)	1805	4560	4528		1805	1615	
287 4560 4528 1805 1615 1.00 1.00 1.00 1.00 80 970 1235 60 30 30 80 970 1234 0 0 47 80 970 1234 0 0 47 80 970 1234 0 0 47 80 970 1234 0 0 47 80 970 1234 0 0 47 80 970 1234 0 0 47 80 970 1234 0 0 47 80 970 1234 0 0 47 80 970 1234 0 0 47 80 970 1234 1 11 80 970 1234 0 0 47 80 970 1234 1 11 80 970 1234 0 0 47 80 970 1234 1 11 80 970 1234 0 90 80 970 1234 1 11 80 970 1234 0 90 80 970 1234 1 11 80 970 1230 0 0 1 80 970 1234 1 11 80 970 1234 0 100 80 90 90 90 80 90 90 90 90 80 90 90 90 90 80 90 90 90 90 80 90 90 90 90 80 90 90 90 90 80 90 90 90 90 80 90 90 90 90 80 90 90 90 90 80 90 90 90 90 80 90 90 90 90 80 90 90 90 90 80 90 90 90 90 80 90 90 90 90 80 90 90 90 90 80 90 90 90 90 80 90 90 90 90 80 90 90 90 90 80 90 90 90 80 90 90 90 80 90 90 90 80 90 90 90 80 90 90 90 90 80 9		0.15	0.1	1:00		0.95	1.00	
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	erm)	287	4560	4528		1805	1615	
80 970 1235 60 30 50 80 970 1234 0 0 47 80 070 1294 0 0 47 80 070 1294 0 0 47 80 070 1294 0 0 47 80 070 1294 0 0 47 80 070 1294 0 0 80 80 070 1004 99.4 80 80 80 077 007 80 08 0.77 0.07 80 08 0.77 0.07 80 0.80 0.77 0.07 80 0.80 0.77 0.07 80 0.80 0.77 0.07 80 0.80 0.77 0.07 80 0.80 0.77 0.07 80 0.80 0.77 0.07 80 0.80 0.77 0.07 80 0.80 0.77 0.07 80 0.80 0.77 0.07 80 0.80 0.77 0.07 80 0.80 0.77 0.07 80 0.80 0.80 0.00 80 0.80 0.77 0.00 80 0.80 0.80 0.00 80 0.80 0.80 0.00 80 0.80 0.	ctor, PHF	1.00	1.00	1.00	9.	9.	1.00	
0 0 0 1 0 0 47 8 0 970 1294 0 0 3 0% 0% 0% 0% 0% 0% 0% 100.0 0% 0% 0% 0% 0% 100.0 1090 99.4 8.0 8.0 110.0 110.0 100.4 9.0 9.0 0.86 0.85 0.77 0.07 4.0 7.0 7.0 6.0 6.0 3.0 3.0 3.0 3.0 3.0 3.19 38.58 3.497 12.4 111 0.01 0.02 0.20 0.03 0.20 0.20 0.03 0.20 0.20 0.03 0.21 2.0 4.7 57.3 56.4 1.45 1.0 0.1 0.01 0.3 0.1 0.3 1.0 0.1 3.3 2.5 5.0 58.3 56.5 A A A A A A 2.5 5.0 58.3 56.5 A A A A A 2.5 5.0 57.2 A A A A A 2.6 5.0 57.2 A A A A A 2.7 HCM 2000 Level of Service action 51.9% ICU Level of Service	h)	8	970	1235	8	8	20	
98 970 1294 0 30 3 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 109.0 99.4 80 80 110.0 100.4 90.4 80 80 110.0 100.4 90.9 90.0 0.85 0.85 0.77 0.07 0.07 4.0 7.0 7.0 6.0 6.0 6.0 3.0 3.0 3.0 3.0 3.0 0.20 0.21 0.029 0.02 0.20 0.21 0.029 0.03 0.21 0.22 0.37 0.04 0.03 0.21 0.20 0.00 0.25 0.25 0.37 0.04 0.31 0.3 10 0.1 0.3 0.1 0.3 10 0.1 0.3 0.1 0.3 10 0.1 0.3 0.1 0.3 10 0.1 0.3 0.1 0.3 10 0.1 0.3 0.1 0.3 5.0 0.3 0.1 0.3 10 0.1 0.3 0.1 0.3 10 0.1 0.3 0.1 0.3 5.0 0.0 0.0 0.25 0.0 5.7 8 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	tion (vph)	0	0	τ-	0	0	47	
0% 0% 0% 0% pm+pt NA NA Prot Perm 2 6 4 4 109 109 99.4 8.0 8.0 109 109 99.4 8.0 8.0 109 100 100.4 9.0 9.0 0.8 0.77 0.0 0.0 0.8 0.77 0.0 0.0 3.0 3.0 3.0 3.0 3.1 3.0 3.0 3.0 0.0 0.07 0.07 0.0 0.20 0.20 0.0 0.0 0.20 0.25 0.37 0.02 0.0 0.20 0.20 0.0 0.0 0.0 0.20 0.20 0.0 0.0 0.0 0.3 0.1 0.3 1.0 0.1 0.3 0.1 0.3 5.0 5.2 A A A A <td< td=""><td>-low (vph)</td><td>8</td><td>970</td><td>1294</td><td>0</td><td>೫</td><td>က</td><td></td></td<>	-low (vph)	8	970	1294	0	೫	က	
pm+pt NA NA Prot Perm 5 2 6 4 109.0 109.0 99.4 8.0 8.0 110.0 110.0 100.4 9.0 9.0 0.85 0.85 0.77 0.07 4.0 7.0 7.0 6.0 6.0 3.0 3.0 3.0 3.0 3.0 3.19 3858 3497 124 111 0.01 c.021 c.029 c.0.02 0.20 0.20 0.20 0.20 0.20 0.3 0.1 0.3 56.4 1.45 1.22 1.00 1.00 0.3 0.1 0.3 1.0 0.1 3.3 2.5 5.0 58.3 56.5 A A A A A A A A A A A Social service action 130 Sum of lost time (s) ration 51.9% ICU Level of Service	es (%)	%0	%0	%0	%0	%0	%0	
5 2 6 4 4 109.0 109.0 99.4 8.0 8.0 8.0 110.0 110.0 100.4 9.0 9.0 9.0 9.0 9.0 9.0 9.0 9.0 9.0 9.0		ta+ma	AN	AN		Prot	Perm	
109.0 109.0 99.4 8.0 4 110.0 100.1 00.0 100.4 9.0 9.0 0.85 0.85 0.77 0.07 0.07 4.0 7.0 7.0 6.0 6.0 3.0 3.0 3.0 3.0 3.0 3.19 3.85 3497 1.24 1.11 0.01 0.021 0.029 0.022 0.20 0.25 0.37 0.024 0.03 2.1 1.45 1.22 1.00 1.00 1.00 1.00 0.3 0.1 0.3 5.0 5.8 5.6 A A A A A A A A A A A A A A A A A A A	ases		2	9		4		
