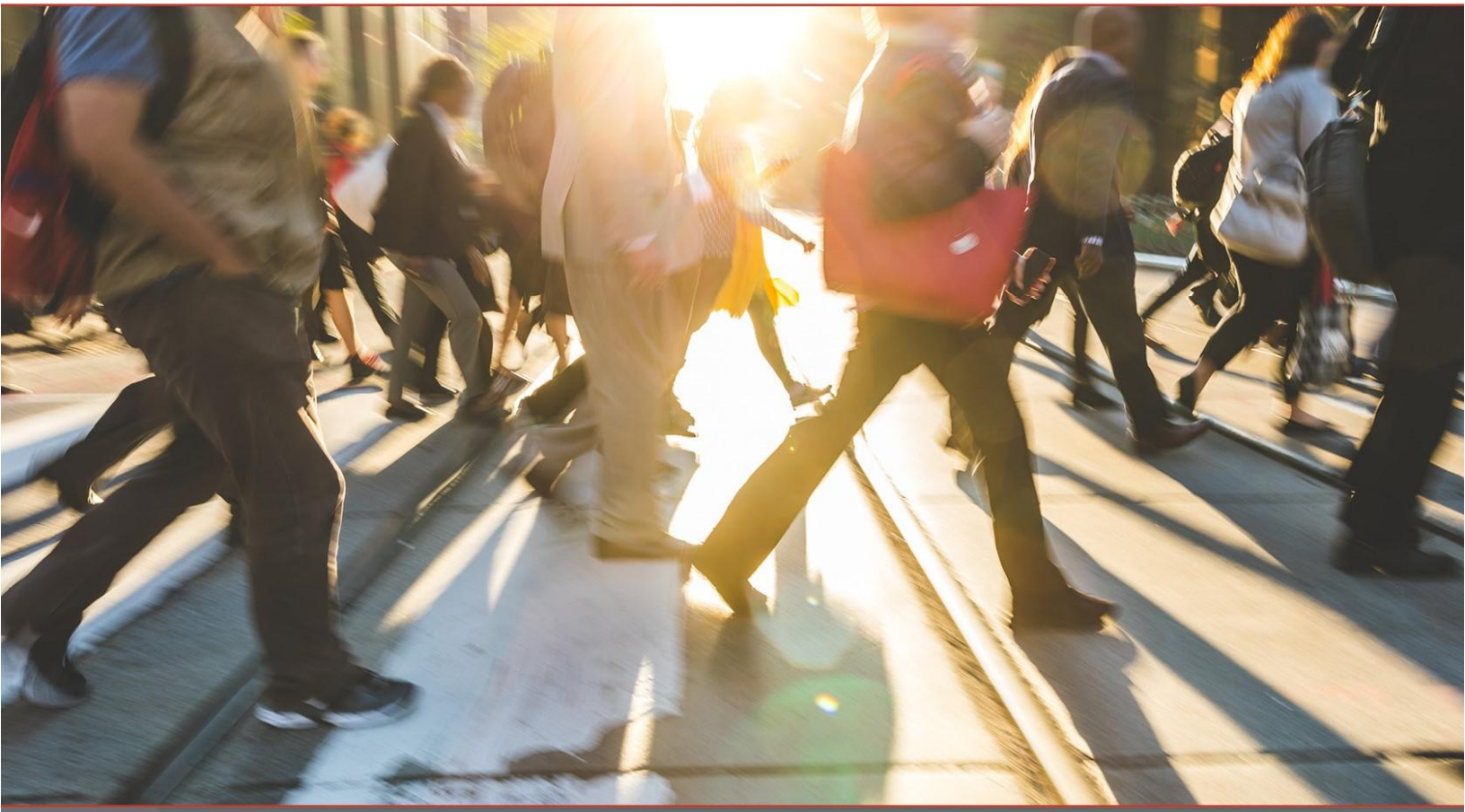
340 BURNHAMTHORPE ROAD EAST AND 3437 TRAFALGAR ROAD
PROPOSED MIXED-USE DEVELOPMENT

Urban Transportation Considerations Report
Town of Oakville



Prepared For: 1816986 Ontario Inc. (Westerkirk)

April 2026

BA Group

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1.0 INTRODUCTION

BA Group is retained by 1816986 Ontario Inc. ("**Westerkirk**") to provide transportation consulting services for a mixed-use development at 340 Burnhamthorpe Road East and 3437 Trafalgar Road in the southeast quadrant of Trafalgar Road / Burnhamthorpe Road East in the Town of Oakville, Region of Halton.

The property (also herein referred to as the "**site**") is a roughly rectangular parcel bounded by Trafalgar Road to the west, Burnhamthorpe Road East to the north, another development parcel to the south, and natural heritage system area to the east. The site is currently occupied by a Golf and Learning Centre in its northwest corner, while the remainder of the site is undeveloped. Vehicular access is provided via an unsignalized all-moves driveway connection to Burnhamthorpe Road East on the east side of the property.

The site is located within the North Oakville East Secondary Plan area. The in-force North Oakville Zoning By-law 2009-189 designates the site as a Future Development "FD" Zone.

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

1.1 Development Proposal

The development proposal is for an urban, mixed-use complete community characterized by pedestrian-scaled development blocks with a focus on a strong public realm.

The proposal includes a total of 12 development blocks containing 6,420 residential units, 10,042 m^2 of retail GFA and 4,433 m^2 of grocery GFA, as well as 0.5 ha of parks and open space, including a public park and parkette, and privately-owned publicly-accessible square.

A fine-grained street network, including pedestrian and cycling infrastructure, is proposed as part of this plan, consisting of:

- Street A, running north-south from Burnhamthorpe Road East to the southern property limits;
- Street B, running east-west from Street A to Street C;
- Street C, running north-south from Burnhamthorpe Road East to the southern property limits;
- Main Street, running east-west from Trafalgar Road to Street C; and
- Settlers Road, running east-west from Trafalgar Road to the eastern property limits.

The proposed master plan and development programme are further discussed in **Section 2.0**. Reduced scale architectural plans are attached in **Appendix A**.

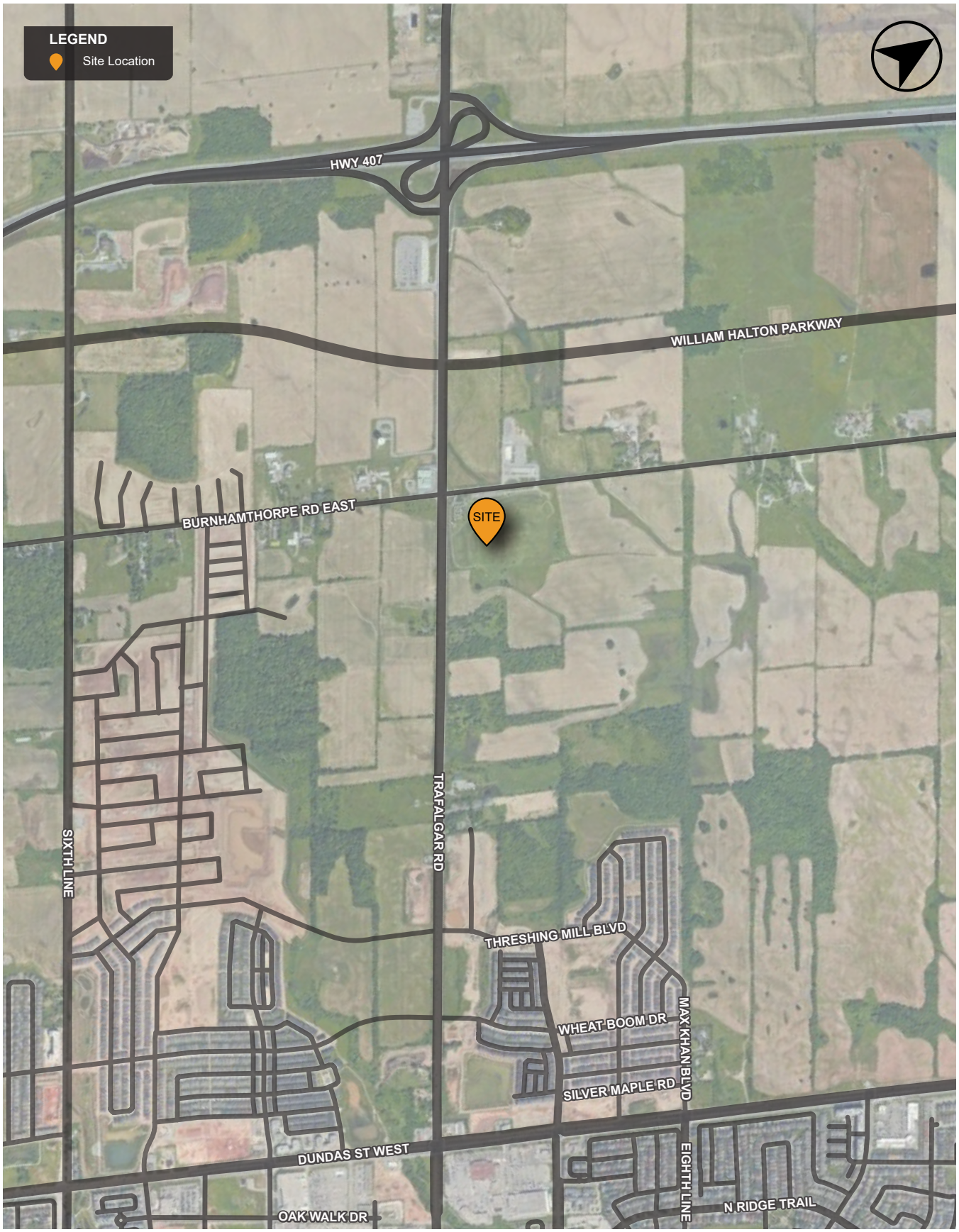
1.2 EM4 JC7 JC9 Landowners Group

Westerkirk is a member of a broader area landowners group known as the EM4 JC7 JC9 Landowners Group (the "**Landowners Group**"). The group is comprised of 11 applicants with lands generally bound by Sixth Line to the west, Ninth Line to the east, Highway 407 to the north and Dundas Street to the south.

Development applications have been put forward for the properties in the EM4 JC7 JC9 lands. Altogether, including the subject site, development on these lands include a mix of residential, employment, and retail uses as well as a community centre and three schools.

Figure 2 illustrates the EM4 JC7 JC9 lands including the subject site.

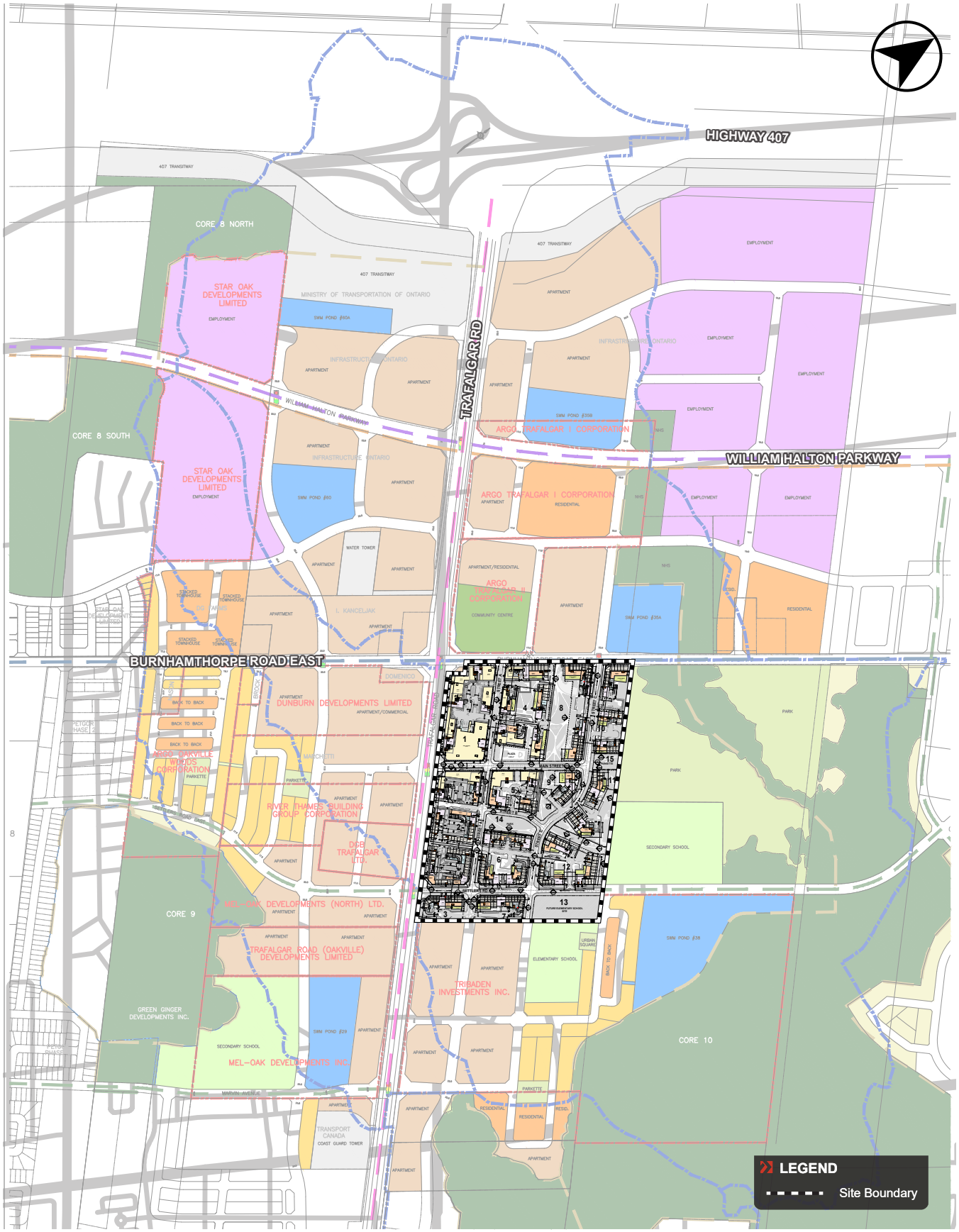
The Landowners Group have submitted a joint a joint Transportation Impact Study (TIS) to support the redevelopment of the EM4 JC7 JC9 lands, including the subject site. An initial TIS study was submitted in November 2024 titled "*EM4 JC7 JC9 Transportation Impact Study*", dated November 2024, prepared by CGH Transportation (herein referred to as the "**November 2024 CGH Report**"). The study reviewed the traffic impact of development within the EM4 JC7 JC9 lands on the area transportation network with a focus on the higher-order road network. Subsequently, development proposals within the Landowners Group were revised in response to agency comments. An updated TIS was submitted in October 2025 titled "*EM4 JC7 JC9 Transportation Impact Study*", dated October 24, 2025, prepared by CGH Transportation (herein referred to as the "**October 2025 CGH Report**").



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

FIGURE 1 SITE LOCATION



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

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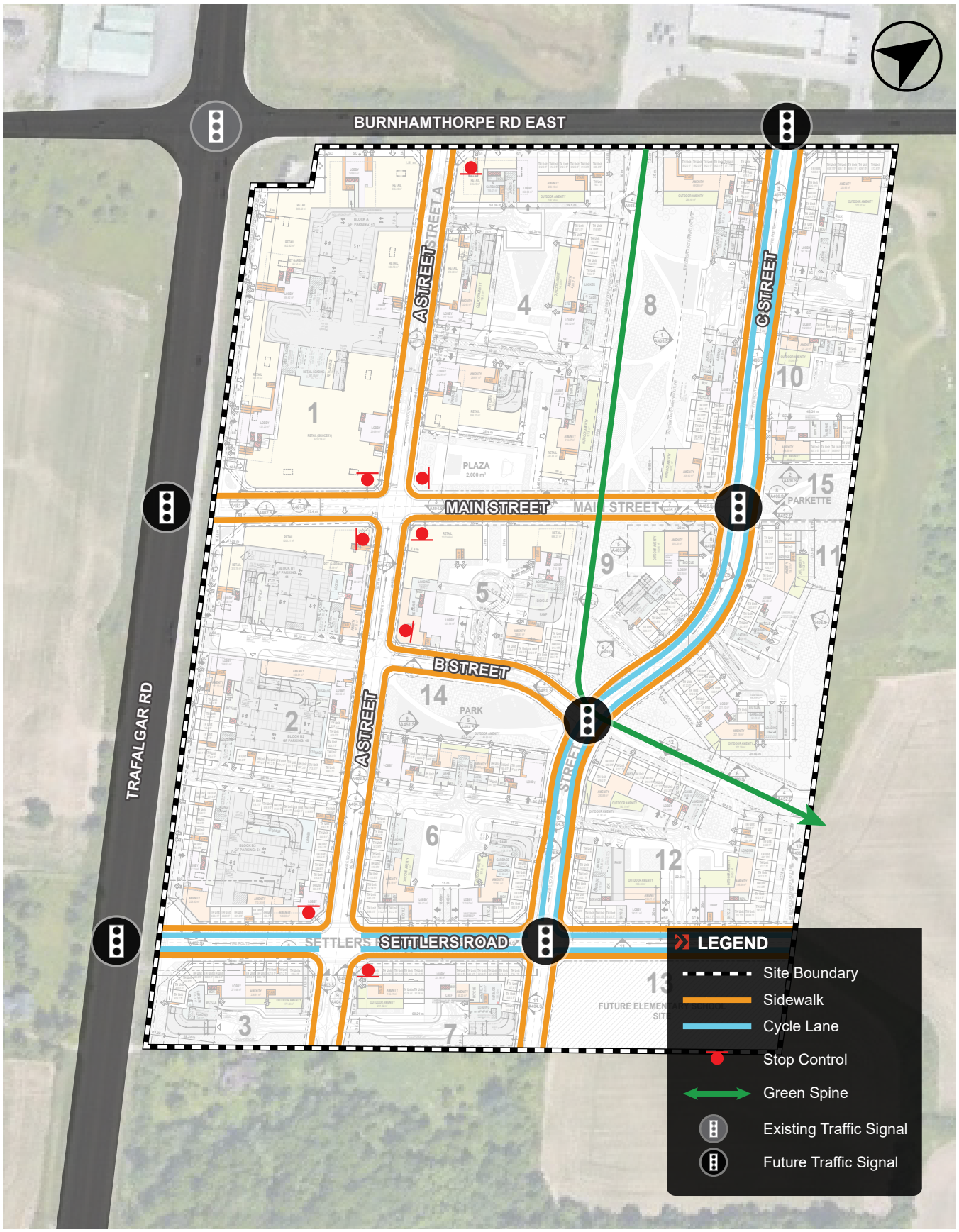
FIGURE 2 EM4 JC7 JC9 LANDS



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FIGURE 3 PROPOSED MASTER PLAN



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

FIGURE 4 PROPOSED STREET NETWORK

1.3 This Study

A Terms of Reference was submitted to the Town of Oakville and Region of Halton on August 25, 2025. The Terms of Reference, including Town and Region comments, are attached in **Appendix B**.