1090 1090 99.4 8.0 8.0 110.0 110.0 110.0 110.0 110.4 9.0 9.0 9.0 110.0 1	ases	2					4	
1100 1100 100.4 9.0 9.0 9.0 9.0 9.0 9.0 9.0 9.0 9.0 9.0	en G(s)	109.0	109.0	99 4		80	80	
0.85 0.85 0.77 0.07 0.07 0.07 0.07 0.08 0.85 0.77 0.07 0.07 0.07 0.07 0.07 0.07 0.0	an a (s)	110.0	110.0	100.4		0.6	06	
4.0 7.0 6.0 6.0 6.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3	Ratio	28.0	0.85	120		200	200	
3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	me (s)	4.0	200	2.0		9	6.0	
319 3858 3497 124 111 0.01 c.021 c.029 c.0.02 0.00 0.20 0.26 0.25 0.37 0.24 0.003 2.1 2.0 4.7 57.3 56.4 1.45 1.22 1.00 1.00 1.00 0.3 0.1 0.3 1.0 0.1 3.3 2.5 5.0 58.3 56.5 A A A B E E 2.5 5.0 57.2 A A A B E C B C C C C C C C C C C C C C C C C C C	sion (e)	2.0	2.0	0.6		0.0	3.0	
119 3635 3497 1124 1111 0.01 0.021 0.029 0.002 0.20 0.20 0.03 0.00 0.25 0.25 0.37 0.24 0.03 2.1 1.45 1.22 1.00 1.00 1.00 0.3 0.1 0.3 1.0 0.1 3.3 2.5 5.0 58.3 56.5 A A A A A A A A A A A A A A A A A A A	(9)	25	25	250		25	277	
0.01 60.21 60.29 60.02 0.26 0.25 0.37 0.24 0.03 0.25 0.25 0.37 0.24 0.03 0.3 0.4 1 57.3 56.4 1.45 1.22 1.00 1.00 0.3 0.1 0.3 1.0 0.1 3.3 2.5 5.0 58.3 56.5 A A A E E E A A A F E A A A F A A A F A A A F A A A F A A A F A A A F A A A F A A A F A A A F A A A B A B A A A B A B A A A B A B A A A B A B	(ydy) c	319	3828	3497		124	111	
0.25 0.25 0.37 0.00 0.00 0.25 0.25 0.37 0.24 0.03 0.24 0.03 0.2 0.3 0.03 0.3 0.1 0.3 0.1 0.0 0.10 0.3 0.1 0.3 0.1 0.3 0.1 0.3 0.1 0.3 0.1 0.3 0.1 0.3 0.1 0.3 0.1 0.3 0.1 0.3 0.1 0.3 0.1 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3		0.01	c0.21	c0.29		c0.02		
0.25 0.27 0.24 0.03 1.1 2.0 4.7 57.3 56.4 1.45 1.22 1.00 1.00 0.3 0.1 0.3 1.0 0.1 3.3 2.5 5.0 58.3 56.5 A A A E E E A 2.5 5.0 57.2 A A A E E A 2.5 5.0 57.2 A A R E A 1.0 0.1 1.0 0.0 5.7 HCM 2000 Level of Service 1.30 Sum of lost time (s) 1.30 Sum of lost time (s) 1.30 Sum of lost time (s) 1.31 2.5 1.36 ICU Level of Service	E	0.20					0.00	
21 2.0 4.7 57.3 56.4 1.45 1.22 1.00 1.00 0.3 3.3 2.5 1.00 1.00 1.00 0.3 2.5 5.0 58.3 56.5 A A A E E E A A A E E A A A E A A A E B A A E B A A A B A A B A B A B A B A B A B A B		0.25	0.25	0.37		0.24	0.03	
1.45 1.22 1.00 1.00 1.00 0.3 0.1 0.3 0.1 0.3 1.0 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1	y, d1	2.1	5.0	4.7		57.3	56.4	
0.3 0.1 0.3 1.0 0.1 3.3 2.5 5.0 583 56.5 A A A E E E E A A A B 2.5 5.0 57.2 A A HCM 2000 Level of Service of S	Factor	1.45	1.22	1.00		1.00	1.00	
3.3 2.5 5.0 58.3 56.5 A A A E E E E E E A A A A E E E E E A 5.0 57.2 A F E E E E E E E E E E E E E E E E E E E	Jelay, d2	0.3	0.1	0.3		1.0	0.1	
A A A E E E 2.5 5.0 57.2 A A A E E A A A E E A A A E E A 100 Sum of lost time (s) 2 2 30.0 Sum of lost time (s) 2 2 31.0 Sum of lost time (s) 1 30.0 Sum of lost time (s)		3.3	2.5	2.0		58.3	56.5	
2.5 5.0 57.2 A A E A A E S.7 HCM 2000 Level of Service acity ratio 0.35 13.0 Sum of lost time (s) 2ation 51.9% ICU Level of Service 15	ice	⋖	⋖	∢		ш	ш	
A A E 5.7 HCM 2000 Level of Service 3.7 HCM 2000 Level of Service 3.8 Sum of lost time (s) 2ation 51.9% ICU Level of Service 15	lav (s)		2.5	2.0		57.2		
5.7 HCM 2000 Level of Service 3.5 HCM 2000 Level of Service 0.35 Sum of lost time (s) 2ation 51.9% ICU Level of Service 15	S		∢	⋖		ш		
5.7 HCM 2000 Level of Service 0.35 Sum of lost time (s) 23.0 Sum of lost time (s) 24.9% ICU Level of Service 15.9% ICU Level of Service	Summary							
200	ontrol Delay			5.7	일	M 2000 L	evel of Service	4
130.0 Sum of lost time (s) zation 51.9% ICU Level of Service 15	olume to Capac	ity ratio		0.35				
zation 51.9% ICU Level of Service 15	le Length (s)			130.0	Sul	n of lost	ime (s)	14.0
15	Sapacity Utilizat	lon		51.9%	ಠ	J Level of	Service	A
Aroun	od (min)			15				
	Critical Lane Group							