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

- a review of the existing and planned area transportation context;
- a description of the proposed development including the site plan arrangements and development programme,
- a description of the transportation arrangements for the site including the functional design of the new street network, as well as access, circulation and pick-up / drop-off considerations for each block,
- a review of the proposed Transportation Demand Management (TDM) plan;
- a review of parking, bicycle parking and loading considerations,
- a review of existing and future background traffic conditions on the study area road network,
- a review of site-related trip generation,
- a review of future total traffic conditions on the study area road network, and
- a discussion of the appropriateness of site related traffic impact.

Note that the joint TIS submitted by the Landowners Group already assesses the traffic impact of the combined development within the EM4 JC7 JC9 lands on the broader area arterial road network. Thus, the focus of the traffic analysis in this study is on the new internal road network, including where these intersect with the existing arterial network.

The October 2025 CGH Report traffic analysis included the following intersections:

- **Signalized intersections:**
    - Trafalgar Road / Burnhamthorpe Road East
    - Trafalgar Road / Local Road 6
    - Trafalgar Road / Settlers Road
    - Burnhamthorpe Road East / Collector Road 5
- **Unsignalized intersections:**
    - Burnhamthorpe Road East / Collector Road 4
    - Settlers Road / Collector Road 4
    - Settlers Road / Collector Road 5

The traffic analysis undertaken for this report includes the following internal and site boundary intersections:

- **Signalized intersections:**
    - Trafalgar Road / Burnhamthorpe Road E
    - Trafalgar Road / Main Street (Local Road 6)
    - Trafalgar Road / Settlers Road
    - Burnhamthorpe Road East / Street C (Collector Road 5)
    - Settlers Road / Street C (Collector Road 5)
    - Main Street (Local Road 6) / Street C (Collector Road 5)
    - Street B / Street C (Collector Road 5)
- **Unsignalized intersections:**
    - Burnhamthorpe Road East / Street A (Collector Road 4)
    - Settlers Road / Street A (Collector Road 4)
    - Main Street / Street A (Collector Road 4)
    - Street A (Collector Road 4) / Street B

The following study horizons have been adopted for this analysis, consistent with the October 2025 CGH Report:

- Existing Conditions
- Future Background Conditions (2031)
- Future Background Conditions (2036)
- Future Background Conditions (2041)
- Future Total Conditions (2031 build-out – Phase 1 Site Traffic)
- Future Total Conditions (2036 – Full Buildout)
- Future Total Conditions (2041 – Full Buildout)

2.0 SUMMARY AND CONCLUSIONS

BA Group is retained by 1816986 Ontario Inc. ("**Westerkirk**") to provide transportation consulting services for a mixed-use development at 340 Burnhamthorpe Road East and 3437 Trafalgar Road in the southeast quadrant of Trafalgar Road / Burnhamthorpe Road East in the Town of Oakville, Region of Halton.

The property (also herein referred to as the "**site**") is a roughly rectangular parcel bounded by Trafalgar Road to the west, Burnhamthorpe Road East to the north, another development parcel to the south, and natural heritage system area to the east. The site is currently occupied by a Golf and Learning Centre in its northwest corner, while the remainder of the site is undeveloped. Vehicular access is provided via an unsignalized all-moves driveway connection to Burnhamthorpe Road East on the east side of the property.

The site is located within the North Oakville East Secondary Plan area. The in-force North Oakville Zoning By-law 2009-189 designates the site as a Future Development "FD" Zone.

Master Plan

1. The proposed master planned development is an urban, mixed-use complete community characterized by pedestrian-scaled development blocks with a focus on a strong public realm. The master plan features a network of public spaces including parks, POPS and open spaces that are integrated with a new multi-modal road network.

2. The proposal includes a total of 12 development blocks containing 6,420 residential units, 10,042 m^2 of retail GFA and 4,433 m^2 of grocery GFA, as well as 0.5 ha of parks and open space, including a public park and parkette, and privately-owned publicly-accessible square.

3. A fine-grained street network, including pedestrian and cycling infrastructure, is proposed as part of this plan, consisting of:

    - Street A, running north-south from Burnhamthorpe Road East to the southern property limits;
    - Street B, running east-west from Street A to Street C;
    - Street C, running north-south from Burnhamthorpe Road East to the southern property limits;
    - Main Street, running east-west from Trafalgar Road to Street C; and
    - Settlers Road, running east-west from Trafalgar Road to the eastern property limits.

4. The new road network includes three road segments that will serve a collector function as identified in the North Oakville East Secondary Plan: Settlers Road (east-west collector), and the pairing of Street C north of Settlers Road and Street A south of Settlers Road (north-south collector). These roads will continue beyond the site and through adjacent properties as contemplated in the Secondary Plan. Note that while the Secondary Plan shows a continuous north-south collector road, the same north-south function is provided by Street C north of Settlers Road, Settlers Road between Street C and Street A, and Street A south of Settlers Road.

EM4 JC7 JC9 Landowners Group

5. Westerkirk is a member of a broader area landowners group known as the EM4 JC7 JC9 Landowners Group (the "**Landowners Group**"). The group is comprised of 11 applicants with lands generally bound by Sixth Line to the west, Ninth Line to the east, Highway 407 to the north and Dundas Street to the south.

6. Development applications have been put forward for the properties in the EM4 JC7 JC9 lands. Altogether, including the subject site, development on these lands include a mix of residential, employment, and retail uses as well as a community centre and three schools.

7. The Landowners Group have submitted a joint a joint Transportation Impact Study (TIS) to support the redevelopment of the EM4 JC7 JC9 lands, including the subject site. An initial TIS study was submitted in November 2024 titled "*EM4 JC7 JC9 Transportation Impact Study*", dated November 2024, prepared by CGH Transportation (herein referred to as the "**November 2024 CGH Report**"). The study reviewed the traffic impact of development within the EM4 JC7 JC9 lands on the area transportation network with a focus on the higher-order road network. Subsequently, development proposals within the Landowners Group were revised in response to agency comments. An updated TIS was submitted in October 2025 titled "*EM4 JC7 JC9 Transportation Impact Study*", dated October 24, 2025, prepared by CGH Transportation (herein referred to as the "**October 2025 CGH Report**").

8. The joint TIS submitted by the Landowners Group already assesses the traffic impact of the combined development within the EM4 JC7 JC9 lands on the broader area arterial road network. Thus, the focus of the traffic analysis in this study is on the new internal road network, including where these intersect with the existing arterial network.

Transportation Demand Management

9. A Transportation Demand Management (TDM) Plan is proposed to guide the provision of viable alternative personal transportation options beyond the single-occupant, private automobile. This plan intends to support the development plan by outlining specific measures and the suite of strategies under consideration to promote the use of more active and sustainable transportation modes, respond to the mobility needs of residents, visitors, employees, and patrons to the site, and reduce dependence on the private automobile.

10. A comprehensive framework has been developed that will serve as a guideline for the implementation of effective TDM strategies during the site plan / design stage, as well as in its operations following the full redevelopment of the property. A detailed and refined TDM Plan will be developed and secured through the approvals process in consultation with the Town of Oakville.

11. Categories of TDM strategies being considered include:

    - Vehicle parking supply and management
    - Facilitation of reduced car ownership & usage
    - Encourage transit use
    - Encourage bicycle use
    - Enhance Pedestrian Mobility
    - Land use & building infrastructure

- Coordination, monitoring, communication & promotion

Vehicle Parking

Zoning Bylaw Requirements

12. Application of the vehicle parking requirements of the in-force Town of Oakville Zoning By-law 2009-189 results in a minimum requirement of 484 spaces and maximum of 10,046 spaces. This includes a resident minimum of 0 and maximum of 8,030 spaces, visitor minimum of 0 and maximum of 1,290 spaces, and retail minimum of 484 and maximum of 726 spaces.

Proposed Parking Rates and Supply

13. The residential vehicle parking requirements within Zoning By-law 2009-189 are progressive and reflect the evolving landscape of parking regulations across Ontario. In recent years municipalities and the government across Ontario have modified regulations in recognition of the changes in parking demand due to societal shifts and other factors including decreasing automobile ownership, transit investment and adoption of micromobility.

14. BA Group has also reviewed the applicable Zoning By-law 2009-189 parking standards for non-residential use and proposes several modifications. A new land use category for grocery stores is proposed. Although the Zoning By-law outlines “Supermarket” as a defined term, no vehicle parking standards are set out for this land use.

15. The recommended standards are as follows:

    - Apartment resident – No minimum; maximum of 1.25 spaces/unit.
        - Recommended supply rate of 1.0 space/unit
    - Apartment visitor – No minimum, maximum of 0.20 spaces/unit
        - Recommended supply rate of 0.15 spaces/unit
    - Retail – Minimum of 1.0 space/100sm, maximum of 1.0 space/20sm
        - Recommended supply rate of 1.0 space/100sm
    - Retail – Minimum of 1.0 space/100sm
        - Recommended supply rate of 5.0 spaces/100sm

16. Application of the recommended vehicle parking rates results in an overall recommended supply of 7,713 spaces. This includes 6,420 resident spaces, 969 visitor spaces, 102 retail spaces and 222 grocery spaces.

17. The project currently proposes to provide a total of 7,703 parking spaces (6,414 resident, 963 residential visitor, 99 retail, and 227 grocery spaces). While this represents a deficit of 10 spaces relative to the recommended parking supply, the proposed parking supply will continue to be refined as the development advances through subsequent applications.

18. The parking strategy is to satisfy the proposed parking rates at the overall site level. Parking supply may vary block-by-block, with some blocks providing a small surplus and others providing slightly fewer than the proposed standard. For blocks with a deficit, the shortfall will be accommodated by adjacent blocks that offer surplus parking.

Additional Proposed Parking Policies

19. In addition to the proposed vehicle parking rates outlined above, additional parking policies are proposed to maximize the efficiency of the vehicle parking supply:

    1. *Visitor parking associated with a residential use, and parking associated with non-residential uses, may be shared on a non-exclusive basis.*

    2. *A maximum of 15% percentage of parking spaces, where an obstruction is located abutting or within a parking space, greater than 1.15 metres at either stall end does not require an increase in parking space width, provided the obstruction projects no more than 0.15 metres into the parking space.*

    3. *Notwithstanding subsection 5.1.3, 25 percent of parking spaces can be provided off-site, on another lot within 400 metres.*

    4. *Surface parking can be provided on a lot as an interim use.*

20. The above policies are appropriate and are commonly sought for other developments of this scale and transportation context. Sharing between residential visitors and retail is appropriate as there is minimal overlap between the demand peak hours. This maximizes the efficiency of parking supply as parking demand generated by various activities can be accommodated via a single facility.

21. Regarding policy #3, “off-site parking” would refer to parking located on other development blocks within the subject site, as the current proposed Draft Plan of Subdivision would sever the site into separate parcels.

22. The provision of surface parking is proposed to accommodate the construction phasing of the site and to meet nearer-term parking needs. The subject surface parking would serve the initial phases of the development in advance of the full build-out of the site.

Bicycle Parking

23. The in-force North Oakville Zoning By-law 2009-189 Section 5.7 (iv.) states the following regarding bicycle parking maximums:

    Notwithstanding Sections i. and ii., a maximum of 200 bicycle parking spaces shall be required.

24. Application of Section 5.7 (iv.) of the Zoning By-law therefore amends any block requirement greater than 200 bicycle parking spaces to 200 bicycle parking spaces.

25. Application of the bicycle parking standards set out in Zoning By-law 2009-189, with the application of Section 5.7 (iv.), would require a total bicycle parking supply of 2,262 spaces allocated to the residents, visitors and retail use.

26. In total the development proposes 2,052 bicycle parking spaces, including 1,587 long-term and 465 short-term spaces (450 residential visitor and 15 retail). This is equivalent to the following rates:

    - Resident (Long-Term) – 0.25 spaces / unit
    - Residential Visitor (Short-Term) – 0.07 spaces / unit

27. The proposed bicycle parking supply will continue to be refined as the development advances through subsequent planning applications.

Loading

28. As per section 5.6.1 of the in-force North Oakville Zoning By-law 2009-189, there are no defined loading requirements for land uses other than Industrial. However, to meet the functional loading needs of the future site, loading facilities are proposed as part of each of the proposed development blocks.

29. Proposed loading space types and dimensions are defined as follows:

    - Type 'G' – 13m long x 4m wide x 6.1m vertical clearance – to accommodate residential waste collection vehicles, single unit trucks and smaller
    - Type 'A' – 17m long x 3.5m wide x 4.4m vertical clearance – to accommodate semi-trailer trucks (for grocery uses), single unit trucks and smaller
    - Type 'C' – 6m long x 3.5m wide x 3m vertical clearance – to accommodate vans and smaller

30. In total the development proposes to provide 31 loading spaces. Appropriate loading facilities and manoeuvering areas have been provided for each building to meet the waste collection, loading, move-in/move-out and delivery needs of each building.

Traffic Volume Forecasting

Study Horizons and Scenarios

31. For the purposes of analysis, volumes have been forecasted for a typical weekday morning (AM) and afternoon (PM) peak hour.

32. Generally consistent with BA Group's August 2025 Terms of Reference and the October 2025 CGH Report, the following conditions have been assessed:

    - Existing Conditions – 2025
        - The existing intersection of Trafalgar Road / Burnhamthorpe Road East.
    - Future Background Conditions – 2031 (Partial Buildout), 2036 (Full Buildout), & 2041 (+5 Years)
        - Traffic activity on the future road network considering allowances made for the growth in area background traffic in addition to the existing conditions, which includes an allowance of traffic generated by area background developments, including the remaining EM4 JC7 JC9 Landowners Group Lands.
    - Future Total Conditions – 2031 (Partial Buildout), 2036 (Full Buildout), & 2041 (+5 Years)

- Traffic activity on the future road network, including on the new internal road network, associated with the phased (2031) and full build-out (2036) of the Westerkirk development in addition to the future background condition.

33. Note that the 2031, 2036, and 2041 horizons are consistent with the adopted study horizons in the October 2025 CGH Report and generally align with the assumed phasing of the subject site including partial build-out by 2031, full build-out by 2036, and the planned reallocation of the Trafalgar HOV lanes to BRT lanes by 2041.

Phasing

34. The proposed development will be delivered on a phased basis, which will be refined as the development proceeds through the approvals process. For the purposes of this analysis, Phase 1 is assumed in the 2031 horizon, while full buildout is assumed in the 2036 horizon.

35. Site statistics under Phase 1 and full build-out conditions are summarized below:

- Phase 1 (Blocks 2 & 3)
  - ~1,550 residential units
  - ~1,650 m^2 retail GFA
- Full Build-Out (Remainder of Blocks 1 – 14)
  - ~6,500 residential units
  - ~10,000 m^2 retail GFA
  - ~4,600 m^2 grocery GFA
  - Green space / parks
  - Elementary school

Background Development Growth

36. Area background development traffic volumes were established by CGH Transportation based on a review of other area development proposals that are anticipated to generate traffic within the study area upon their build out and occupation. As the purpose of this study is to assess the impact of the Westerkirk Lands on the area road network, the remaining developments within the EM4 JC7 JC9 Landowners Group have been considered as additional background developments from what was considered in the October 2025 CGH Report.

37. A total of 15 development proposals and / or studies have been considered, in addition to the remaining EM4 JC7 JC9 Landowners Group lands, representing a total of approximately 32,187 units, 618,000 m^2 of non-residential GFA, three elementary schools, and one secondary school.

Corridor Growth

38. As part of the October 2025 CGH Report forecast, compounded annual growth rates were applied along the Trafalgar Road and Burnhamthorpe Road East corridors within the vicinity of the site, as recommended by staff at Halton Region and the Town of Oakville, and compared against forecasts within Halton Region's 2031 EMME Model.

39. It was further noted by CGH Transportation that the region's EMME model considers a study area much larger than the October 2025 CGH Report and does not have information on population and employment statistics. Thus, it is not certain how many trips generated from within the EM4 JC7 JC9 Landowners Group study area is included in the EMME model forecast. A conservative approach was taken by assuming no reduction to EMME model and corridor growth rate forecasts would be applied to offset trips generated from within the study area.

40. As many of the intersections were forecasted to operate above capacity in the October 2025 CGH Report, BA Group has completed a review of effective corridor growth rates generated by area background developments to forecast a more realistic future background condition, recognizing that the subject study includes a more granular analyses of future intersections.

41. Traffic allowances adopted from area background developments represent significant growth along both corridors. Adding the Regional annual corridor growth would represent an overly conservative and unrealistic scenario. It is considered appropriate to adopt a 0% general corridor growth rate along Burnhamthorpe Road East and Trafalgar Road.

42. Notwithstanding the above, for comparison purposes, traffic operations analysis has been undertaken assuming both 'base future total conditions' reflective of BA Group's modified corridor growth approach, and 'sensitivity future total conditions' reflective of additional corridor growth rates in line with Halton Region and the Town of Oakville's projections.

Trip Generation

43. Trip generation rates have been adopted based on the ITE Trip Generation Manual 11th Edition and the methodology outlined in the ITE Trip Generation Handbook 3rd Edition and the mode share forecasts in the Halton Region 2011 TMP (72% auto mode share under future scenarios).

44. The proposed development will generate in the order of 1,320 and 1,985 two-way external vehicle trips in the weekday morning and afternoon peak hours, respectively.

Traffic Operations Analysis

Existing Conditions

45. Under existing conditions, the study area encompasses the intersection of Trafalgar Road / Burnhamthorpe Road East. Trafalgar Road is an existing four-lane road with auxiliary left turn lanes at the intersection, and Burnhamthorpe Road East is an existing two-lane road with auxiliary left turn lanes at the intersection.

46. The intersection operates at an acceptable level of service and within its theoretical capacity with overall v/c ratios of 0.57 and 0.58 during the weekday morning and afternoon peak hours, respectively.

Future Conditions

47. Under future conditions, road network assumptions have been assumed consistent with the October 2025 CGH Report for the 2031, 2036, and 2041 horizon years. The exception is the phasing of the Westerkirk lands, whereby only Phase 1 is projected to be built by 2031, with the full build-out planned prior to 2036. A summary of the external road network assumptions by horizon year assumed for the purposes of this analysis is provided below:

2031 Conditions

48. Under 2031 conditions, the following road network revisions are assumed to be completed within the study area:

- Trafalgar Road is widened to six lanes, with curbside lanes operating as HOV lanes, auxiliary left turn lanes provided all signalized intersections along the corridor, and auxiliary right turn lanes provided at the intersection with Settlers Road;
- Burnhamthorpe Road East is widened to four lanes, with auxiliary left turn lanes provided all signalized intersections along the corridor, and auxiliary right turn lanes provided at the intersection with Trafalgar Road;
- Full build-out of the external road network contemplated within the October 2025 CGH Report, including Settlers Road, Main Street (Local Road 6) west of Trafalgar Road, and Street A (Collector Road 4) and Street C (Collector Road 5) north of Burnhamthorpe Road E; and,
- Interim build-out of Street A to provide Phase 1 of the Westerkirk lands with access to Settlers Road and Trafalgar Road (via Settlers Road).

2036 Conditions

49. Under 2036 conditions, the road network within the study area is assumed to remain consistent with 2031 conditions with the exception of the following:

- Full build-out of the Westerkirk lands, including all internal road network connections to Trafalgar Road, Burnhamthorpe Road East, and Settlers Road.

2041 Conditions

50. Under 2041 conditions, the road network within the study area is assumed to remain consistent with 2036 conditions with the exception of the reallocation of the curbside HOV lanes along Trafalgar Road to BRT lanes, reducing through lane capacity for vehicles along Trafalgar Road.

51. Traffic operations analysis results for area external intersections under future conditions are summarized as follows:

52. Under base 2031 and 2036 future background and future total conditions, all external intersections are projected to operate at acceptable levels of service and within their theoretical capacity.

53. While it is BA Group's opinion that general corridor growth rates are not necessary along both corridors, as area background developments already represents a significant growth to both corridors, and regional model forecasts are likely to double count growth as it pertains to area background developments considered, a sensitivity analysis has been prepared under 2031 and 2036 conditions, inclusive of corridor growth allowances in line with Halton Region and the Town of Oakville's projections. Under sensitivity conditions, most external intersections are projected to continue to operate at acceptable levels of service and within their theoretical capacity, however, the intersections of Trafalgar Road / Burnhamthorpe Road East and Trafalgar Road / Settlers Road are projected to operate at or slightly in excess of their theoretical capacity.

54. Notwithstanding, the impact of site traffic on critical lane groups at these intersections is in the order of 0% to 3% during both horizons and peak hours. If city and regional projected corridor growth rates were to occur in excess of planned area background development related traffic volumes, these intersections will operate poorly under 2031 and 2036 conditions, irrespective of the site. It is reasonable to assume that as the corridor approaches capacity under future conditions, some peak period drivers traveling along Trafalgar Road will be 'displaced'; either to alternative routes of travel, alternative travel modes, or to travel outside of peak hours.

55. Under base 2041 future background and future total conditions, with the reallocation of curbside HOV lanes along Trafalgar Road to BRT lanes, all external intersections along Trafalgar Road are projected to operate in excess of their theoretical capacity, irrespective of the site. Remaining external intersections along Burnhamthorpe Road East are projected to continue to operate at acceptable levels of service and within their theoretical capacity. Recognizing that future background traffic allowances along Trafalgar Road under 2041 conditions exceed the corridors capacity following the removal of a lane in each direction for the BRT, a corridor growth allowance sensitivity has been omitted for 2041 conditions, and an alternative sensitivity analysis has been conducted with consideration of a mode shift for through traffic along Trafalgar Road such that the corridor can operate within capacity.

56. As part of the sensitivity analysis, the decrease in vehicular trips is assumed to result in an increase in alternatives modes of transportation (e.g. increased carpooling, transit, cycling, and walking trips). Furthermore, it is expected that as major intersections along the corridor reach capacity, some peak period drivers will be 'displaced'; either to alternative routes of travel, alternative travel modes (e.g. the proposed BRT along Trafalgar Road), or to travel outside of peak hours.

57. Based on the analysis, it is forecasted that a 26% reduction to weekday morning and 25% reduction to weekday afternoon peak hour traffic volumes north and southbound along Trafalgar Road would be necessary for all intersection lane groups along the corridor to operate within capacity under 2041 future total conditions. The shift in roughly one quarter of corridor volumes can largely be attributed to the reduction in through lanes along Trafalgar Road by a factor of one third, from three lanes per direction, including an HOV lane, to two lanes per direction.

58. As the intersections of Trafalgar Road / Burnhamthorpe Road East, Trafalgar Road / Main Street and Trafalgar Road / Settlers Road are projected to exceed their theoretical capacity prior to the 2041 horizon, with the reallocation of planned curbside HOV lanes along Trafalgar Road as BRT lanes, mode shift targets would be necessary for the corridor to remain within its theoretical peak hour capacity.

59. In addition to intersection capacity analysis, 50th and 95th percentile queue lengths have been assessed at area signalized intersections and 95th percentile queue lengths have been assessed at area unsignalized intersections to identify any locations where individual movement queues are projected to exceed available turning lane storage. Based on the foregoing, 50th and 95th percentile queue lengths at signalized intersections are projected to be appropriate and are generally within available storage lengths under all scenarios and horizon years, with exceptions noted at the three signalized intersections along Trafalgar Road. 95th percentile queue lengths at unsignalized intersections are projected to be appropriate and within available storage lengths under all scenarios and horizon years.

60. Based on the foregoing assessment, consideration should be given to the extension of the eastbound left and westbound left turn lane storages to 70 and 110 metres, respectively, at the intersection of Trafalgar Road / Burnhamthorpe Road East alongside planned road widenings. Furthermore, consideration should be given to the extension of the northbound left and northbound right turn lane storages to 100 and 60 metres, respectively, at the intersection of Trafalgar Road / Settlers Road alongside planned road widenings.

Traffic Signal Warrants

61. The following external and internal intersections providing access to the Westerkirk development have been contemplated as signalized intersections to support vehicular, active, and transit mobility throughout the district:

    External

    - Trafalgar Road / Main Street
    - Trafalgar Road / Settlers Road
    - Burnhamthorpe Road East / Street C

    Internal

    - Settlers Road / Street C
    - Main Street / Street C
    - Street B / Street C

62. Consistent with the OTM methodology for projected volumes using “Justification 7”, each intersection has been identified as one of the following three cases under 2031 conditions:

    - **Case 1:** The traffic signal is certainly warranted – the suggested threshold for this condition is meeting 200% or more of Justifications 1 or 2.
    - **Case 2:** The traffic signal might be warranted – falls between cases 1 and 3, somewhere between 100% and 199% of Justifications 1 or 2.
    - **Case 3:** Signal warrant is unlikely – meets less than 100% of Justifications 1 or 2.

63. Based on this analysis, traffic signals at the intersections of Trafalgar Road / Main Street and Trafalgar Road / Settlers Road are projected to be certainly warranted (Case 1) under 2031 conditions and beyond. A traffic signal at the intersection of Burnhamthorpe Road East / Street C is projected to not likely be warranted (Case 3) under 2031 conditions, however, it is projected to possibly be warranted (Case 2) under 2036 conditions and beyond. Recognizing that all three intersections are proposed to permit all moves intersecting arterial road corridors, it is recommended that traffic signals be installed at each location alongside development of the EM4 JC7 JC9 Landowners Group Lands, and that reasonable underground signal related infrastructure be installed during initial construction of the intersections.

64. Upon full buildout of the Site under 2036 conditions, a traffic signal at the internal intersection of Settlers Road / Street C is projected to possibly be warranted (Case 2), whereas traffic signals at the internal intersections of Main Street / Street C and Street B / Street C are projected to not likely be warranted (Case 3). While possibly not warranted, it is recommended and proposed that these intersections be constructed as signalized intersection prior to the full build-out of the Westerkirk Lands to support active mobility between residential neighbourhoods and the planned elementary and secondary schools to the southeast of the site.

3.0 PLANNING CONTEXT

3.1 Provincial and Regional Policy Framework

3.1.1 Provincial Planning Statement (2024)

The *2024 Provincial Planning Statement* (PPS) (replacing the PPS 2020 and the Places to Grow: Growth Plan for the GGH 2020) promotes efficient development patterns that optimize the use of land, resources and public investment in infrastructure and public service facilities, for the next 25 years. According to the PPS, efficient development patterns promote a mix of housing, including affordable housing, employment, recreation, parks and open spaces, and safe and efficient transportation choices, that maximize the use of existing and planned infrastructure and increase the use and connectivity of multi-modal transportation system elements.

There are several important transportation-related directives relevant to the development of the site that include the following:

- Provide a density and mix of land uses to minimize the duration and number of vehicle trips and encourage the use of transit and active transportation;
- Make efficient use of existing and planned infrastructure, including TDM strategies;
- Improve the connectivity of transportation systems for all modes of travel;
- Provide transportation systems that are appropriate for projected needs which consider safety and are energy efficient and facilitate the movement of people and goods;
- Support the development of viable choices and plans for public transit and other alternative transportation modes, including commuter rail and bus;
- Prioritize growth in strategic growth areas;
- Planning authorities shall not permit development in planned corridors that could preclude or negatively affect the use of the corridor for the purpose(s) for which it was identified; and
- New development proposed on adjacent lands to existing or planned corridors and transportation facilities should be compatible with, and supportive of, the long-term purposes of the corridor and should be designed to avoid, or where avoidance is not possible, minimize and mitigate negative impacts on and adverse effects from the corridor and transportation facilities.

3.1.2 2041 Metrolinx Region Transportation Plan (2018)

The *Metrolinx 2041 Regional Transportation Plan* (the "2041 RTP") was adopted in 2018 as an update to The Big Move (2008) and provides a framework to create an integrated, multi-modal and regional transportation system that supports the growth of healthy, complete, and sustainable communities.

The 2041 RTP includes strategies that integrate land use and transportation planning to identify areas for investment and build new connections. Strategy 4.8 specifically addresses parking management and encourages the province to adopt a region-wide policy that "*provides guidelines and encourages best practice in parking management*." The strategy states that "*zoning standards should be reviewed, with the expectation that minimum parking requirements will be reduced, particularly in transit-supportive neighbourhoods*", such as the Westerkirk site. The 2041 RTP also includes the importance of TDM strategies in land use planning and development to prioritize cycling, walking, and transit use. The 2041 RTP identifies area transit projects part of the Frequent Rapid Transit Network. This includes planned BRT service on Dundas Street between Kipling Transit Hub in Toronto to Highway 6 in Hamilton in addition to a Trafalgar BRT which is planned to span between Midtown Oakville and Highway 407.

3.2 Local Area Policy Framework and Directives

3.2.1 Region of Halton Official Plan (2024)

The Region of Halton Official Plan (OP) sets out a policy framework to guide the planning vision for the Region to 2051. Pertaining to transportation, the OP establishes a goal to provide a safe, convenient, accessible, affordable, and efficient transportation system while minimizing the impacts on the environment. The OP emphasizes sustainable transportation modes including active transportation and transit and includes a 20% public transit mode share goal by 2031. This will be encouraged through the coordination of density and transportation planning whereby land uses within growth areas are to be well served with transit and major roads. Map 1h *Regional Urban Structure* delineates the lands between Highway 407 and Dundas Street West as a Primary Regional while Map 3 *Functional Plan of Major Transportation Facilities* delineated Dundas Street, Highway 407 and Trafalgar Road as *Higher Order Transit Corridors.*

As outlined in Section 79 of the OP, transportation is a key consideration in the development of *Strategic Growth Areas.* To achieve the policy objective of developing *Strategic Growth Areas* as complete communities, there is a reliance on sustainable transportation planning to foster multi-modal transportation. Note that the site is located within a *Primary Regional Node Strategic Growth Area*.

3.2.2 Region of Halton Integrated Master Plan (2026)

The Region of Halton is currently undertaking the development of an Integrated Master Plan (IMP) to guide the region-wide need for services, including transportation, to 2051. Key transportation considerations of the IMP includes enhanced connectivity, integration of all transportation modes, and maximizing corridor spaces to support local growth opportunity. The IMP sets out to conform to general provincial policies while providing additional focused policy frameworks. As part of the consideration for all modes, the IMP sets out the planned 2051 transportation networks for roads, transit, cycling, and walking. On March 27, 2026, the Region of Halton released the IMP for public comment as part of its statutory 30-day public review period.

The IMP recognizes the importance of reduced auto reliance and emphasizes prioritizing transit and active transportation infrastructure to accommodate the movement of people throughout the Region. This policy objective is actualized by various transportation strategies which culminate in the planned 2051 transportation network, guided by the following criteria:

- Provision of equitable infrastructure services;
- Safe and healthy communities;
- Sustainability;
- Climate Change;
- Integration of planning for regional infrastructure; and,
- Technical innovation.

As further discussed in **Section 4.1, 4.2,** and **4.3** the IMP outlines the planned transportation networks for roads, transit priority corridors, and cycling and walking infrastructure expansions. Furthermore, the IMP considers the implementation of the various transportation modal enhancement through distinct phases. The following figures within the IMP illustrate the phased implementation of various transportation network improvements:

- Figure 14 – Phasing of Regional Road Improvements;
- Figure 20 – 2031+ Phasing of Transit Priority Corridors;
- Figure 21 – 2042 to 2046 Phasing of Transit Priority Corridors; and
- Figure 22 – 2047 to 2051 Phasing of Transit Corridors.

As part of a review of the IMP, Regional Council has directed staff to engage with proponents from the Town of Oakville to complete an Operational Review of planned High Occupancy Vehicle lanes along the Trafalgar Road corridor. The Operational Review will consider the temporal and geographic requirements for High Occupancy Vehicle lanes in addition to signal timing and traffic flow implications. The Operation Review is slated to be completed Q3 – Q4, 2027.

3.2.3 Town of Oakville Official Plan (2025)

Known as *Livable Oakville,* the Town of Oakville Official Plan (OP) outlines the planning vision for the Town to support population and employment growth to 2051. The OP establishes policies that secure the sustainable development of the municipality and encourages a built environment for people of all ages and abilities. Pertaining to transportation, the OP emphasizes sustainable transportation mode choice through an integrated transportation network inclusive of roads, transit, and walking and cycling trails.

As part of an ongoing Official Plan Amendment (OPA) to bring the OP into conformity with provincial legislation, an OPA is currently being sought by the Town to amend *Schedule A1 Urban Structure*. A key change proposed includes the designation of Dundas Street, Trafalgar Road, and Highway 407 as *Higher Order Transit Corridors*. Under the Provincial Policy Statement, lands adjacent to *Higher Order Transit Corridors* may be identified as S*trategic Growth Areas. Strategic Growth Areas* are frequently further classified as *Urban Growth Centres, Protected Major Transit Stations Areas or Major Transit Station Area.* Note that the nearest S*trategic Growth Area* is the *Uptown Core Urban Growth Centre,* approximately 2 km south of the site.

Section 3.7 *Nodes and Corridors* identities key areas to encourage development and intensification. The OP designates the Trafalgar Urban Core Area as an intensification corridor and defers further policy frameworks to the *North Oakville East Secondary Plan*. Note that the site lands are contained within the North Oakville East Secondary Plan.

3.2.4 North Oakville East Secondary Plan (2023)

The North Oakville East Secondary Plan is a planning framework created to guide the urbanization of developmental lands bounded by Dundas Street West, Sixteen Mile Creek, Highway 407, and Ninth Line. Section 7.2.3.5 *Transportation* outlines various policies to guide the mobility strategy of the future development, which includes the following policies relevant to the site:

a) To create a system of roads and transportation corridors which promotes the safe, efficient circulation of traffic including transit and non-vehicular traffic.

b) To establish an efficient and linked safe pedestrian movement system (cycleways and walkways) along with an appropriate distribution of land uses so that residents do not need to rely on the automobile to meet the recreational, shopping, and commuter needs of daily life.

c) To establish a transportation system that complements and supports the existing and future urban structure and land use pattern.

d) To promote transit opportunities through community design, including a “transit first” policy to ensure that development including the phasing of development, proceeds in a manner which will be supportive of the early provision of transit services.

e) To explore all modes of transportation including the use of HOV lanes, express bus lanes, and transit rights-of-way on the existing and future road network in Oakville, as well as other innovative approaches to transit.

f) To plan residential development and its road network so that residents are predominantly within a 400 metre walking distance of transit services.

g) To promote both local and higher order transit opportunities through land use arrangements, building orientation, and streetscape design

The above transportation policies will support the planned urban form of the area, including the *Trafalgar Urban Core Area.* The *Trafalgar Urban Core Area* is an intensification corridor spanning from Highway 407 to Dundas Street where it connects to the *Uptown Core Urban Growth Centre.* Given its planned density and mixed uses, it is outlined as a pedestrian-oriented streetscape. The Trafalgar Road / Burnhamthorpe Road East intersection is envisioned as a commercial node that will anchor the corridor. To maximize the uses on the corridor, the plan outlines various Travel Demand Management policies to encourage non-auto travel.

3.2.5 Town of Oakville Transportation Master Plan (2025)

The Town of Oakville Transportation Master Plan (TMP) sets out a planning framework to address the Town's transportation needs to 2051. Key considerations of the plan include the identification of long-term needs of the transportation system and an outline of strategic implementation. Planned improvements are assessed on short-, medium-, and long-term time horizons where short-term projects are recommended for inclusion on the Town's 10-year capital plan. Section 5.0 *Best Practice Review* outlines various aspects of transportation planning that should be considered including active transportation, transit-oriented communities, and transportation demand management (TDM).

The TMP outlines various transportation network improvements including on Trafalgar Road and the surrounding area. The planned transportation network improvements are further discussed in **Section 4.0**.

3.2.6 Trafalgar Road Environmental Assessment (2015)

In 2015, Halton Region completed a Corridor Class Environmental Assessment (EA) for the widening of Trafalgar Road from Cornwall Road to Highway 407. The Westerkirk lands are in the Stage 2 area, from Hays Boulevard to William Halton Parkway. The recommended reconstruction of Trafalgar Road includes widening from 4 to 6 lanes with a continuous centre median adjacent to the site area. Furthermore, it is recommended that the existing curb lanes be converted into high-occupancy vehicle (HOV) or bus rapid transit (BRT) lanes once the road widening is complete.

Additional road improvements include curbside dedicated bus lanes, bus bays, upgraded traffic signals and a buffered multi-use path. Construction of Phase 2 is currently slated to commence in 2027 with a targeted completion date of 2030.