Testing Road Improvements - Option 1 Standard Six Lane Cross Section (No HOV Lanes)

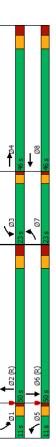
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Britannia & RR25 BA Group - NHY

2037 Future Total AM 01-12-2024 Timings 7: Regional Rd 25 & Britannia Rd

Part Charge Part		•	†	>	ţ	•	←	۶	→	
1070 415 1070 415 1070 415 1070 415 1070 415 1070 415 10 10 10 10 10 10 10 10 10 10 10 10 10	Lane Group	EB	EBT	WBL	WBT	图	NBT	SB	SBT	
1070 415 1070 415 1070 415 1070 415 1070 415 10 10 10 10 10 10 10 10 10 10 10 10 10	-ane Configurations	£	4413	K.	4413	F	4413	K.	4413	
1070 445 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Fraffic Volume (vph)	92	455	465	380	22	1070	415	1975	
NA Prot 2 1 2 1 2 1 2 1 2 1 2 1 3 3 5 5 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	-uture Volume (vph)	92	455	465	380	22	1070	415	1975	
2 1 20.0 7.0 49.7 11.0 59.0 11.0 38.5% 85% 31 42 3.0 1.10 -1.0 6.7 3.0 1.42 10.4 43.3 10.4 43.3 10.4 42.8 59.6 0.0 0.0 42.8 59.6 0.0 0.0 0.0 42.8 59.6 0.0 0.0 0.0 42.8 59.6 0.0 0.0 0.0 42.8 59.6 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Turn Type	Prot	Ϋ́	Prot	ΑN	Prot	Ϋ́	Prot	ΑN	
20.0 7.0 40.7 11.0 50.0 11.0 50.0 11.0 50.0 11.0 50.0 11.0 50.0 11.0 50.0 50	Protected Phases	7	4	က	80	2	2	~	9	
2 1 20.0 7.0 49.7 11.0 38.5% 85% 31 4.2 3.0 4.2 3.0 1.0 -1.0 6.7 3.0 1.0 6.7 3.0 1.3 0.15 0.3 0.15 0.3 0.15 0.3 0.15 0.15 0.00 42.8 59.6 D E 43.5 59.6 D E 43.5 59.6 D E H 43.5 59.6 D E H 50.6 59.6 D E H 50.	Permitted Phases									
20.0 7.0 49.7 11.0 50.0 11.0 50.0 11.0 38.5% 8.5% 3.6 3.0 4.2 3.0 4.2 5.0 4.2 5.0 6.7 3.0 6.7	Detector Phase	7	4	က	∞	2	2	-	9	
200 7.0 49.7 11.0 50.0 11.0 50.0 11.0 50.0 11.0 50.0 11.0 50.0 11.0 50.0 50	Switch Phase									
49.7 110 50.0 110 38.5% 85% 33 4.2 30 -10 -10 -10 -10 -10 -10 -10 -10 -10 -1	Minimum Initial (s)	7.0	10.0	7.0	10.0	7.0	20:0	7.0	20:0	
38.5% 85% 39 38.5% 85% 30 3.5 1.0 -1.0 -1.0 -1.0 6.7 3.0 Lag Ves Yes C-Max None C- 43.3 19.9 0.33 0.15 0.8 95.6 0.0 0.0 42.8 95.6 0.0 0.0 42.8 95.6 0.0 0.0 42.8 95.6 0.0 0.0 42.8 95.6 0.0 0.0 42.8 95.6 0.0 0.0 42.8 95.6 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Minimum Split (s)	11.0	45.5	11.0	45.5	11.0	49.7	11.0	49.7	
38.5% 8.5% 31 4.2 3.0 3.5 1.0 -1.0 -1.0 6.7 3.0 Leag Lead Yes Yes C-Max Nore C-Max	otal Split (s)	23.0	46.0	23.0	46.0	11.0	20.0	11.0		
42 30 35 10 -10 -10 6.7 30 6.7 30 1.8 Lead Yes C-Max None C- 433 199 0.33 0.15 0.81 0.78 42.8 59.6 0.0 0.0 42.8 59.6 D E 43.5 D E 43.5 D I G 43.5 D I G 45 D I G 5 D I G 5 D I G 5 D I G 5 D I G 6 D I G 6 D I G 6 D I G 6 D I G 6 D I G 7 D I D I D I D I D I D I D I D I D	otal Split (%)	17.7%	35.4%	17.7%	35.4%	8.5%	38.5%	8.5%	88	
35 10 -10 6.7 3.0 6.7 3.0 6.7 3.0 6.7 3.0 1.89 Lead 1.83 0.15 0.33 0.15 0.33 0.15 0.31 0.78 42.8 99.6 0.0 0.0 42.8 99.6 D E 43.5 D E 43.5 D I G	(ellow Time (s)	3.0	4.2	3.0	4.2	3.0	4.2	3.0		
-1.0 -1.0	II-Red Time (s)	1.0	3.3	1.0	3.3	1.0	3.5	1.0		
6.7 3.0 Lead Ves Ves C-Max None C-433 0.15 0.33 0.15 0.81 0.78 9.9 0.0 0.0 0.0 42.8 59.6 D E 43.5 D E 43.5 D T G-43.5 D T	ost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0		
Leg Lead Yes Yes C-Max None C. 43.3 19.9 0.15 0.83 0.15 0.83 0.15 0.842.8 59.6 0.0 0.0 42.8 59.6 D E 43.5 D E 43.5 D I G Service F	otal Lost Time (s)	3.0	6.5	3.0	6.5	3.0	6.7	3.0		
C-Max None	ead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead		
C-Max. Nore C- 43.3 19.9 0.33 0.15 0.81 0.75 0.0 0.0 42.8 59.6 0.0 42.8 59.6 D E 43.5 D E 107 Service F	ead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
43.3 19.9 43.3 0.15 0.81 0.78 42.8 59.6 0.0 0.0 42.8 59.6 D E 43.5 D E 107.Service F	tecall Mode	None	None	None	None	None	C-Max	None	C-Max	
0.33 0.15 0.81 0.78 42.8 59.6 0.0 0.0 42.8 59.6 D E 43.5 D E	ct Effct Green (s)	9.5	27.8	19.8	40.6	8.8	43.3	19.9	56.5	
0.81 0.78 42.8 59.6 0.0 42.8 59.6 D E 43.5 D D E 107.5ervice F	ctuated g/C Ratio	0.07	0.21	0.15	0.31	0.07	0.33	0.15	0.43	
42.8 59.6 0.0 0.0 42.8 59.6 D E 43.5 D E 43.5 D	/c Ratio	0.28	0.86dr	0.88	0.38	0.24	0.81	0.78	0.94	
00 00 42.8 59.6 D E 43.5 D D E 107 Service F	ontrol Delay	0.09	45.9	69.1	28.8	29.7	45.8	9.69	8.4.8	
42.8 59.6 D E 43.5 D D E 10.00 I COS.D	Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
43.5 43.5 D on LOS: D	otal Delay	0.09	45.9	69.1	28.8	29.7	45.8	9.69	8.48	
43.5 D on LOS: D I of Service F	SO	ш	□	ш	ပ	ш	□	ш	۵	
pproach LOS D D D D E Tensection Summary yole Length: 130 yole Length: 130 Thise Line Cycle Length: 130 Thise I do (40%) Keiterneed to phase 2:NBT and 6:SBT, Start of Green attural Cycle: 140 control Type: Actuated-Coordinated atturnum vic Ratio: 0.94 Intersection Signal Delay; 50.0 Intersection Capacity Utilization 91.3% Included Capacity Utilization 91.3% Included Capacity Utilization 91.3%	pproach Delay		47.0		47.7		43.5		55.6	
Netsection Summary yole Length: 130 Yisel Length: 130 Affect 104 (30%), Kelterneed to phase 2:NBT and 6:SBT, Start of Green Actualted Cycle: 140 Control Type: Actualted-Coordinated Admirmum vic Ratio: 0.94 Intersection Signal Delays; 50.0 Intersection Capacity Utilization 91.3% Included Coordinated Intersection Capacity Utilization 91.3% ICU Level of Service F	pproach LOS		۵		۵		٥		ш	
ycle Length: 130 Tiffset 104 (80%), Referenced to phase 2:NBT and 6:SBT, Start of Green Iatural Cycle: 140 Toxinity or Actualed-Coordinated Taxinium vic Ratio: 0.94 Intersection Capacity Utilization 91:3% Included Coordinated Included Coordinated Intersection Capacity Utilization 91:3% ICU Level of Service F	ntersection Summary									
cctuated Cycle Length: 130 Lates 1'04 (BW), Referenced to phase 2:NBT and 6:SBT, Start of Green Latural Cycle: 140 Latural Cycle: 140 Latural Cycle: 140 Latural Cycle: 140 Latinum vic Ratio: 0.94 Instruction Type: Ratio: 0.94 Intersection Capacity Utilization 91:3% ICU Level of Service F ICU Level of Service F	Sycle Length: 130									
Vitset 104 (80%), Referenced to phase 2:NBT and 6:SBT, Start of Green that a control type. Actualed-Coordinated control type. Actualed-Coordinated described to the coordinated saxinum vic Ratio: 0:34 Instruction (Spain Delay: 50.0 Intersection LOS: Described to Spain Delay: 50.0 Intersection Capacity Utilization 91.3% ICU Level of Service Finalysis Period (min) 15	ctuated Cycle Length: 130									
Istural Cycle: 140 Istural Cycle: 140 Istural Cycle: 154 Intersection Signal Delay: 50.0 Inc. Capacity Utilization 91.3% Indexists Period (min) 15	offset 104 (80%), Reference	ed to phas	e 2:NBT a	Ind 6:SB1	, Start of	Green				
	Vatural Cycle: 140									
	Control Type: Actuated-Coord	dinated								
	Maximum v/c Ratio: 0.94									
	ntersection Signal Delay: 50.	0:			Ξ	ersection	LOS: D			
nalysis Period (min) 15	ntersection Capacity Utilization	on 91.3%			೨	U Level	of Service	ш		
	nalysis Period (min) 15									