3.2.7 Burnhamthorpe Road Character Study & Municipal Class Environmental Assessment (2014)

In 2014, the Town of Oakville completed the Burnhamthorpe Road Character Study & Municipal Class Environmental Assessment. The stretch of Burnhamthorpe Road East across the site is considered part of the 'Core Section'. This is proposed to include a 24m right-of-way consisting of two lanes of traffic and two-lanes of parking during off-peak hours and four lanes of traffic during peak hours. The cross-section also proposes dedicated cycle lanes, boulevards, and sidewalks along both sides of the road.

3.2.8 Highway 407 Transitway Environmental Assessment (2020)

In 2014, the Ministry of Transportation initiated an Environmental Assessment as part of the Transit Project Assessment Process (TPAP). The Highway 407 Transitway is a planned, grade-separated transit project running the length of the Highway 407 Corridor from the City of Burlington to the City of Pickering. While the overall project has been divided into various EA segments, adjacent to the site is a 35 km corridor study area between Brant Street and Hurontario Street. In the Town of Oakville, the Transitway will be located on the south side of the Highway, with stations at both Bronte Road and Trafalgar Road.

4.0 AREA TRANSPORTATION CONTEXT

4.1 Area Road Network

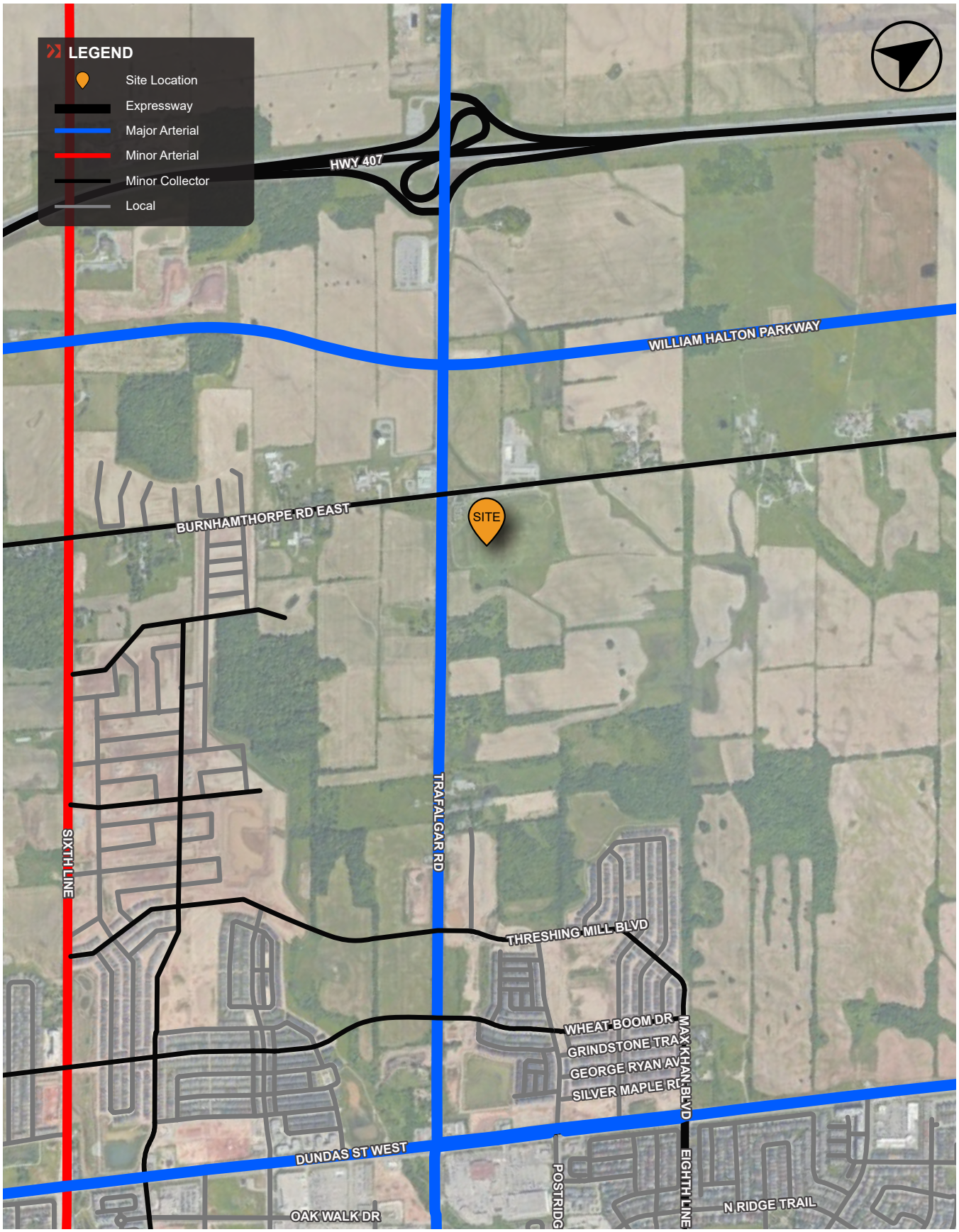
4.1.1 Existing Road Network

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 1** and illustrated in **Figure 5**. The existing lane configurations and traffic control are illustrated in **Figure 6**.

Table 1 Area Road Network

Classification / Direction		Street Name	Roadway Limits	Description
Provincial Freeway / Highway	East-West	Highway 407 / 407 Express Toll Route ("407 ETR")	Highway 407 extends across the Greater Toronto Area ("GTA") between the Queen Elizabeth Way ("QEW") / Highway 403 interchange in Burlington in the west and Highway 35 in Clarington, east of the City of Toronto.	A 400-series highway under the jurisdiction of the Ontario Ministry of Transportation ("MTO"). Highway 407 is a tolled limited access highway located immediately north of the site and is generally oriented in the east-west direction. The highway maintains a six-lane toll freeway arrangement within the vicinity of the site. A full interchange with two signalized intersections is located at Trafalgar Road, north of the site. The posted speed limit is 100km/h.
Major Arterial	North-South	Trafalgar Road (Regional Road 3)	Trafalgar Road extends from Lake Ontario in the south Highway 7 in the north. The road continues as Regional Road through the Town of Halton Hills.	Within the vicinity of the site Trafalgar Road has a four-lane cross-section with auxiliary left turn lanes at major intersections. South of Dundas Street, Trafalgar Road widens to six-lanes. Halton Region's OP protects for a 50 m right-of-way on Trafalgar Road, between the QEW and Highway 407 ETR. North of Dundas Street West, the posted speed limit along Trafalgar Road is 80km/h.
	East-West	Dundas Street West (Regional Road 5)	Dundas Street West extends from Highway 6 in the City of Hamilton to the west and Yonge Street in the City of Toronto to the east, where it continues as Dundas Street East.	Within the vicinity of the site, Dundas Street West has a six-lane cross-section with a centre median and auxiliary left and right turn lanes at key intersections. The Region's OP and TMP protect for a 50-metre right-of-way on Dundas Street West, between Winston Churchill Boulevard and Milburough Line. On-street parking is prohibited on both sides of the street and the posted speed limit is 70 km/h.

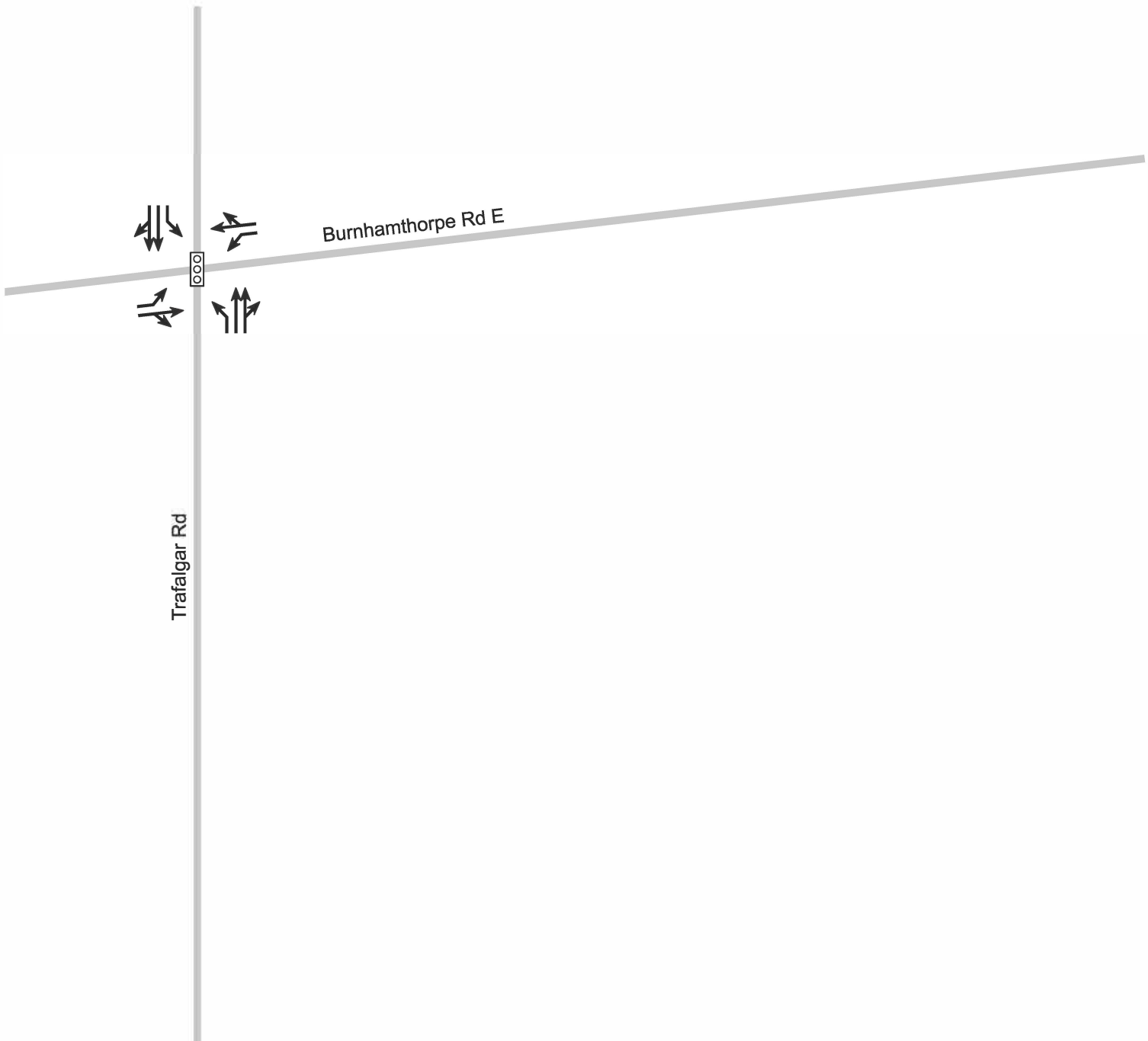
Classification / Direction		Street Name	Roadway Limits	Description
		William Halton Parkway (Regional Road 40)	William Halton Parkway extends across the Town of Oakville from Bronte Road in the west and Ninth Line in the east.	Within the vicinity of the site, William Halton Parkway has a two-lane cross-section from Bronte Road to Hospital Gate, where it continues east as a four-lane cross-section to Third Line. Halton Region's OP protects for a 35 m right-of-way on William Halton Parkway, between Regional Road 25 and Ninth Line. Bicycle lanes are included on both sides of the roadway between Neyagawa Boulevard and Ninth Line. The posted speed limit is 60km/h.
Minor Collector	East-West	Burnhamthorpe Road East (Regional Road 27)	Burnhamthorpe Road East extends from Neyagawa Boulevard in the west to the Town of Oakville boundary where it continues east through Mississauga to its terminus near Islington Avenue in Toronto.	Within the vicinity of the site, Burnhamthorpe Road East has a two-lane cross-section with auxiliary left-turn lanes at major intersections including Trafalgar Road. As per Halton Region's OP, the segment of Burnhamthorpe Road adjacent to the site protects for a 24 m right-of-way. The posted speed limit is 60km/h.



P:\82\7901\Graphics\ADOBE\Id\8279-01_340 Burnhamthorpe and 3437 Trafalgar Road.indd

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

FIGURE 5 EXISTING ROAD NETWORK



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FIGURE 6 EXISTING LANE CONFIGURATIONS AND TRAFFIC CONTROL

4.1.2 Future Road Network

Given the extensive planned development in the area, both the Town of Oakville and Region of Halton have planned future improvements to the municipal and regional road network. This includes upgrading existing road infrastructure as well as constructing new roads. The future road network is generally identified in Halton Region's Draft Integrated Master Plan, Town of Oakville Transportation Master Plan, and North Oakville West Secondary Plan.

4.1.2.1 Trafalgar Road

To address forecasted traffic demands and provide convenient travel options for various users (i.e., motorists, cyclists, and pedestrians), the Region is improving the Trafalgar Road (Regional Road 3) corridor. These improvements are currently underway and are planned to be implemented in two stages:

- **Stage 1 (Fall 2022)** – Leighland Avenue to north of Hays Boulevard
  This segment of Trafalgar Road was recently expanded from four to six lanes within a 50-metre right-of-way. As part of this upgrade, the speed limit was reduced to 60 km/h to create a more urban environment.
- **Stage 2 (2030)** – Hays Boulevard to William Halton Parkway
  This segment of Trafalgar Road will be widened from four to six lanes and will include enhanced active transportation infrastructure, including sidewalks, multi-use paths, and transit stops to promote non-auto travel. The site has frontage along this segment of Trafalgar Road, and as such, will benefit from the enhanced transportation infrastructure. This segment is currently at the design and construction phase and is expected to be completed by 2030.

The Trafalgar Road Improvements Class Environmental Assessment Study (2015) includes the long-term potential to accommodate curb-side High Occupancy Vehicle (HOV) lanes or dedicated bus lanes, as previously outlined in **Section 3.2.6**. These HOV lanes would encourage carpooling and transit usage by reducing travel times along the Trafalgar Road corridor.

Additionally, Halton Region's Integrated Master Plan includes planned phasing for curbside transit priority infrastructure along Trafalgar Road including:

- **Post 2031 –** HOV lanes; and
- **Between 2041 and 2046** – convert the curbside HOV lanes to bus only lanes to create a Bus Rapid Transit ("BRT") corridor.

4.1.2.2 William Halton Parkway

To accommodate the planned growth of North Oakville, the Region has been extending William Halton Parkway (Regional Road 40) as a new east-west corridor from Bronte Road to Ninth Line (Regional Road 13). The new road has been divided into two phases. Phase 1 (from Sixth Line to Ninth Line) began construction in December 2018 and was completed in November 2020. Phase 2 (from Third Line and Sixth Line) is underway. The William Halton Parkway Extension includes the following key elements:

- **Phase 1 (Complete)**:
    - a new four-lane roadway between Sixth Line and Trafalgar Road;
    - a new two-lane roadway between Trafalgar Road and Ninth Line;
- **Phase 2 (Ongoing)**:
    - a new four-lane roadway between Third Line and Neyagawa Boulevard;
    - a new four-lane roadway between Neyagawa Boulevard and Sixth Line; and,
- New on-street bike lanes, multi-use pathways, and sidewalks along the entire length of the roadway.

Additional road improvements are proposed along the William Halton Parkway, with plans to widen the roadway from two to four lanes between Old Bronte Road and Hospital Gate (Regional Road 40). Budget for construction of this segment is allocated between 2023 - 2026 in the Halton Region Budget and Business Plan Capital Report 2025.

4.1.2.3 Burnhamthorpe Road

Burnhamthorpe Road East is a municipal road under the jurisdiction of the Town of Oakville. As per the Town of Oakville Official Plan and Transportation Master Plan, Burnhamthorpe Road East is planned for future infrastructure improvements. The urbanization of Burnhamthorpe Road East is planned in two phases, as follows:

- **Phase 1** – Sixth Line to Trafalgar Road, construction to begin 2027
- **Phase 2** – William Halton Parkway (800 metres east of Neyagawa Boulevard) to Sixth Line, construction to begin 2028

In 2014, the Town of Oakville completed the Burnhamthorpe Road Character Study & Municipal Class Environmental Assessment. The stretch of Burnhamthorpe Road East across the site is considered part of the ‘Core Section’. This is proposed to include a 24m right-of-way consisting of two lanes of traffic and two-lanes of parking during off-peak hours and four lanes of traffic during peak hours. The cross-section also proposes dedicated cycle lanes, boulevards, and sidewalks along both sides of the road.



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

FIGURE 7 FUTURE ROAD NETWORK

4.2 Area Transit Network

4.2.1 Existing Transit Network

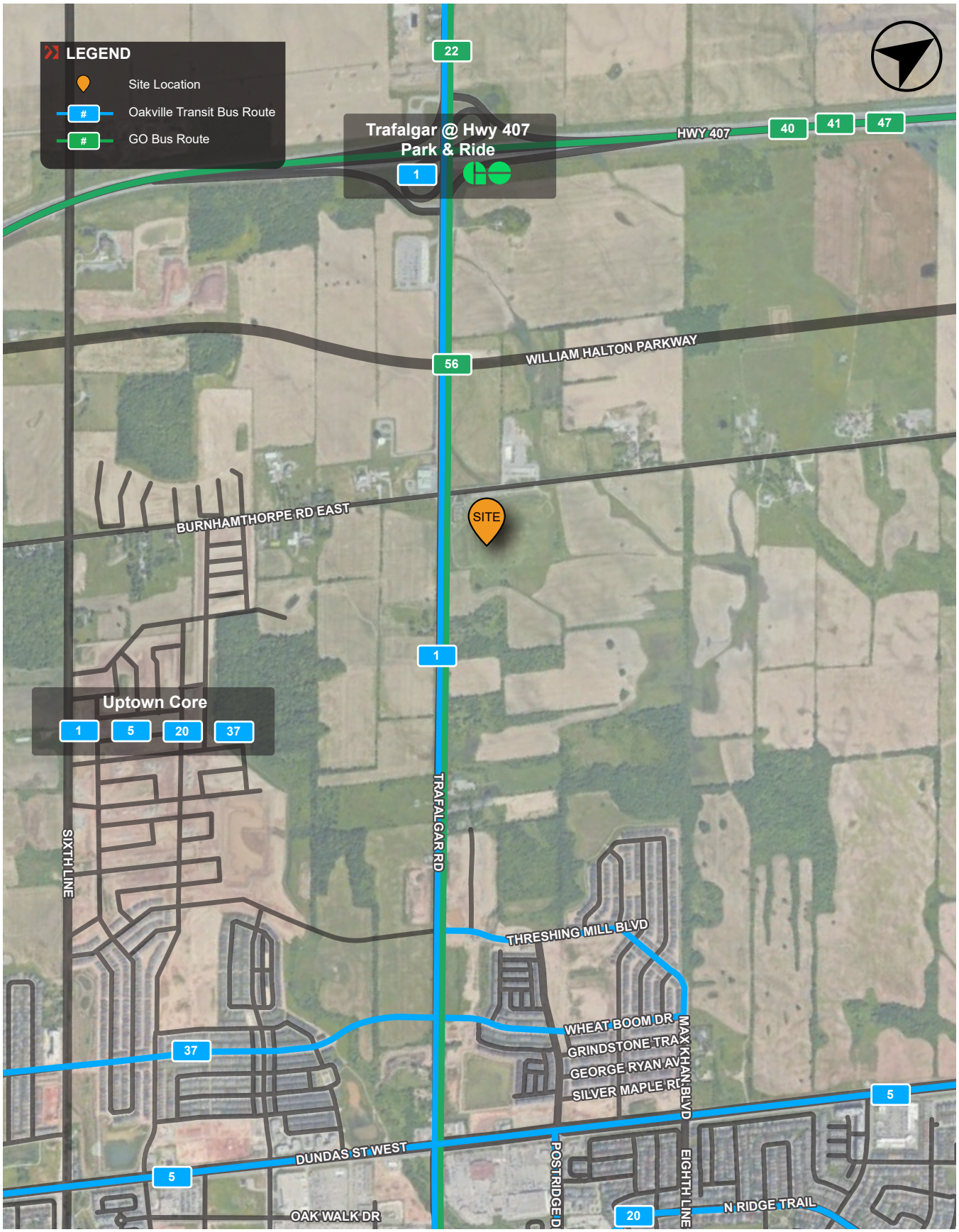
The site is currently served by local surface bus routes operated by Oakville Transit that provide the site with connections to GO Transit.