Splits and Phases: 7: Regional Rd 25 & Britannia Rd



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Queues 7: Regional Rd 25 & Britannia Rd

2037 Future Total AM 01-12-2024

→	SBT	2000	0.94	54.8	0.0	54.8	171.9	#259.1	159.1		2139	0	0	0	0.94	
٠	SBL	415	0.78	9.69	0.0	9.69	61.4			90.0	535	0	0	0	0.78	
←	NBT	1315	0.81	42.8	0.0	42.8	114.7	134.1 m#104.1	165.3		1630	0	0	0	0.81	
•	NBL	55	0.24	29.7	0:0	29.7	7.4	14.3		0.06	229	0	0	0	0.24	
ļ	WBT	530	0.38	28.8	0.0	28.8	41.8	55.2	182.4		1420	0	0	0	0.37	
•	WBL	465	0.88	69.1	0.0	69.1	64.0	#93.4		120.0	230	0	0	0	0.88	
†	EBT	0//	0.86dr	45.9	0.0	45.9	70.2	82.9	377.9		1369	0	0	0	0.56	
•	EBF	ı	0.28							0.09	208	0	0	0	0.13	
	Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Queue Delay	Total Delay	Queue Length 50th (m)	Queue Length 95th (m)	Internal Link Dist (m)	Turn Bay Length (m)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio	

95th percentile volume exceeds capacity, queue may be longer.

95th percentile volume exceeds capacity, queue may be longer.

95th percentile queue is metered by upstream signal.

In Volume for 95th percentile queue is metered by upstream signal.

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

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HCM Signalized Intersection Capacity Analysis 7: Regional Rd 25 & Britannia Rd

2037 Future Total AM 01-12-2024

1975 1975 1975 1900 6.7 6.7 1.00 1.00 1.00 1.00 1.00 54.0 55.0 0.42 7.7 3.0 2080 c0.41 0.96 36.5 1.38 9.4 9.4 666 ≸ 18.9 19.9 0.15 4.0 3.0 536 536 415 415 415 900 3.0 0.97 1.00 0.95 502 502 503 1.00 1.00 415 0% Prot 0.77 52.9 0.97 4.7 56.2 □ 19.2 41.5 42.5 0.33 7.7 3.0 1572 0.27 0.82 40.2 4.9 45.1 D D ¥ ~ 55 55 55 3.0 3.0 3.0 1.00 0.95 0.95 3367 1.00 1.00 55 55 Prot 6.4 7.4 0.06 4.0 3.0 3.0 0.02 0.29 58.8 1.00 0.8 59.6 HCM 2000 Level of Service Sum of lost time (s) ICU Level of Service 150 150 39.6 40.6 0.31 7.5 3.0 1346 0.11 380 380 380 380 1900 1000 1.00 1.00 1.00 380 380 380 380 ₹ 0.35 34.6 0.95 0.2 33.1 Defacto Right Lane. Recode with 1 though lane as a right lane. Critical Lane Group 18.8 19.8 0.15 4.0 3.0 524 co.13 MBL 465 465 3.0 3.0 3.0 0.97 1.00 1.00 3445 465 465 0.89 54.0 0.93 16.2 66.2 0 465 7% 52.7 0.88 130.0 91.3% 0.86dr 47.1 1.00 2.9 50.0 D 50.7 27.6 28.6 0.22 7.5 3.0 932 c0.16 ¥ HCM 2000 Control Delay
HCM 2000 Volume to Capacity ratio
Actuated Cyde Length (s)
Intersection Capacity Utilization
Analysis Period (min)
or Delatod Right Lane. Recode with
c Critical Lane Group 6% 6.8 7.8 0.06 4.0 3.0 198 0.02 0.33 58.6 1.00 1.0 59.6 65 65 65 1900 3.0 3.0 0.97 1.00 0.95 3303 0.95 0.95 0.95 Prot Fit Protected Fit Protected Sadd. Flow (prot) Stard. Flow (porm) Sadd. Flow (perm) Peak-hour factor, PHF Adj. Flow (ppi) Lane Group Flow (vpi) Lane Group Flow (vpi) v/c Ratio Uniform Delay, d1 Progression Factor Incremental Delay, d2 Effective Green, g (s)
Actuated g/C Ratio
Clearance Time (s)
Vehicle Extension (s)
Lane Grp Cap (vph)
v/s Ratio Prot Lane Configurations
Traffic Volume (vph)
Future Volume (vph)
Ideal Flow (vphpl)
Total Lost time (s)
Lane Util. Factor Actuated Green, G (s) Delay (s) Level of Service Approach Delay (s) Approach LOS ntersection Summary Turn Type Protected Phases Permitted Phases Heavy Vehicles (%)

Synchro 11 Report Page 3 Britannia & RR25 BA Group - NHY

Timings 7: Regional Rd 25 & Britannia Rd

2037 Future Total PM 01-12-2024

→	SBT	4413	1050	1050	≨	9		9		20.0	49.7	53.0	40.8%	4.2	3.5	-1.0	6.7	Lag	Yes	C-Max	25.0	0.42	0.53	18.1	0:0	18.1	В	27.2	ပ											
۶	SBL	ř.	190	190	Prot	-		~		7.0	11.0	11.0	8.5%	3.0	1:0	-1.0	3.0	Lead	Yes	None	12.6	0.10	0.57	80.3	0.0	80.3	ш											L		
•	NBT	4413	1725	1725	≨	2		7		20.0	49.7	58.0	44.6%	4.2	3.5	-1.0	6.7	Lag	Yes	C-Max	28.0	0.45	1.01	56.5	0:0	56.5	ш	57.2	ш								LOS: D	f Service		
•	NBL	K.	275	275	Prot	2		2		7.0	11.0	16.0	12.3%	3.0	1.0	-1.0	3.0	Lead	Yes	None	15.6	0.12	99.0	62.5	0.0	62.5	ш						eu				Intersection LOS: D	ICU Level of Service F		
ţ	WBT	4413	220	220	¥	∞		∞		10.0	45.5	49.0	37.7%	4.2	3.3	-1.0	6.5	Lag	Yes	None	33.9	0.26	0.91dr	37.3	0.0	37.3	٥	52.4	۵				art of Gre				≝	೦		right lane
>	WBL	*	325	325	Prot	က		က		7.0	11.0		11.5%												0.0	9.96	ш						5:SBT, St							ane as a
†	EBT	4413	320	320	¥	4		4		10.0	45.5	46.0	35.4%	4.2	3.3	-1.0	6.5	Lag	Yes	None	28.2	0.22	0.40	41.9	0.0	41.9	٥	44.2	۵				NBT and (though
4	EBL	K.	22	22	Prot	7		7		7.0	11.0	12.0	9.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	8.5	0.07	0.25	2.09	0.0	2.09	ш						ohase 2:№		nated			n 93.6%		de with
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	ros	Approach Delay	Approach LOS	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 Capacity Utilization 93.6%	Analysis Period (min) 15	dr Defacto Right Lane. Recode with 1 though lane as a right lane.

7: Regional Rd 25 & Britannia Rd Splits and Phases:

104 100 03 Ø6 (R) Ø5

Synchro 11 Report Page 1 Britannia & RR25 BA Group - NHY

2037 Future Total PM 01-12-2024 Queues 7: Regional Rd 25 & Britannia Rd

7. I regional isa 20 & Dilianna isa	אם	10							20 15 505 1
	•	†	•	ţ	•	+	۶	→	
Lane Group	EBF	EBT	WBL	WBT	퓜	NBT	SBL	SBT	
Lane Group Flow (vph)	55	395	325	922	275	2230	190	1105	
v/c Ratio	0.25	0.40	0.98	0.91dr	99.0	1:01	0.57	0.53	
Control Delay	60.7	41.9	9.96	37.3	62.5	26.5	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	9.96	37.3	62.5	299	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	28.7	52.7	#282.8	#40.0	103.5	
Internal Link Dist (m)		377.9		190.1		165.3		161.9	
Turn Bay Length (m)	0.09		120.0		0.06		0.06		
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	
Control of the control									

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.