An overview of the existing area transit services is summarized in **Table 2** and illustrated on **Figure 8.**

Table 2 Existing Area Transit Network

	Number / Name of Service Line	Peak Headway	Closest Stop Location	Description
Oakville Transit	1 Trafalgar	20 minutes	Trafalgar Road / Burnhamthorpe Road (Adjacent to the site)	The bus route operates north-south between Oakville GO Station to the south and Highway 407 Park-and-Ride to the north. The route makes connections to various other local bus connections at the Uptown Core and Sheridan College.
	5 Dundas	20 minutes	Dundas Street East / Postridge Drive (1.5 km south of the site)	The bus route operates east-west the length of Oakville between Dundas Street West / Highway 407 Park-and-Ride and Laird Road. This service makes connections to Burlington Transit, GO Bus and MiWay
	20 Northridge	30 minutes	Dundas Street East / Postridge Drive (1.5 km south of the site)	The bus route operates north-south between Oakville GO and the Uptown Core Terminal. This services makes connections to GO Bus and Train.
	37 Glenorchy	25 minute (peak only)	Trafalgar Road / Dundas Street East (1.5 km south of the site)	The 37 bus route operates generally east-west in a loop beginning and ending at the uptown core terminal at the intersection of Trafalgar Road and Dundas Street West. The service spans from sixteen Mile Sports Complex in the west to Threshing Mill Boulevard in the east. The service operates on 25 – 30-minute headways during the morning and afternoon peak hour only.
GO Transit	22 Milton / Oakville GO	A few trips scheduled for morning and afternoon peaks	Trafalgar Road / Burnhamthorpe Road (Adjacent to the site)	The 22 Milton / Oakville GO bus route operates between Milton GO and Oakville GO, generally in a north-west to south-east direction.

Number / Name of Service Line		Peak Headway	Closest Stop Location	Description
	40 Hamilton / Richmond Hill GO	20 minutes	Trafalgar Road / Highway 407 Park & Ride (780 metres north of the site)	The 40 Hamilton / Richmond Hill GO bus route operates between Richmond Hill Centre and Hamilton GO Centre, serving key stops like Pearson Airport and Square One in-between. It generally operates in a north-east to south-west direction.
	41 Hamilton / Pickering GO	30 minutes	Trafalgar Road / Highway 407 Park & Ride (780 metres north of the site)	The 41 Hamilton / Pickering GO bus route operates between Hamilton GO Centre in the west to Pickering GO in the east, serving multiple stops in-between including Square One Bus Terminal, Highway 407 Bus Terminal, Richmond Hill Centre, and University of Toronto Scarborough. It generally runs in an east to south-west direction.
	47 Hamilton / Pickering GO	30 minutes	Trafalgar Road / Highway 407 Park & Ride (780 metres north of the site)	The 47 Hamilton / Pickering GO bus route operates between Hamilton GO Centre in the west to Highway 407 Bus Terminal, serving key stops including Square One Bus Terminal and Bramalea GO. It generally runs in an east to south-west direction.
	56 Oshawa / Oakville GO	15-30 minutes	Trafalgar Road / Burnhamthorpe Road (Adjacent to the site)	The 56 Oshawa / Oakville GO bus route operates between Oakville GO in the west to Durham College Oshawa GO, serving key stops including Highway 407 Bus Terminal, Richmond Hill Centre, Unionville, and Ontario Tech University / Oshawa College.



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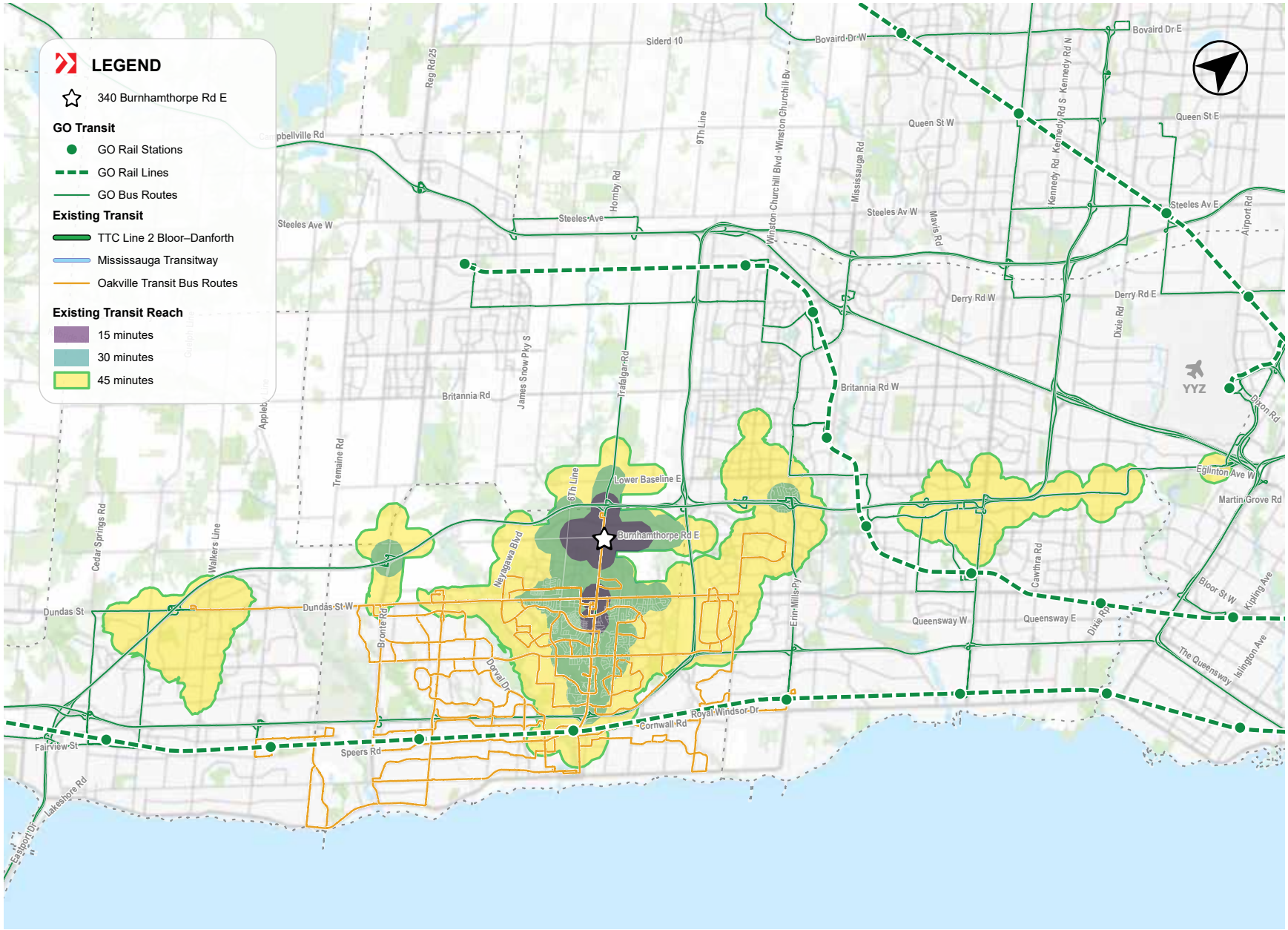
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FIGURE 8 EXISTING TRANSIT NETWORK

4.2.2 Existing Transit Service Area Analysis

To understand the changing transportation context, transit service area analyses for the existing and future transit network were conducted using Geographic Information Systems (GIS). These analyses assess the service area of a transit network that a trip-maker from the site has access to, within a given time frame. This type of analysis is useful in understanding the transit accessibility and can also be used to quantify the impact of transit service changes.

A 15-, 30-, 45-minute transit service area from the site during the weekday morning travel period was analysed for existing conditions and is illustrated in **Figure 9**. Total travel times include travel time to and from transit stops, as well as the transit schedules during peak hour (i.e., service frequency), all of which are based upon existing transit service parameters. The existing transit service area includes transit service provided by Oakville Transit, Burlington Transit, MiWay (Mississauga), Brampton Transit, Milton Transit, TTC (Toronto) and GO Transit. A detailed comparison of the existing and future transit service areas is included in **Section 4.2.4**.



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FIGURE 9 EXISTING TRANSIT SERVICE AREA - AM TRAVEL TIME

4.2.3 Future Transit Context

4.2.3.1 Trafalgar Road Bus Rapid Transit (BRT)

The Trafalgar BRT is a future planned public transit project undertaken by the Town of Oakville, the Region of Halton, and Metrolinx. While noted on Map 5: "2041 Frequent Rapid Transit Network" of Metrolinx's Regional Transportation, the Trafalgar BRT is primarily being planned and designed by the Town of Oakville and Region of Halton.

As outlined in the Region of Halton's Infrastructure Master Plan (IMP), the Trafalgar BRT is planned in several phases and will operate in the interim as a priority bus corridor but will be upgraded to a BRT corridor in the ultimate condition. In the interim, the route will initially span from the Oakville GO Station to Steeles Avenue. Once constructed, the Trafalgar BRT will connect the Oakville GO Station to Highway 407 and Milton with future planned expansions to Georgetown. As depicted in Halton Region's IMP, the Trafalgar BRT will initially terminate at Steeles Avenue and then will be extended north in two phases, first to Regional Road 10 then to Regional Road 11 in north Georgetown.

The transitway is being planned in conjunction with the improvements along Trafalgar Road, however, the two infrastructure projects will not be delivered simultaneously. The Trafalgar Road roadway improvement includes a curbside HOV lane, which will later be converted to the BRT corridor for exclusive transit use.

As per the 2015 Trafalgar Road Environmental Assessment, Trafalgar Road, adjacent to the site, will include transit stops spaced at approximately 400m with bus bays located at the far side of intersections. While the project remains in the design phase, an expected completion date for interim phase 1 is slated for 2031 or beyond, while the ultimate condition is planned to be completed by 2051.

4.2.3.2 407 Transitway

The 407 Transitway is a planned 150 km high-speed public transit route that will be constructed on a separate right-of-way parallel to the existing 407 ETR, between the City of Burlington in Halton Region and the Highway 35 / 115 interchange in Durham Region. The Transitway has been designed as a BRT which can accommodate the conversion to an LRT line if warranted in the future. It will serve as a northern spine, running parallel to and linking communities along the Lakeshore GO corridor. Additionally, the Transitway will provide stations for easy and fast transfers to north-south transit lines.

Metrolinx's 10-Year Bus Strategy identifies the 407 Transitway as a key corridor for expansion of service, projecting an increase in service frequency during peak periods from 30-minute headways to 12-minute headways in each direction. This represents a 2.5 time increase in GO bus service, with two routes connecting the City of Hamilton in the west to Kipling Station or Unionville GO Station in the east.

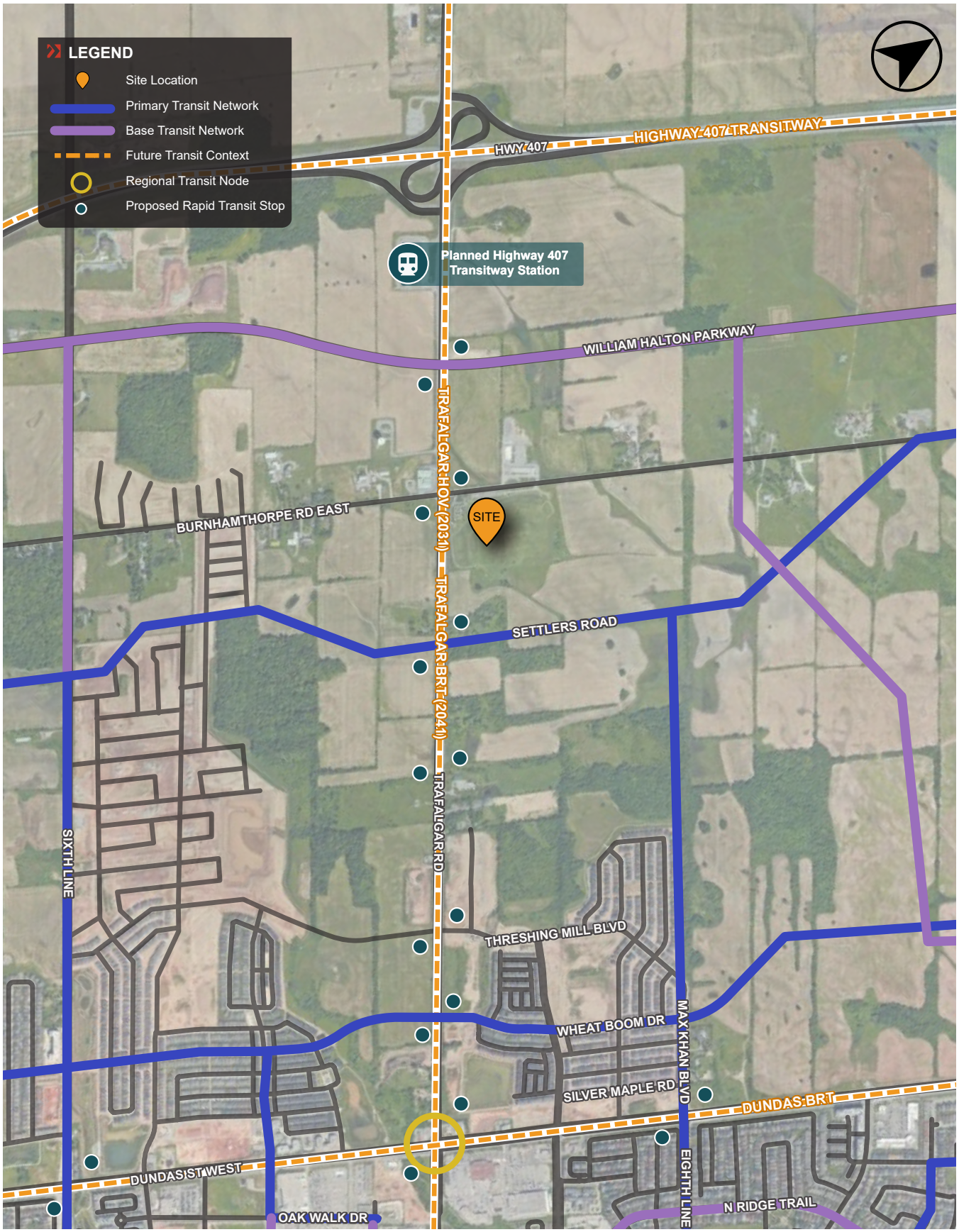
The proposed development falls within the Transitway 4 study area, which runs between Brant Street (City of Burlington) and Hurontario Street (City of Brampton). This 43 km segment forms part of the 150 km high-speed facility and consists of 8 stations. The Transitway network will have a Trafalgar Road Station located off Highway 407, north of the site.

4.2.3.3 Dundas Street Bus Rapid Transit (BRT)

The Dundas Street Bus Rapid Transit (BRT) is a higher order rapid transit service that will operate along Dundas Street West from Waterdown in the City of Hamilton (Highway 6) to Kipling Transit Hub in the City of Toronto, linking the Etobicoke (City of Toronto) and Mississauga city centres. More than 20 kilometres of the 48-kilometre transit project will operate in bus lanes or in a dedicated right-of-way, separate from other traffic, allowing for faster and more reliable transit connections. The Dundas Street BRT is expected to operate with headways in the order of 5 minutes during peak travel periods, providing better connections to the Toronto Transit Commission (TTC), Viva Rapid Transit (York Region), Mississauga Transit (MiWay), Oakville Transit, Burlington Transit, Hamilton Street Rail (HSR), Hurontario Light Rail Transit (LRT), and GO Transit routes.

The Oakville segment of the Dundas Street BRT is in development with the City's Dundas Connects Master Plan. The Dundas Connects Master Plan was endorsed by City Council on June 18, 2018, and it establishes a vision for the future of Dundas Street, supporting major improvements to transportation, land use and the public realm along the 19.5 km corridor.

Details have not been finalized along the Oakville corridor of the BRT, although the future closest stop to the site will likely be at the intersection of Dundas Street West and Bronte Road, south of the site.