Synchro 11 Report Page 2 Britannia & RR25 BA Group - NHY

HCM Signalized Intersection Capacity Analysis 7: Regional Rd 25 & Britannia Rd

2037 Future Total PM 01-12-2024

	•	†	<i>></i>	\	ţ	4	•	←	•	۶	→	•
Movement	盟	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	F	441		F	444		ř.	4₩₽		F	444	
Traffic Volume (vph)	22	320	45	325	220	405	275	1725	202	190	1050	22
Future Volume (vph)	22	320	42	325	220	402	275	1725	202	190	1020	22
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	
F,	1.00	0.98		1:00	0.94		1.00	0.97		1.00	0.39	
Fit 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)	22	320	45	325	220	405	275	1725	202	190	1050	22
RTOR Reduction (vph)	0	12	0	0	112	0	0	38	0	0	4	0
Lane Group Flow (vph)	22	383	0	325	843	0	275	2192	0	190	1101	0
Heavy Vehicles (%)	%9	%0	%0	2%	1%	1%	%0	3%	2%	1%	4%	%0
Turn Type	Prot	Ν		Prot	¥		Prot	¥		Prot	NA	
Protected Phases	7	4		က	∞		2	7		_	9	
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	0.45	
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)	180	666		333	1102		420	2145		336	2067	
v/s Ratio Prot	0.02	0.09		60.00	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	45.9		28.9	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)	0.09	43.2		95.2	41.8		58.3	61.6		0.92	17.6	
Level of Service	ш	Δ		ш	۵		ш	ш		ш	Ф	
Approach Delay (s)		45.2			55.4			61.3			26.2	
Approach LOS		۵			ш			ш			O	
Intersection Summary												
HCM 2000 Control Delay			50.4	¥	HCM 2000 Level of Service	evel of S	ervice		۵			
HCM 2000 Volume to Capacity ratio	ratio		0.93									
Actuated Cycle Length (s)			130.0	S	Sum of lost time (s)	time (s)			19.2			
Intersection Capacity Utilization	_		93.6%	೦	ICU Level of Service	Service			ш			
Analysis Period (min)			15									
dr Defacto Right Lane. Recode with 1 though lane as a right lane.	de with	1 though I	ane as a r	ight lane								
Critical Land Group												

c Critical Lane Group

Britannia & RR25 BA Group - NHY

Synchro 11 Report Page 3

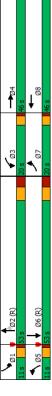
2037 Future Total AM 01-12-2024 Timings 7: Regional Rd 25 & Britannia Rd

	4	†	>	ţ	•	←	•	۶	→	
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	
Lane Configurations	1	444	14	444	14	444	ĸ.	1	444	
Traffic Volume (vph)	92	455	465	380	22	1070	245	415	1975	
Future Volume (vph)	92	455	465	380	22	1070	242	415	1975	
Turn Type	Prot	¥	Prot	¥	Prot	≨	Perm	Prot	ΑĀ	
Protected Phases	7	4	က	∞	2	2		_	9	
Permitted Phases							2			
Detector Phase	7	4	က	∞	2	2	2	-	9	
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	69.0	0.41	0.79	1.01	
Control Delay	0.09	46.0	102.0	31.0	29.7	38.6	9.6	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	0.09	46.0	102.0	31.0	29.7	38.6	9.9	60.3	65.4	
SOT	ш	۵	ш	ပ	ш	Ω	∢	ш	ш	
Approach Delay		47.1		64.2		33.6			64.5	
Approach LOS		Ω		ш		ပ			ш	
Intersection Summary										
Cycle Length: 130										
Actuated Cycle Length: 130										
Offset: 104 (80%), Referenced to phase 2:NBT and 6:SBT, Start of Green	to phase	e 2:NBT a	Ind 6:SB	r, Start of	Green					

Testing Road Improvements - Option 2 Regional Road 25 / Britannia Road - With Northbound Right Turn Lane

Intersection LOS: D ICU Level of Service F Natural Cycle; 150
Control Type: Actuated-Coordinated
Maximum vic Ratio: 103
Intersection Signal Delay; 54.3
Intersection Capacity Utilization 91.3%
Analysis Pendo (min) 15
dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Splits and Phases: 7: Regional Rd 25 & Britannia Rd



Britannia & RR25 BA Group - NHY

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2037 Future Total AM 01-12-2024 Queues 7: Regional Rd 25 & Britannia Rd

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	1	†	>	ţ	•	←	•	۶	→	
Lane Group	EB	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	
Lane Group Flow (vph)	65			530	55	1070	245	415	2000	
v/c Ratio	0.28	0.87dr	1.03	0.40	0.24	69:0	0.41	0.79	1.01	
Control Delay	0.09			31.0	29.7	38.6	9.6	60.3	65.4	
Queue Delay	0.0			0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	0.09			31.0	29.7	38.6	9.6	60.3	65.4	
Queue Length 50th (m)	8.7			43.2	7.4	102.2	0.0	61.4	~238.7	
Queue Length 95th (m)	16.3		#105.2	57.0	14.3	121.8	23.2 m	23.2 m#104.5	#308.5	
Internal Link Dist (m)		377.9		182.4		165.3			159.1	
Turn Bay Length (m)	0.09		120.0		0.06		0.06	90.0		
Base Capacity (vph)	431	1367	450	1382	529	1546	009	228	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	69.0	0.41	0.79	1.01	
Informaction Cummons										

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.

To volume for 95th percentile queue is metered by upstream signal.

of Defacto Right Lane. Recode with 1 though lane as a right lane.