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FIGURE 10 FUTURE TRANSIT NETWORK

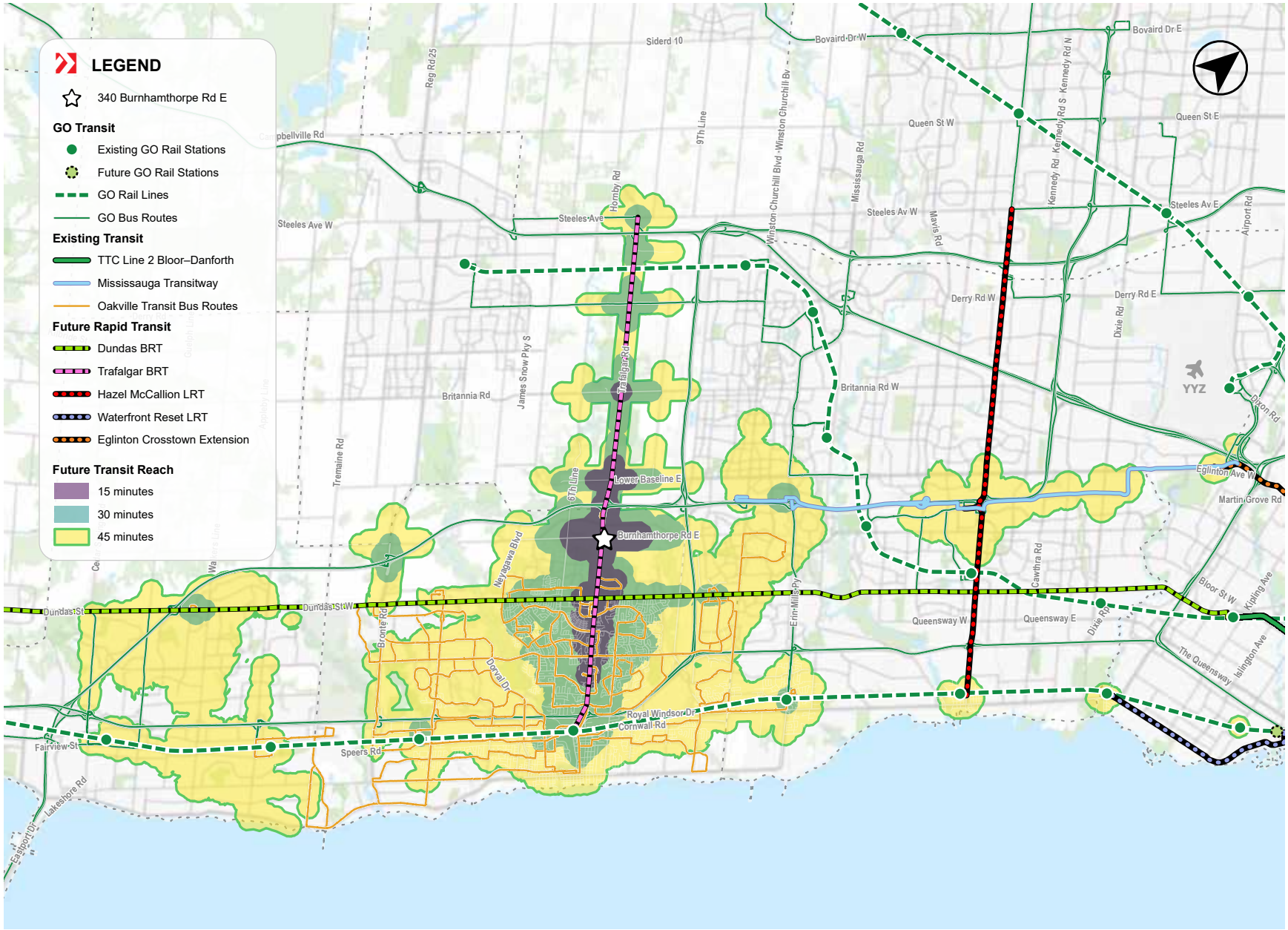
4.2.4 Future Transit Service Area Analysis

As outlined in **Section 4.2.2**, a transit service area analysis was conducted in consideration of the future transit network using Geographic Information Systems (GIS). A review of projected transit travel times assumed the various public transit network improvements included in **Section 4.2.3** and illustrated in **Figure 11**. This includes the implementation of the planned Dundas and Trafalgar Bus Rapid Transit networks. It should be noted that the future transit service analysis does not include the planned 407 Transitway. As outlined in **Section 4.2.3,** the 407 Transitway remains in the design phase and while the in-vehicle travel speed can be approximated, information on the service frequency is not available. Trips using the 407 Transitway from the site require an initial connecting trip using the Trafalgar BRT; the impacts of this connection on out-of-vehicle travel time can not be fully understood until information on the frequency on the 407 Transitway becomes available. Given the proposed length and stop spacing of the 407 Transitway, it is expected that the 407 Transitway would operate with regional-level service frequencies. Regional service frequencies have increased impact on out-of-vehicle travel time and therefore the 407 Transit way has not been considered.

Furthermore, the future transit service area on Trafalgar Road north of Highway 407 is conservative as it does not consider the planned urbanization of Trafalgar Road in Milton outlined in the Town of Milton Trafalgar Secondary Plan. The Town of Milton Trafalgar Secondary Plan sets out a planning vision to urbanize Trafalgar Road corridor north of Highway 407 which would be supported by a robust road network, increasing connectivity of the area along with expansion of the Milton Transit bus network to service the corridor. Notable findings include the following:

- The existing 15-minute service area includes the area surrounding the site along Burnhamthorpe Road East north to Highway 407, as well as the area surrounding the Trafalgar Road / Dundas Street East intersection. Under future conditions, the transit service area expands north-south along Trafalgar Road between Lower Baseline East to Upper Middle Road and the area around the Britannia Road and Trafalgar Road intersection.
- The existing 30-minute service area coverage includes the areas north-south along Trafalgar Road between Lower Baseline East to the Queen Elizabeth Way (QEW), east-west along Burnhamthorpe Road between Carding Mill Trail and Ninth Line, and east-west along Dundas Street between Towne Boulevard and Ninth Line. Under future conditions, the transit service expands north-south along Trafalgar Road between Steeles Avenue in the north to nearly Lakeshore Road in the south, providing service to Oakville GO station along the Lakeshore West GO Rail line. The 30-minute future transit service generally covers the areas bounded by Burnhamthorpe Road in the north, Ninth Line in the east, the QEW in the south and Neyagawa Boulevard in the west.
- The existing 45-minute service area includes the area generally within Lower Baseline Road East, Lakeshore Road East, Dorval Drive / Neyagawa Boulevard, and Erin Mills Parkway. Existing transit service provides east-west connections into Burlington and Mississauga within 45-minutes. Under future conditions, the transit service area expands to the include majority of Oakville and Burlington south of Dundas Street West from Highway 407 to Erin Mills Parkway; and transit service north-south extends from Steeles Avenue to the waterfront. The 45-minute future transit service expands along the Lakeshore West GO Rail line between Burlington GO and Mimico GO (Toronto) stations.

Overall, the site is currently accessible via the 1 - Trafalgar bus, providing access south into central Oakville. In the future as a result of the Trafalgar BRT, Dundas BRT, GO Expansion, and other improvements to Mississauga and Oakville's rapid transit network, the site's location will provide future convenient connections to transit to / from key local and regional destinations. It is therefore expected that the future transit context will facilitate reduced auto dependency and expand transit mode share of the site.



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FIGURE 11 FUTURE TRANSIT SERVICE AREA (2041+) - AM TRAVEL TIME

4.3 Area Active Transportation Network

4.3.1 Existing Active Transportation Context

Under existing conditions there is minimal active transportation infrastructure in the vicinity of the site which reflects the undeveloped lands. Active transportation infrastructure is provided along William Halton Parkway between Ninth Line and Sixth Line. This includes a sidewalk on the north side between Nonth Line and Sixth Line and a multi-use pathway between Trafalgar Road and Sixth Line. Approximately 800 metres south of the site there is a signed bike route running east-west on Threshing Mill and Wheat Boom Drive. Approximately 1.5 km south of the site there is a multi-use path on the south side of Dundas Street West spanning from Ninth Line to Bronte Road.

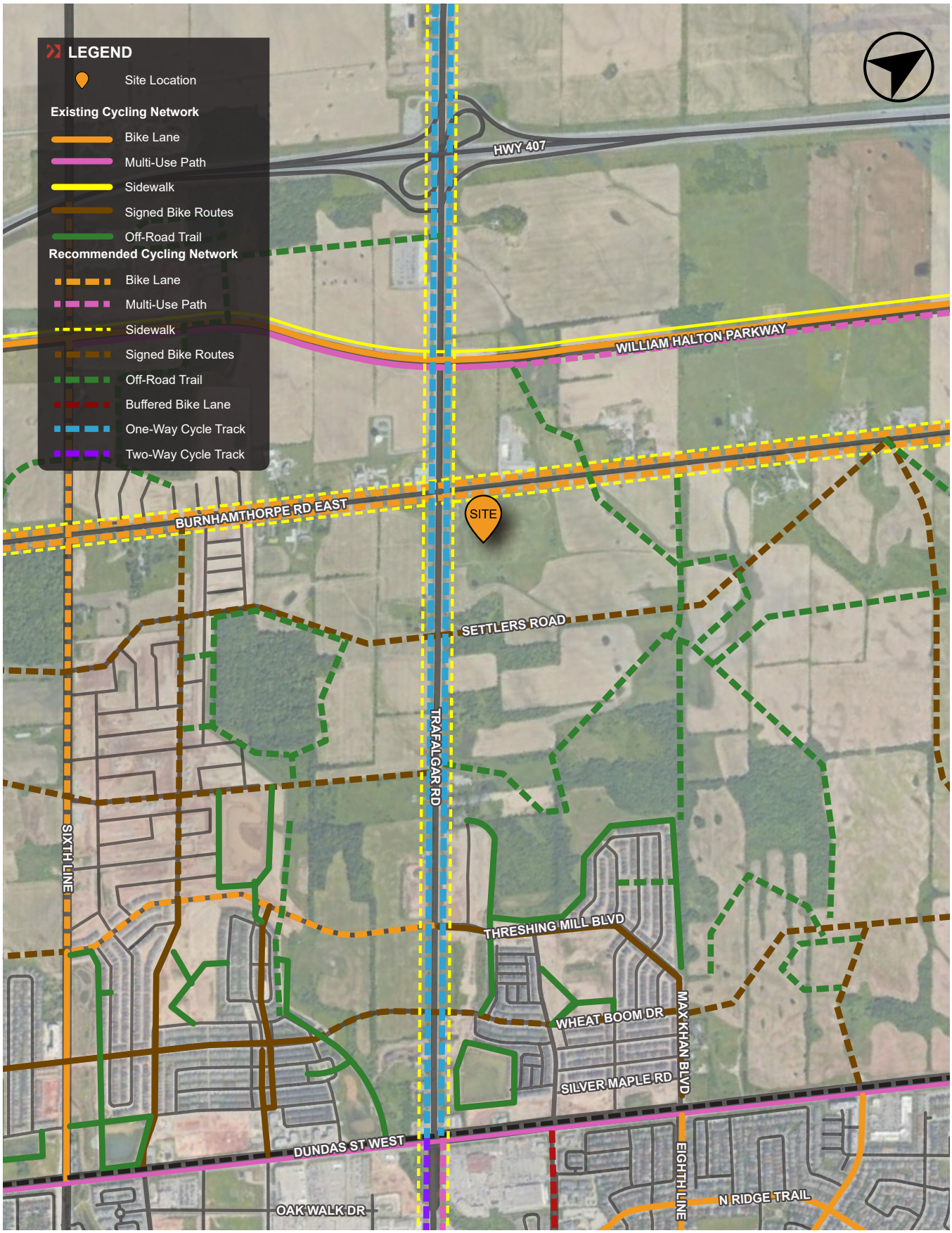
The existing and future active transportation network is illustrated in **Figure 12**.

4.3.2 Future Active Transportation Context

Significant expansion of the active transportation network is planned to support the intensification of the site and wider North Oakville East Secondary Plan area. To facilitate north-south travel, active transportation infrastructure has been incorporated into the planned widening of Trafalgar Road, including one-way cycle tracks and sidewalks on the east and west sides. To facilitate east-west travel, active transportation infrastructure has been incorporated into the planned widening of Burnhamthorpe Road East, including cycle lanes and sidewalks along both sides. Furthermore, The Town of Oakville Transportation Master Plan includes various east-west connections that will be delivered as part of the ongoing redevelopment of the area, including a combination of signed bike routes and off-road trails. These active modes facilities will compliment the proposed higher order road network and provide block porosity.

Active transportation is proposed throughout the site to ensure connectivity between the adjacent lands, as discussed further in **Section 5.2.2**.

The existing and future active transportation network is illustrated in **Figure 12**.



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FIGURE 12 EXISTING AND FUTURE ACTIVE TRANSPORTATION NETWORK

5.0 MASTER PLAN

5.1 Development Program

The proposed master planned development is an urban, mixed-use complete community characterized by pedestrian-scaled development blocks with a focus on a strong public realm. The master plan features a network of public spaces including parks, POPS and open spaces that is integrated with a new multi-modal road network.

A series of interconnected green spaces are proposed throughout the master plan including a public park on the south side of Street B, a public parkette opposite the easterly terminus of Main Street, and a network of privately owned publicly accessible spaces (POPS) that run north-south and east-west along the east side of the site.

A network of roads will create a fine-grained block structure and pedestrian-scaled development blocks. Pedestrian, cycling, transit and vehicular activity will be accommodated on the new road network, as well as access and servicing for the new development blocks.

Commercial activity will be centred around Main Street, a new east-west road that runs between Trafalgar Road and Street C. Main Street is intended to be a low-speed, pedestrian-focused road lined with active retail and commercial frontages. It is set back from the busy Trafalgar Road and Burnhamthorpe Road corridors and will create a new people-centric street that will anchor the new community. A privately-owned publicly-accessible square is proposed on the north side of Main Street that will be the focus of community gatherings. The square will itself be lined with active commercial uses. To the west, Main Street will connect across Trafalgar Road to another proposed new east-west public road running through the neighbouring development parcel on the west side of Trafalgar Road (not part of the subject site). To the east, Main Street will connect to Street C opposite a new public parkette that will in turn connect to a planned new major park to the east of the site (not part of the subject site). Main Street is proposed to be signalized at both Trafalgar Road and at Street C to facilitate and prioritize pedestrian and cyclist crossings.

The new road network includes three road segments that will serve a collector function as identified in the North Oakville East Secondary Plan: Settlers Road (east-west collector), and the pairing of Street C north of Settlers Road and Street A south of Settlers Road (north-south collector). These roads will continue beyond the site and through adjacent properties as contemplated in the Secondary Plan. Note that while the Secondary Plan shows a continuous north-south collector road, the same north-south function is provided by Street C north of Settlers Road, Settlers Road between Street C and Street A, and Street A south of Settlers Road.

The master plan includes a total of 12 development blocks containing 6,420 residential units, 10,042 m^2 of retail GFA and 4,433 m^2 of grocery GFA, as well as 0.5 ha of parks and open space, including a public park and parkette, and privately-owned publicly-accessible square. A further block is provided for a future school site.

The development proposal for the master plan is illustrated in **Figure 3**. Reduced-scale architectural plans are attached in **Appendix A**.

The proposed development programme by block is summarized in **Table 3**.

Table 3 Development Program by Block

Block	Residential Units	Commercial (m^2)	Vehicular Parking Supply	Bicycle Parking Supply	Loading Supply
1	1,281	8,681	1,309 resident 192 visitor 268 commercial	34 short-term 166 long-term 9 commercial	2 Type 'G' 3 Type 'A'
2	1,298	1,618	1,402 resident 195 visitor 16 commercial	34 short-term 166 long-term 2 commercial	3 Type 'G' 1 Type 'A'
3	248	0	240 resident 37 visitor	32 short-term 117 long-term	1 Type 'G'
4	1,009	2,392	1,179 resident 151 visitor 24 commercial	34 short-term 166 long-term 2 commercial	5 Type 'G'
5	487	1,785	493 resident 73 visitor 18 commercial	34 short-term 166 long-term 2 commercial	1 Type 'G' 1 Type 'C'
6	422	0	463 resident 63 visitor	34 short-term 166 long-term	3 Type 'G'
7	118	0	110 resident 18 visitor	11 short-term 60 long-term	1 Type 'G'
8	466	0	412 resident 70 visitor	52 short-term 148 long-term	2 Type 'G'
9	145	0	127 resident 22 visitor	73 short-term 14 long-term	1 Type 'G'
10	336	0	215 resident 50 visitor	56 short-term 144 long-term	2 Type 'G'
11	232	0	231 resident 35 visitor	22 short-term 108 long-term	2 Type 'G'
12	378	0	233 resident 57 visitor	34 short-term 166 long-term	2 Type 'G' 1 Type 'C'
Total	**6,420 units**	**14,475 m^2**	**6,414 resident 963 visitor 326 commercial**	**450 short-term 1,587 long-term 15 commercial**	**4 Type 'A' 2 Type 'C' 25 Type 'G'**

Notes:
1. Based upon site statistics provided by BDP Quadrangle on April 6, 2026

Upon full build-out, the development will provide 7,703 vehicular parking spaces, 2,052 bicycle parking spaces, and 31 loading spaces.

- **Block 1** will be supported by one consolidated parking garage including three levels of underground parking, ground floor parking, and two levels of podium parking, five at-grade loading spaces, and two pick-up / drop-off areas, all accessed via one shared driveway connecting to Street A.
- **Block 2** will be supported by one consolidated parking garage including two levels of underground parking, ground floor parking, and two levels of podium parking, four at-grade loading spaces, and one pick-up / drop-off area, accessed via two shared driveways connecting to Street A.
- **Block 3** will be supported by one parking garage including three levels of underground parking, one at-grade loading space, and one pick-up / drop-off area, accessed via one driveway to Street A.
- **Block 4** will be supported by one consolidated parking garage including three levels of underground parking, five at-grade loading spaces, and one pick-up / drop-off area, accessed via two driveways to Street A.
- **Block 5** will be supported by one parking garage including three levels of underground parking, two at-grade loading spaces, and one pick-up / drop-off area, accessed via one driveway to Street B.
- **Block 6** will be supported by one parking garage including of two levels of underground parking, three at-grade loading areas, four pick-up / drop-off areas, accessed via one driveway that bisects the Block and connects to Street A and Street C.
- **Block 7** will be supported by one parking garage including of one level of underground parking, one at-grade loading area, one pick-up / drop-off area, accessed via one driveway to Street A.
- **Block 8** will be supported by one consolidated parking garage including two levels of underground parking, two at-grade loading areas, one pick-up / drop-off area, accessed via one driveway to Street C.
- **Block 9** will be supported by one parking garage including two levels of underground parking, one at-grade loading area, accessed via one driveway to Street C.
- **Block 10** will be supported by one consolidated parking garage including one level of underground parking, two at-grade loading areas, two pick-up / drop-off areas, accessed via two driveways to Street C.
- **Block 11** will be supported by one consolidated parking garage including one level of underground parking, ground floor parking, two at-grade loading areas, one pick-up / drop-off area, accessed via one driveway to Street C.
- **Block 12** will be supported by one consolidated parking garage including one level of underground parking, three at-grade loading areas, three pick-up / drop-off areas, accessed via one driveway to Street C and one driveway to Settlers Road.

5.2 Site Plan Considerations

The layout of the site has been designed to create a fine-grain internal road network and well-connected public realm that can facilitate the movement of all modes of travel.

A fine-grained street network, including pedestrian and cycling infrastructure is proposed as part of the master plan consisting of:

- Street A, running north-south from Burnhamthorpe Road East to the southern property limits;
- Street B, running east-west from Street A to Street C;
- Street C, running north-south from Burnhamthorpe Road East to the southern property limits;
- Main Street, running east-west from Trafalgar Road to Street C; and
- Settlers Road, running east-west from Trafalgar Road to the eastern property limits.

5.2.1 Transportation Network

The master plan includes a network of new public roads that will service the development blocks and provide multi-modal connectivity to the existing and future surrounding transportation infrastructure. The new master plan road network is illustrated in **Figure 4** and summarized below **Table 4**.

Street A

Street A is a new two-lane north-south road proposed to extend from Burnhamthorpe Road East to the southern limits of the site, connecting into the future lands to the south. Pick-up / drop-off laybys are proposed on the north side of Street A. Sidewalks are proposed along both sides of Street A. Street A will provide access to Blocks 1, 2, 3, 6, and 7.

Street B

Street B is a new two-lane east-west road proposed to extend from Street A to Street C. Sidewalks are proposed along both sides of Street B. Street B will provide access to Block 5.

Street C

Street C is a new two-lane north-south road proposed to extend from Burnhamthorpe Road East to the southern limits of the site, connecting to the future lands to the south. Pick-up / drop-off laybys are proposed at strategic locations along Street C. Sidewalks and cycle tracks are proposed along both sides of Street C. This road will provide access to Blocks 8, 9, 10, 11 and 12.

Main Street

Main Street is a new two-lane east-west road proposed to extend from Trafalgar Road to Street C. Sidewalks are proposed along both sides of Main Street and cyclists will be accommodated on-street in mixed traffic. There are no direct vehicular connections from Main Street to any of the proposed development Blocks in order to prioritize a continuous active commercial frontage along the length of the street.

Settlers Road

Settlers Road is a new two-lane east-west road proposed to extend from Trafalgar Road to the eastern limits of the site, connecting to the future lands to the east. Sidewalks and cycle tracks are proposed along both sides of Settlers Road and it will provide access to Block 12.

Functional plans illustrating the new master plan road network are attached in **Appendix C**. Block Access diagrams for each of the development Blocks are attached in **Appendix D**. Vehicle Manoeuvring Diagrams (VMD's) illustrating the proposed loading areas for each Block are attached in **Appendix E**.

Table 4 Proposed New Public Roads

Street	Segment	**ROW** Width (m)	Road Classification	Pavement Width (m)	Cycling	Sidewalk	Parking
Street A	Burnhamthorpe Road to Main Street	19	Local	7.5	None	Both sides	Laybys on west side
	Main Street to Settlers Road	19	Local	9.5	None	Both sides	2.5m on east side
	South of Settlers Road	22	Collector	8.5	None	Both sides	none
Street B	Street A to Street C	17	Local	7.0	None	Both sides	None
Street C	Burnhamthorpe Road to Main Street	22	Collector	7.5	Both sides	Both sides	None
	Main Street to Settlers Road	22	Collector	8.5	Both sides	Both sides	Laybys on west side
	South of Settlers Road	19	Local	8.5	None	Both sides	None
Main Street	Trafalgar Street A	19	Local	9	None	Both sides	None
	Street A to Street C	19	Local	7.5	None	Both sides	None
Settlers Road	Trafalgar Road to eastern site limits	22	Collector	9.5	Both sides	Both sides	None

5.2.2 Active Network

The proposed active transportation network is illustrated in **Figure 4**. It includes consists of on-street and off-street infrastructure including:

- Sidewalks on all proposed roads within the Master Plan lands, with a minimum width of 2.1m;
- Marked pedestrian crossings at all road intersections;
- The green spine on the northeastern portion of the Master Plan lands creates a “linear park”, connecting Burnhamthorpe Road East to the future high school to the east of the site;
- Signalized intersections at Street C / Main Street, Street C / Street B and Street C / Settlers Road to provide formal, protected pedestrian and cyclist crossing opportunities, and connect the parks and open spaces to other key destinations in the master plan; and
- Uni-directional cycle tracks (each 1.5m – 1.8m wide) along both sides of Street C and Settlers Road.

5.2.3 Transit Accessibility

The site is within walking distance of the future planned Trafalgar Bus Rapid Transit (BRT) service along Trafalgar Road, which will provide connectivity between the Oakville GO Station and Town of Milton. As an interim condition, the route will initially connect the Oakville GO Station to Steeles Avenue and will operate as a priority bus corridor.

The Master Plan has been developed to provide improved pedestrian access from the site to the future transit service along Trafalgar Road via sidewalks and pedestrian pathways. These sidewalks and pathways will allow for future site residents, visitors, employees, and patrons to travel from any of the future development blocks to the bus stops along Trafalgar Road.

6.0 TRANSPORTATION DEMAND MANAGEMENT

A Transportation Demand Management (TDM) Plan is proposed to guide the provision of viable alternative personal transportation options beyond the single-occupant, private automobile. This plan intends to support the development plan by outlining specific measures and the suite of strategies under consideration to promote the use of more active and sustainable transportation modes, respond to the mobility needs of residents, visitors, employees, and patrons to the site, and reduce dependence on the private automobile.

Four specific objectives define the policy framework for the TDM Plan:

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

A comprehensive framework has been developed that will serve as a guideline for the implementation of effective TDM strategies during the site plan / design stage, as well as in its operations following the full redevelopment of the property. A detailed and refined TDM Plan will be developed and secured through the approvals process in consultation with the Town of Oakville.

6.1 TDM Plan Strategies

The future site context provides for public transit services and improved pedestrian and cycling connectivity. While strong opportunities exist in the area's infrastructure to accommodate sustainable transportation practices, the ability to fully leverage these opportunities is fundamental to ensuring the success of the TDM Plan. To this end, TDM strategies are presented with targeted "intents" (i.e., what it is trying to achieve and for whom), accompanied by methods of implementation. Potential strategies are then framed in the context of the development and the strategies most appropriate for application are proposed.

A summary of the TDM Plan is outlined in **Table 5**. It is important to note that these TDM strategies will be continuously refined throughout the development application process.

Table 5 Proposed Transportation Demand Management Plan

Category	Intent	Potential Measures	Development Plan Measures
Vehicle parking supply & management	• Increasing the desirability of using alternative modes of transportation • Reduce car ownership needs • Encourage higher vehicle occupancy • Encourage the use of other travel modes	**Building, Planning & Design** • Establish appropriately low parking supply rates for the proposed land uses and buildings • Adopt a sharing of non-residential parking to maximize the efficient use of the available supply • Locate parking below grade to enhance the pedestrian realm and encourage use of non-auto means at grade **Operational / Management** • Operate the majority of the site parking supply as paid parking for non-residents • Adjust parking fee structure, operations and parking allocations to support non-automobile usage goals and to accommodate changing parking needs • Offer parking to residents 'unbundled' from unit purchase	• Propose residential and non-residential parking rates which are aligned with the stated policy goal of the Town of Oakville and Region of Halton
Facilitation of reduced car ownership & usage	• Reduce the need for residents and employees to own a car for occasional travel • Reduce the likelihood of privately-owned car use for general travel, particularly during peak periods	**Building, Planning & Design** • Provide appropriate pick-up / drop-off facilities to accommodate taxi / ride-share use • Make provisions for car-share, car-pool, low-emission, and short-term vehicle parking to accommodate priority parking for targeted vehicle users **Operational / Management** • Operate a car-share program on-site that members can access "on demand" • Coordinate with building employers to offer flexible work hours and compressed work week opportunities for staff • Provide information and communication items that outline the availability of the on-site services as well as broader taxi and ridesharing services • Implement incentive programs design to encourage the use of on-site services including corporate or private membership to car-share / car-pool services **Monitoring** • Monitor car-share program membership and usage, and adjust car deployment to respond to demands • Monitor carpool and ride-matching programs, and adjust to suit needs of residents, employees and visitors	• Develop on-site pick-up / drop-off facilities and incorporate on-street facilities where appropriate and supportive of public amenities • Consider the provision of car share services on-site • Provide information to site residents and employees regarding the availability of car-share provided within the area

Category	Intent	Potential Measures	Development Plan Measures
Encourage transit use	• Increase awareness and viability of transit travel options for commuter and recreational travel purposes • Support and encourage the use of transit	**Building, Planning & Design** • Provide accessible and high-quality pedestrian connections towards transit from the site • Provide facilities that support transit passenger travel including weather protection and amenities along key travel paths within the site • Provide street, pedestrian crossing, and pedestrian improvements to enable convenient / efficient transfers between local and regional transit • Facilitation of accessible transit services (e.g. Paratransit) **Operational / Management** • Encourage on-site PRESTO card sales • Provide transit service information for site users • Offer transit promotion program • Consider providing shuttle service to key destinations • Work with Town / regional transit operators and other stakeholders to review and improve accessibility to existing / new surface transit routes	• Direct pedestrian connections are provided through the site to connect primarily to the existing and planned transit facilities on Trafalgar Road.
Encourage bicycle use	• Provide physical and operational infrastructure on-site • Cooperate with the Town to enhance bicycle connectivity within the area to the broader network • Support and encourage cycling for short and medium distance trips, particularly during peak travel periods.	**External Infrastructure** • Work with the Town to improve existing facilities and provide new connections in the site area **Building, Planning & Design** • Provision of new on-street cycling facilities as part of new municipal streets delivered for the development • Provide secure long-term bicycle parking in secure locations • Provide short-term bicycle parking distributed across the site in accessible and convenient locations **Operational / Management** • Encourage an on-site bicycle repair / maintenance centre, or bicycle parking valet • Provide on-site bicycle repair / maintenance stations	• Adopt the North Oakville Zoning By-law 2009-189 residential and non-residential bicycle parking rates with minor modifications.

Category	Intent	Potential Measures	Development Plan Measures
Enhance Pedestrian Mobility	• Enhance the walkability of the site at-grade and create a pedestrian-first neighbourhood • Assist in creating high-quality, safe pedestrian linkages to the site and wider network • Improve the quality of the public realm and accessibility of the area • Provide high-quality pedestrian facilities that connect to transit stations and stops	**External Infrastructure** • Work with the Town towards realizing improvements to area pedestrian infrastructure quality of the public realm and the convenience of pedestrian linkages / road crossings along the site boundaries and in the site area **Building, Planning & Design** • Provide high-quality, pedestrian-scale connections from the site property to the surrounding public street network and throughout the redevelopment site • Provide weather-protected and accessible connectivity in key, high-volume pedestrian areas • Facilitate convenient building access and connectivity • Provide accessible and universal connectivity throughout the site, meeting appropriate accessibility codes and guidelines • Enhance the quality of the public realm through the provision of pedestrian-scale landscaping and appropriate sidewalk widths and general improvements of the public realm along building frontages **Operational / Management** • Maintain on-site pedestrian facilities to enable year-round pedestrian access and usage	• Increased pedestrian permeability through the site through new streets, mid-block connections, parks and “Green Spine” • Vehicular accesses are consolidated to reduce points of vehicle / pedestrian conflict • Reduced crossing distances, and improved boulevards to improve the pedestrian realm and support the anticipated pedestrian activity
Land use & building infrastructure	• Offer a variety of mutually supportive residential and non-residential uses on-site • Reduce the need for residents, employees and visitors to travel off-site to address daily needs • Shorten travel distances • Support residents that work from home	**Building, Planning & Design** • Provide for a range of employment, retail, and residential uses within the proposed buildings • Provide technology and communication support infrastructure and facilities within the residential buildings that support telecommuting and other work from home practices	• The proposed development offers a variety of uses – employment, retail, and residential – that allow people to meet multiple needs on-site • The mix of uses support one another, reducing the number of vehicle trips generated from the site

Category	Intent	Potential Measures	Development Plan Measures
Coordination, monitoring, communication & promotion	• Inform and raise awareness of non-automobile travel options for the site • Actively promote non-automobile travel options and services • Introduce, develop and coordinate TDM programs / incentives with the employment tenants within the context of the broader strategies in place • Ability to adapt the strategy based on changing demand and special circumstances as they may arise • Provide real-time information to allow for commuters to make effective travel decisions	**Operational / Management** • Establish a TDM Coordinator Office that supports activities and advances TDM strategies, programs and implementation protocols for the site • Establish a consultative framework to liaise and empower building tenants, businesses and residents to engage in dialogue with the Town, transit providers, and other service providers to advance the needs of the development and surrounding area • Use of wayfinding and multi-modal navigation tools to augment the TDM services provided on-site • The active marketing, branding and promotion of non-automobile travel options (e.g. fairs, events and other incentive programs) • Provide real-time information regarding travel options, incidents and delays **Monitoring** • Monitor the success of programming by the TDM Coordinator Office • Measure the site's modal split over time to examine the effectiveness of TDM interventions • Refine programming on an ongoing and coordinated basis • Partner with TDM coordinators or the Town to undertake long-term monitoring of transportation facilities and operations.	• New residential and commercial tenants will be made aware of the existing transit services and active transportation facilities on-site and within proximity to the site • The use of sustainable transportation modes will be supported and promoted by building management and operations

7.0 VEHICLE PARKING CONSIDERATIONS

7.1 Parking Requirements

7.1.1 North Oakville Zoning By-law 2009-189 Parking Standards Review

The site is subject to the vehicle parking requirements of the Town of Oakville's Zoning By-law 2009-189 and is located within the "Mixed Use Zones". Application of the parking standards of the By-law to the proposed development program is summarized in **Table 6**.

Table 6 Zoning By-law 2009-189 – Vehicle Parking Requirements

Block	Land Use	Units / GFA [1]	Minimum Rate	Maximum Rate	Minimum Requirement	Maximum Requirement
Block 1	Resident	1,281 units	None	1.25 spaces / unit	0 spaces	1,602 spaces
	Resident Visitor		None	0.20 spaces / unit	0 spaces	257 spaces
	Non-Residential	8,681 m²	1.0 spaces / 30m² LFA [2]	1.0 spaces / 20m² LFA	293 spaces	435 spaces
				Block 1 Subtotal	**293 spaces**	**2,294 spaces**
Block 2	Resident	1,298 units	None	1.25 spaces / unit	0 spaces	1,623 spaces
	Resident Visitor		None	0.20 spaces / unit	0 spaces	260 spaces
	Non-Residential	1,618 m²	1.0 spaces / 30m² LFA	1.0 spaces / 20m² LFA	54 spaces	81 spaces
				Block 2 Subtotal	**54 spaces**	**1,964 spaces**
Block 3	Resident	248 units	None	1.25 spaces / unit	0 spaces	310 spaces
	Resident Visitor		None	0.20 spaces / unit	0 spaces	50 spaces
				Block 3 Subtotal	**0 spaces**	**360 spaces**
Block 4	Resident	1,009 units	None	1.25 spaces / unit	0 spaces	1,262 spaces
	Resident Visitor		None	0.20 spaces / unit	0 spaces	202 Spaces
	Non-Residential	2,392 m²	1.0 spaces / 30m² LFA	1.0 spaces / 20m² LFA	90 spaces	120 spaces
				Block 4 Subtotal	**90 spaces**	**1,584 spaces**
Block 5	Resident	487 units	None	1.25 spaces / unit	0 spaces	609 spaces

Block	Land Use	Units / GFA [1]	Minimum Rate	Maximum Rate	Minimum Requirement	Maximum Requirement
	Resident Visitor		None	0.20 spaces / unit	0 spaces	98 spaces
	Non-Residential	1,785 m^2	1.0 spaces / 30m^2 LFA	1.0 spaces / 20m^2 LFA	68 spaces	90 spaces
				Block 5 Subtotal	**68 spaces**	**797 spaces**
Block 6	Resident	422 units	None	1.25 spaces / unit	0 spaces	528 spaces
	Resident Visitor		None	0.20 spaces / unit	0 spaces	85 spaces
				Block 6 Subtotal	**0 spaces**	**613 spaces**
Block 7	Resident	118 units	None	1.25 spaces / unit	0 spaces	148 spaces
	Resident Visitor		None	0.20 spaces / unit	0 spaces	24 spaces
				Block 7 Subtotal	**0 spaces**	**172 spaces**
Block 8	Resident	466 units	None	1.25 spaces / unit	0 spaces	583 spaces
	Resident Visitor		None	0.20 spaces / unit	0 spaces	94 spaces
				Block 8 Subtotal	**0 spaces**	**677 spaces**
Block 9	Resident	145 units	None	1.25 spaces / unit	0 spaces	182 Spaces
	Resident Visitor		None	0.20 spaces / unit	0 spaces	29 Spaces
				Block 9 Subtotal	**0 spaces**	**211 spaces**
Block 10	Resident	336 units	None	1.25 spaces / unit	0 spaces	420 Spaces
	Resident Visitor		None	0.20 spaces / unit	0 spaces	68 Spaces
Block 10 Subtotal					**0 spaces**	**488 spaces**
Block 11	Resident	232 units	None	1.25 spaces / unit	0 spaces	290 Spaces
	Resident Visitor		None	0.20 spaces / unit	0 spaces	47 Spaces
				Block 11 Subtotal	**0 spaces**	**337 spaces**
Block 12	Resident	378 units	None	1.25 spaces / unit	0 spaces	473 Spaces

Block	Land Use	Units / GFA [1]	Minimum Rate	Maximum Rate	Minimum Requirement	Maximum Requirement
	Resident Visitor		None	0.20 spaces / unit	0 spaces	76 Spaces
				Block 12 Subtotal	**0 spaces**	**549 spaces**
				Resident Subtotal	**0 spaces**	**8,030 spaces**
				Visitor – Subtotal	**0 spaces**	**1,290 spaces**
				Retail – Subtotal	**484 spaces**	**726 spaces**
				Site Total	**484 spaces**	**10,046 spaces**

Notes:

1. For the purpose of calculating the parking requirement, GFA is conservatively assumed to equivalent to Leasable Floor Area (LFA).
2. LFA – Leasable Floor Area.
3. As per Zoning By-law 2009-189 section 5.1.2.2 where the application of ratios results in a fraction of a parking space, the required number of spaces shall be increased to the next whole number.
4. Based upon site statistics provided by BDP Quadrangle on April 6, 2026.

Application of the vehicle parking requirements as outlined in Zoning By-law 2009-189 results in a minimum requirement of 484 spaces and maximum of 10,046 spaces. This includes a resident minimum of 0 and maximum of 8,030 spaces, visitor minimum of 0 and maximum of 1,290 spaces, and retail minimum of 484 and maximum of 726 spaces.