Synchro 11 Report Page 2 Britannia & RR25 BA Group - NHY

HCM Signalized Intersection Capacity Analysis 7: Regional Rd 25 & Britannia Rd

2037 Future Total AM 01-12-2024

	4	†	>	>	ţ	4	•	←	•	٠	→	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	F	4413		F	443		K.	444	*	K.	4413	
Traffic Volume (vph)	92	455	315	465	380	150	22	1070	242	415	1975	25
Future Volume (vph)	92	455	315	465	380	150	22	1070	245	415	1975	52
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	96.0		1.00	1.00	0.85	1.00	1.00	
Fit 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)	92	455	315	465	380	120	22	1070	242	415	1975	52
RTOR Reduction (vph)	0	88	0	0	26	0	0	0	159	0	-	0
Lane Group Flow (vph)	92	681	0	465	474	0	22	1070	98	415	1999	0
Heavy Vehicles (%)	%9	1%	1%	%/	1%	2%	4%	2%	4%	%0	2%	27%
Turn Type	Prot	NA		Prot	¥		Prot	¥	Perm	Prot	NA	
Protected Phases	7	4		က	∞		2	2		_	9	
Permitted Phases									2			
Actuated Green, G (s)	8.9	27.7		16.0	36.9		6.4	44.5	44.5	18.6	29.7	
Effective Green, g (s)	7.8	28.7		17.0	37.9		7.4	45.5	45.5	19.6	27.7	
Actuated g/C Ratio	90.0	0.22		0.13	0.29		90.0	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	
Vehide 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		00.12	00.46	
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	4 2	
Uniform Delay, d1	28.6	47.0		56.5	36.7		58.8	36.4	29.5	53.2	36.1	
Progression Factor	1.00	1.00		0.93	96.0		1.00	1.00	1.00	0.97	1.32	
Incremental Delay, d2	0:	5.9		50.9	0.2		0.8	5.8	0.1	5.3	29.2	
Delay (s)	29.6	49.9		103.4	35.4		29.6	39.2	30.5	22.0	77.1	
Level of Service	ш	۵		ш	۵		ш	۵	ပ	ш	ш	
Approach Delay (s)		20.7			67.2			38.5			73.7	
Approach LOS		Ω			ш			Ω			ш	
Intersection Summary												
HCM 2000 Control Delay			60.5	Ì	HCM 2000 Level of Service	Level of S	ervice		ш			
HCM 2000 Volume to Capacity ratio	y ratio		0.95									
Actuated Cycle Length (s)			130.0	ઝ	Sum of lost time (s)	time (s)			19.2			
Intersection Capacity Utilization	_		91.3%	2	ICU Level of Service	f Service			ш			
Analysis Period (min)			12									
dr Defacto Right Lane. Recode with 1 though lane as a right lane.	ode with	1 though I	ane as a	right lane	ai.							
Critical I and Groun												

c Critical Lane Group

Synchro 11 Report Page 3 Britannia & RR25 BA Group - NHY

Timings 2037 Future Total PM 7: Regional Rd 25 & Britannia Rd 01-12-2024

→	SBT	4413	1050	1050	Ϋ́	9		9		20.0	49.7	52.5	40.4%	4.2	3.5	-1.0	6.7	Lag	Yes	C-Max	55.5	0.43	0.59	20.8	0.0	20.8	ပ	28.8	ပ											
۶	SBL	£	190	190	Prot	-		-		7.0	11.0	11.0	8.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	12.8	0.10	0.56	75.3	0.0	75.3	ш													
•	NBR	₩.	202	202	Perm		2	2		20.0	49.7	58.5	45.0%	4.2	3.5	-1.0	6.7	Lag	Yes	C-Max	58.3	0.45	0.68	15.9	0.0	15.9	В											ш		
—	NBT	₩₩	1725	1725	¥	2		2		20.0	49.7	58.5	42.0%	4.2	3.5	-1.0	6.7	Lag	Yes	C-Max	58.3	0.45	0.87	39.5	0.0	39.5	_	37.2	۵								LOS: D	ICU Level of Service E		
•	NBL	£	275	275	Prot	2		S		7.0	11.0	17.0	13.1%	3.0	1.0	-1.0	3.0	Lead	Yes	None	15.7	0.12	0.65	62.1	0.0	62.1	ш						Green				Intersection LOS: D	U Level o		
ţ	WBT	4413	220	220	¥	∞		∞		10.0	45.5	49.5	38.1%	4.2	3.3	-1.0	6.5	Lag	Yes	None	33.9	0.26	0.91dr	37.1	0.0	37.1	_	97.6	ш				F, Start of				₹	೦	right lane	
>	WBL	£	325	325	Prot	က		ო		7.0	11.0	15.0	11.5%	3.0	1.0	-1.0	3.0	Lead	Yes	None	12.0	0.0	0.98	118.1	0.0	118.1	ш						Ind 6:SB7						ane as a	3
†	EBT	₩₽	320	320	¥	4		4		10.0	45.5	45.5	35.0%	4.2	3.3	-1.0	6.5	Lag	Yes	None	27.7	0.21	0.41	42.5	0.0	42.5	_	44.8					e 2:NBT a						though	
4	EBF	F	22	22	Prot	7		7		7.0	11.0	11.0	8.5%	3.0	1:0	-1.0	3.0	Lead	Yes	None	8.0	90.0	0.27	61.9	0.0	61.9	ш						d to phase		linated		0	on 82.4%	ode with	3
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Recall Mode	Act Effct Green (s)	Actuated g/C Ratio	v/c Ratio	Control Delay	Queue Delay	Total Delay	NOS	Approach Delay	Approach LOS	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 Capacity Utilization 82.4%	Analysis Period (min) 15 dr Defacto Right I ane Recode with 1 though Jane as a right lane	

Splits and Phases: 7: Regional Rd 25 & Britannia Rd

SB.5s
0 0 0 0 0 0

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Queues 2037 Future Total PM 7: Regional Rd 25 & Britannia Rd 01-12-2024

	^	†	\	ļ	•	—	4	٠	→	
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	
Lane Group Flow (vph)	22	395	325	922	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	45.5	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)	0.09		120.0		90.0		90.0	90.0		
Base Capacity (vph)	203	1355	333	1499	430	1985	746	345	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	xceeds cap	acity, que	eue may	be longer.						
Queue shown is maximum after two cycles	n after two	cycles.								

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

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BA Group - NHY
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HCM Signalized Intersection Capacity Analysis 7: Regional Rd 25 & Britannia Rd

2037 Future Total PM 01-12-2024

							-	-	-		•	
Movement	田田	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	K.	4413		K.	4413		£	444	¥C.	F	4413	
raffic Volume (vph)	32	320	42	325	220	405	275	1725	202	190	1050	55
-uture Volume (vph)	22	320	45	325	220	405	275	1725	202	190	1050	22
deal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
otal Lost time (s)	3.0	6.5		3.0	6.5		3.0	6.7	6.7	3.0	6.7	
ane Util. Factor	0.97	*0.80		0.97	*0.80		0.97	*0.80	*0.80	0.97	*0.80	
ŧ.	1.00	0.98		1.00	0.94		1.00	1.00	0.85	1.00	0.99	
Fit 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	
It 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)	22	320	45	325	220	405	275	1725	202	190	1050	22
RTOR Reduction (vph)	0	12	0	0	112	0	0	0	180	0	က	0
ane Group Flow (vph)	22	383	0	325	843	0	275	1725	325	190	1102	0
Heavy Vehicles (%)	%9	%0	%0	2%	%	%	%0	3%	5%	%	4%	%0
urn Type	Prot	NA		Prot	NA		Prot	Ν	Perm	Prot	W	
Protected Phases	7	4		က	∞		2	2		_	9	
Permitted Phases									5			
Actuated Green, G (s)	9.9	27.5		11.0	32.9		14.7	56.5	56.5	11.8	53.6	
Effective Green, g (s)	9.9	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	
/ehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
ane Grp Cap (vph)	167	982		333	1102		422	1958	260	¥	1831	
//s Ratio Prot	0.02	0.09		60.00	c0.20		c0.08	c0.39		0.05	0.25	
//s Ratio Perm									0.26			
//c Ratio	0.33	0.39		0.98	0.91dr		0.65	0.88	0.58	0.56	0.60	
Jniform Delay, d1	9.69	43.3		28.9	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	
ncremental Delay, d2	1.2	0.3		41.4	3.1		3.6	6.1	4.3	(1.3	
Jelay (s)	2.09	43.6		119.2	41.6		28.1	39.2	31.5	6.07	20.1	
evel of Service	ш	□		ш	□		ш	Δ	ပ	ш	ပ	
Approach Delay (s)		45.7			61.3			39.8			27.6	
Approach LOS		Ω			ш			Ω			O	
ntersection Summary												
HCM 2000 Control Delay			42.4	¥	3M 2000	HCM 2000 Level of Service	Service		O			
HCM 2000 Volume to Capacity ratio	ratio		0.85									
Actuated Cycle Length (s)			130.0	ଊ	ım of lost	Sum of lost time (s)			19.2			
ntersection Capacity Utilization	_		82.4%	೦	U Level o	of Service			ш			
Analysis Period (min)			15									

Synchro 11 Report Page 3 Britannia & RR25 BA Group - NHY

APPENDIX L: SENSITIVITY CAPACITY TABLES

1 Regional Rd 25 & Louis St Laurent Ave

	- 10 gronian - 10 20 ai 2		• •	
Lane Group	FT20	32	FT20	37
Lane Group	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

2 Regional Na 20 a William Na				
Lawa Craun	FT20	032	FT20	37
Lane Group	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	
Lane Group	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

	rtegioriai rta 20 a L	iliailia ita		
1 0	FT20	32	FT20	37
Lane Group	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

10	Dillalilla Nu & Lall	iisteau Di		
Lana Cuarra	FT20	32	FT20	37
Lane Group	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

	Dillamia Na a Noo	c vvay		
Lane Group	FT20	32	FT20	37
Lane Group	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	FT	2032	FT	2037
Lane Group	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)

Lana Craun	FT.	2032	FT	2037
Lane Group	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

Lana Craun	FT	2032	FT	2037
Lane Group	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

1 Regional Na 20 & Eddie of Eddient 7 Ve				
FT2	032	FT2	037	
50th Percentile Queue	95th Percentile Queue	50th Percentile Queue	95th Percentile Queue	
43.2 (39.3)	62.6 (58.3)	43.2 (39.3)	62.6 (58.3)	
106.4 (69.7)	145.4 (93.7)	106.4 (69.7)	145.4 (93.7)	
120.2 (80.3)	185.9 (117.9)	120.2 (80.3)	185.9 (117.9)	
79.1 (84.4)	105.6 (106.9)	79.1 (84.4)	105.6 (106.9)	
20.0 (34.5)	34.2 (65.1)	20.0 (45.6)	46.0 (82.9)	
139.9 (137.7)	164.2 (160.7)	175.9 (193.6)	218.7 (225.6)	
11.0 (12.9)	20.8 (32.6)	11.0 (12.9)	20.8 (37.1)	
111.4 (115.8)	132.1 (140.5)	166.2 (145.0)	207.8 (171.5)	
	50th Percentile Queue 43.2 (39.3) 106.4 (69.7) 120.2 (80.3) 79.1 (84.4) 20.0 (34.5) 139.9 (137.7) 11.0 (12.9)	FT2032 50th Percentile Queue 95th Percentile Queue 43.2 (39.3) 62.6 (58.3) 106.4 (69.7) 145.4 (93.7) 120.2 (80.3) 185.9 (117.9) 79.1 (84.4) 105.6 (106.9) 20.0 (34.5) 34.2 (65.1) 139.9 (137.7) 164.2 (160.7) 11.0 (12.9) 20.8 (32.6)	FT2032 FT2 50th Percentile Queue 95th Percentile Queue 50th Percentile Queue 43.2 (39.3) 62.6 (58.3) 43.2 (39.3) 106.4 (69.7) 145.4 (93.7) 106.4 (69.7) 120.2 (80.3) 185.9 (117.9) 120.2 (80.3) 79.1 (84.4) 105.6 (106.9) 79.1 (84.4) 20.0 (34.5) 34.2 (65.1) 20.0 (45.6) 139.9 (137.7) 164.2 (160.7) 175.9 (193.6) 11.0 (12.9) 20.8 (32.6) 11.0 (12.9)	

2 Regional Rd 25 & Whitlock Ave

Lane Group	FT2	032	FT2	037
Lane Group	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

Lana Craun	FT2032		FT2037	
Lane Group	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	FT2	FT2032		FT2037	
Lane Group	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

To Britainia Na a Familia Bi				
Lane Group	FT2032		FT2037	
Lane Group	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

TT Britainia Na a Noce Way				
Lane Group	FT2032		FT2037	
Lane Group	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	FT2037
		95th Percentile Queue	95th Percentile Queue
EBR		4.0 (1.5)	4.8 (1.7)

6 Regional Rd 25 & Site Dwy (South)

Lane Group		FT2032	FT2037
		95th Percentile Queue	95th Percentile Queue
EBR		2.1 (1.0)	2.5 (1.1)

8 Site Dwy (South)/Site Dwy (North) & Etheridge Ave

Lane Group	FT2032	FT2037
Lane Group	95th Percentile Queue	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)