7.1.2 Accessible Parking Requirements

There are no accessible vehicle parking requirements in the Zoning By-law for residential uses. The non-residential component of the development proposal is subject to the accessible vehicle parking standards outlined in section 5.2.1 of Zoning By-law 2009-189. The subject non-residential accessible parking standards are summarized in **Table 7.** Provision of accessible parking will be addressed at the Site Plan Application level.

Table 7 Zoning By-law 2009-189 – Accessible Vehicle Parking Requirements

Land Use	Total Number of Parking Spaces in all Parking Areas on the Lot	Number of Accessible Parking Spaces Required[1]
Non-Residential	Less than 10	0
	11 to 25	1
	26 to 50	2
	51 to 75	3
	76 to 100	4
	101 to 150	5
	151 to 200	6
	201 to 300	7
	301 to 400	8
	401 to 500	9
	501 to 100	2% of total
	1001 and over	20 plus 1 for each 100 over 1000

Notes:

1. As per Zoning By-law 2009-189 section 5.1.2.2 where the application of ratios results in a fraction of a parking space, the required number of spaces shall be increased to the next whole number.

Section 5.2.2 of Zoning By-law 2009-189 outlines the following design specifications for Type A and Type B accessible vehicle parking spaces:

Type A: (Width: 3.65 metres) x (Length: 5.20 metres)

Type B: (Width 2.70 metres) x (Length: 5.20 metres)

Accessible vehicle parking spaces should be allocated evenly between Type A and Type B spaces. Where an odd number of accessible vehicle parking spaces is required, an additional Type B space should be provided. Where a minimum of 1 accessible vehicle parking space is required, a Type A space should be provided.

7.2 Parking Supply

7.2.1 Proposed Parking Rates

This section reviews the appropriateness of the in-force vehicle parking Zoning By-law requirements and, in some instances, recommends modified vehicle parking standards.

The residential vehicle parking requirements within Zoning By-law 2009-189 are progressive and reflect the evolving landscape of parking regulations across Ontario. In recent years municipalities and the government across Ontario have modified regulations in recognition of the changes in parking demand due to societal shifts and other factors including decreasing automobile ownership, transit investment and adoption of micromobility.

BA Group has also reviewed the applicable Zoning By-law 2009-189 parking standards for non-residential use and proposes several modifications. A new land use category for grocery stores is proposed. Although the Zoning By-law outlines "Supermarket" as a defined term, no vehicle parking standards are set out for this land use.

The proposed parking standards for the subject site are summarized in **Table 8**, including the minimum and maximum zoning by-law rates, and the recommended supply ratios**.**

Table 8 Proposed Minimum, Maximum and Recommended Parking Rates

Land Use		Minimum By-law Rate	Maximum By-law Rate	Recommended Supply Rate
Residential				
Apartment	Resident	None	1.25 spaces / unit	1.0 space / unit
	Resident Visitor	None	0.20 spaces / unit	0.15 spaces / unit
Non-Residential				
Retail[1]		1.0 spaces / 100m^2 GFA	1.0 spaces / 20m^2 GFA	1.0 spaces / 100m^2 GFA
Grocery		1.0 spaces / 100m^2 GFA	--	5.0 spaces / 100m^2 GFA

Notes:

1. In the Trafalgar Urban Core Zone, no additional parking spaces above the minimum shall be permitted, unless such parking is located in a parking garage.
2. Section 5.1.2.2 of Zoning By-law 2009-189 states *Where the application of ratios results in a fraction of a parking space, the required number of spaces shall be increased to the next highest whole number.*

Application of the *recommended* parking supply rates to the development program are summarized in **Table 9**.

Table 9 Recommended Site Vehicle Parking Supply

Land Use		Units / GFA	Recommended Supply Rate	Recommended Supply
Block 1	Resident	1,281 units	1.0 space / unit	1,281 spaces
	Resident Visitor		0.15 spaces / unit	193 spaces
	Non-Residential	4,248m²	1.0 space / 100m² GFA	43 spaces
	Grocery	4,433 m²	5 spaces / 100m² GFA	222 spaces
			Block 1 Subtotal	**1,739 spaces**
Block 2	Resident	1,298 units	1.0 space / unit	1,298 spaces
	Resident Visitor		0.15 spaces / unit	195 spaces
	Non-Residential	1,618 m²	1.0 space / 100m² GFA	17 spaces
			Block 2 Subtotal	**1,510 spaces**
Block 3	Resident	248 units	1.0 space / unit	248 spaces
	Resident Visitor		0.15 spaces / unit	38 spaces
			Block 3 Subtotal	**286 spaces**
Block 4	Resident	1,009 units	1.0 space / unit	1,009 spaces
	Resident Visitor		0.15 spaces / unit	152 spaces
	Non-Residential	2,392 m²	1.0 space / 100m² GFA	24 spaces
			Block 4 Subtotal	**1,185 spaces**
Block 5	Resident	487 units	1.0 space / unit	487 spaces
	Resident Visitor		0.15 spaces / unit	74 spaces
	Non-Residential	1,785 m²	1.0 space / 100m² GFA	18 spaces
			Block 5 Subtotal	**579 spaces**
Block 6	Resident	422 units	1.0 space / unit	422 spaces
	Resident Visitor		0.15 spaces / unit	64 spaces
			Block 6 Subtotal	**267 spaces**
Block 7	Resident	118 units	1.0 space / unit	118 spaces
	Resident Visitor		0.15 spaces / unit	18 spaces

Land Use		Units / GFA	Recommended Supply Rate	Recommended Supply
			Block 7 Subtotal	**136 spaces**
Block 8	Resident	466 units	1.0 space / unit	466 spaces
	Resident Visitor		0.15 spaces / unit	70 spaces
			Block 8 Subtotal	**536 spaces**
Block 9	Resident	145 units	1.0 space / unit	145 spaces
	Resident Visitor		0.15 spaces / unit	22 spaces
			Block 9 Subtotal	**167 spaces**
Block 10	Resident	336 units	1.0 space / unit	336 spaces
	Resident Visitor		0.15 spaces / unit	51 spaces
			Block 10 Subtotal	**387 spaces**
Block 11	Resident	232 units	1.0 space / unit	232 spaces
	Resident Visitor		0.15 spaces / unit	35 spaces
			Block 11 Subtotal	**267 spaces**
Block 12	Resident	378 units	1.0 space / unit	378 spaces
	Resident Visitor		0.15 spaces / unit	57 spaces
			Block 12 Subtotal	**435 spaces**
			Resident Subtotal	**6,420 spaces**
			Visitor – Subtotal	**969 spaces**
			Retail – Subtotal	**102 spaces**
			Grocery - Subtotal	**222 spaces**
			Non-Resident - Subtotal	**1,293 spaces**
			Site Total	**7,713 Space**

Notes:

1. Based upon site statistics provided by BDP Quadrangle on April 6, 2026
2. As per Zoning By-law 2009-189 section 5.1.2.2 where the application of ratios results in a fraction of a parking space, the required number of spaces shall be increased to the next whole number.

Application of the *recommended* vehicle parking rates results in an overall recommended supply of 7,713 spaces. This includes 6,420 resident spaces, 969 visitor spaces, 102 retail spaces and 222 grocery spaces.

7.2.2 Additional Proposed Parking Policies

In addition to the proposed vehicle parking rates outlined in **Section 7.2.1**, additional parking policies are proposed to maximize the efficiency of the vehicle parking supply:

5. *Visitor parking associated with a residential use, and parking associated with non-residential uses, may be shared on a non-exclusive basis.*
6. *A maximum of 15% percentage of parking spaces, where an obstruction is located abutting or within a parking space, greater than 1.15 metres at either stall end does not require an increase in parking space width, provided the obstruction projects no more than 0.15 metres into the parking space.*
7. *Notwithstanding subsection 5.1.3, 25 percent of parking spaces can be provided off-site, on another lot within 400 metres.*
8. *Surface parking can be provided on a lot as an interim use.*

The above policies are appropriate and are commonly sought for other developments of this scale and transportation context. Sharing between residential visitors and retail is appropriate as there is minimal overlap between the demand peak hours. This maximizes the efficiency of parking supply as parking demand generated by various activities can be accommodated via a single facility.

Regarding policy #3, “off-site parking” would refer to parking located on other development blocks within the subject site, as the current proposed Draft Plan of Subdivision would sever the site into separate parcels.

The provision of surface parking is proposed to accommodate the construction phasing of the site and to meet nearer-term parking needs. The subject surface parking would serve the initial phases of the development in advance of the full build-out of the site.

7.2.3 Proposed Vehicle Parking Supply

Table 10 summarizes the parking supply in the current development proposal.

Table 10 Proposed Site Vehicle Parking Supply

Land Use		Units / GFA	Recommended Supply	Proposed Parking Supply	Difference
Block 1	Resident	1,281 units	1,281 spaces	1,309 spaces	+28 spaces
	Resident Visitor		193 spaces	192 spaces	-1 space
	Non-Residential	4,248m²	43 spaces	41 spaces	-2 space
	Grocery	4,433 m²	222 spaces	227 spaces	+5 space
Block 1 Total			**1,739 spaces**	**1,769 spaces**	**+30 spaces**
Block 2	Resident	1,298 units	1,298 spaces	1,402 spaces	+104 spaces
	Resident Visitor		195 spaces	195 spaces	--
	Non-Residential	1,618 m²	17 spaces	16 spaces	-1 spaces
Block 2 Total			**1,510 spaces**	**1,613 spaces**	**+103 spaces**
Block 3	Resident	248 units	248 spaces	240 spaces	-8 spaces
	Resident Visitor		38 spaces	37 spaces	-1 spaces
Block 3 Total			**286 spaces**	**277 spaces**	**-9 spaces**
Block 4	Resident	1,009 units	1,009 spaces	1,179 spaces	+170 spaces
	Resident Visitor		152 spaces	151 spaces	-1 space
	Non-Residential	2,392 m²	24 spaces	24 spaces	--
Block 4 Total			**1,185 spaces**	**1,354 spaces**	**+169 spaces**
Block 5	Resident	487 units	487 spaces	493 spaces	+6 spaces
	Resident Visitor		74 spaces	73 spaces	-1 space
	Non-Residential	1,785 m²	18 spaces	18 spaces	--
Block 5 Total			**579 spaces**	**584 spaces**	**+5 spaces**
Block 6	Resident	422 units	422 spaces	463 spaces	+41 spaces
	Resident Visitor		64 spaces	63 spaces	-1 space
Block 6 Total			**486 spaces**	**526 spaces**	**+40 spaces**
Block 7	Resident	118 units	118 spaces	110 spaces	-8 spaces

Land Use		Units / GFA	Recommended Supply	Proposed Parking Supply	Difference
	Resident Visitor		18 spaces	18 spaces	--
Block 7 Total			**136 spaces**	**128 spaces**	**-8 spaces**
Block 8	Resident	466 units	466 spaces	412 spaces	-54 spaces
	Resident Visitor		70 spaces	70 spaces	--
Block 8 Total			**536 spaces**	**482 spaces**	**-54 spaces**
Block 9	Resident	145 units	145 spaces	127 spaces	-18 spaces
	Resident Visitor		22 spaces	22 spaces	--
Block 9 Total			**167 spaces**	**149 spaces**	**-18 spaces**
Block 10	Resident	336 units	336 spaces	215 spaces	-121 spaces
	Resident Visitor		51 spaces	50 spaces	-1 space
Block 10 Total			**387 spaces**	**265 spaces**	**-122 spaces**
Block 11	Resident	232 units	232 spaces	231 spaces	-1 spaces
	Resident Visitor		35 spaces	35 spaces	--
Block 11 Total			**267 spaces**	**266 spaces**	**-1 space**
Block 12	Resident	378 units	378 spaces	233 spaces	-145 spaces
	Resident Visitor		57 spaces	57 spaces	--
Block 12 Total			**435 spaces**	**290 spaces**	**-145 spaces**
Resident Subtotal			**6,420 spaces**	**6,414 spaces**	**-6 spaces**
Visitor – Subtotal			**969 spaces**	**963 spaces**	**-6 spaces**
Retail – Subtotal			**102 spaces**	**99 spaces**	**-3 spaces**
Grocery – Subtotal			**222 spaces**	**227 spaces**	**5 space**
Non-Resident – Subtotal			**1,293 spaces**	**1,289 spaces**	**-4 spaces**
Site Total			**7,713 spaces**	**7,703 spaces**	**-10 spaces**

Notes:

1. Based upon site statistics provided by BDP Quadrangle on April 6, 2026
2. As per Zoning By-law 2009-189 section 5.1.2.2 where the application of ratios results in a fraction of a parking space, the required number of spaces shall be increased to the next whole number.

The project currently proposes to provide a total of 7,703 parking spaces (6,414 resident, 963 residential visitor, 99 retail, and 227 grocery spaces). While this represents a deficit of 10 spaces relative to the recommended parking supply, the proposed parking supply will continue to be refined as the development advances through subsequent applications.

The parking strategy is to satisfy the proposed parking rates at the overall site level. Parking supply may vary block-by-block, with some blocks providing a small surplus and others providing slightly fewer than the proposed requirement. For blocks with a deficit, the shortfall will be accommodated by adjacent blocks that offer surplus parking.

8.0 BICYCLE PARKING CONSIDERATIONS

8.1 Bicycle Parking Requirements

8.1.1 North Oakville Zoning By-law 2009-189

Application of the North Oakville Zoning By-law 2009-189 to the site is summarized in **Table 11**. Note that North Oakville Zoning By-law Section 5.7 (iv.) states the following regarding bicycle parking maximums:

> ***Notwithstanding Sections i. and ii., a maximum of 200 bicycle parking spaces shall be required.***

Application of Section 5.7 (iv.) of the Zoning By-law therefore amends any block requirement greater than 200 bicycle parking spaces to 200 bicycle parking spaces.

Table 11 Zoning By-law 2009-189 – Bicycle Parking Requirements

Land Use		Units / GFA	Min Rate	Min Requirement
Block 1	Resident (Long-Term)	1,281 units	0.75 spaces / unit	961 spaces
	Residential Visitor (Short-Term)		0.25 spaces / unit	321 spaces
	Retail (Short-Term)[3]	8,681 m^2	7% of the Zoning By-law required vehicle parking spaces to a minimum of 5 spaces	21 spaces
Block 1 Subtotal excluding Zoning By-law 2009-189 Section 5.7 (iv.)				**1,303 spaces**
Block 2	Resident (Long-Term)	1,298 units	0.75 spaces / unit	974 spaces
	Residential Visitor (Short-Term)		0.25 spaces / unit	325 spaces
	Retail (Short-Term)[3]	1,618 m^2	7% of the Zoning By-law required vehicle parking spaces to a minimum of 5 spaces	5 spaces
Block 2 Subtotal excluding Zoning By-law 2009-189 Section 5.7 (iv.)				**1,304 spaces**
Block 3	Resident (Long-Term)	248 units	0.75 spaces / unit	186 spaces
	Residential Visitor (Short-Term)		0.25 spaces / unit	62 spaces
Block 3 Subtotal excluding Zoning By-law 2009-189 Section 5.7 (iv.)				**248 spaces**
Block 4	Resident (Long-Term)	1,009 units	0.75 spaces / unit	757 spaces
	Residential Visitor (Short-Term)		0.25 spaces / unit	253 spaces
	Retail (Short-Term)[3]	2,392 m^2	7% of the Zoning By-law required vehicle parking spaces to a minimum of 5 spaces	6 spaces
Block 4 Subtotal excluding Zoning By-law 2009-189 Section 5.7 (iv.)				**1,016 spaces**
Block 5	Resident (Long-Term)	487 units	0.75 spaces / unit	366 spaces
	Residential Visitor (Short-Term)		0.25 spaces / unit	122 spaces
	Retail (Short-Term)[3]	1,785 m^2	7% of the Zoning By-law required vehicle parking spaces to a minimum of 5 spaces	5 spaces
Block 5 Subtotal excluding Zoning By-law 2009-189 Section 5.7 (iv.)				**493 spaces**
Block 6	Resident (Long-Term)	422 units	0.75 spaces / unit	317 spaces
	Residential Visitor (Short-Term)		0.25 spaces / unit	106 spaces
Block 6 Subtotal excluding Zoning By-law 2009-189 Section 5.7 (iv.)				**423 spaces**
Block 7	Resident (Long-Term)	118 units	0.75 spaces / unit	87 spaces
	Residential Visitor (Short-Term)		0.25 spaces / unit	29 spaces
Block 7 Subtotal excluding Zoning By-law 2009-189 Section 5.7 (iv.)				**116 spaces**
Block 8	Resident (Long-Term)	466 units	0.75 spaces / unit	350 spaces
	Residential Visitor (Short-Term)		0.25 spaces / unit	117 spaces
Block 8 Subtotal excluding Zoning By-law 2009-189 Section 5.7 (iv.)				**467 spaces**

Land Use		Units / GFA	Min Rate	Min Requirement
Block 9	Resident (Long-Term)	145 units	0.75 spaces / unit	109 spaces
	Residential Visitor (Short-Term)		0.25 spaces / unit	37 spaces
Block 9 Subtotal excluding Zoning By-law 2009-189 Section 5.7 (iv.)				**146 spaces**
Block 10	Resident (Long-Term)	336 units	0.75 spaces / unit	252 spaces
	Residential Visitor (Short-Term)		0.25 spaces / unit	84 spaces
Block 10 Subtotal excluding Zoning By-law 2009-189 Section 5.7 (iv.)				**336 spaces**
Block 11	Resident (Long-Term)	232 units	0.75 spaces / unit	174 spaces
	Residential Visitor (Short-Term)		0.25 spaces / unit	58 spaces
Block 11 Subtotal excluding Zoning By-law 2009-189 Section 5.7 (iv.)				**232 spaces**
Block 12	Resident (Long-Term)	378 units	0.75 spaces / unit	284 spaces
	Residential Visitor (Short-Term)		0.25 spaces / unit	95 spaces
Block 12 Subtotal excluding Zoning By-law 2009-189 Section 5.7 (iv.)				**379 spaces**
Block Subtotals with application of North Oakville Zoning By-law 2009-89 Section 5.7 (iv.)				
			Block 1 Subtotal	**200 spaces[2]**
			Block 2 Subtotal	**200 spaces[2]**
			Block 3 Subtotal	**200 spaces[2]**
			Block 4 Subtotal	**200 spaces[2]**
			Block 5 Subtotal	**200 spaces[2]**
			Block 6 Subtotal	**200 spaces[2]**
			Block 7 Subtotal	**116 spaces**
			Block 8 Subtotal	**200 spaces[2]**
			Block 9 Subtotal	**146 spaces**
			Block 10 Subtotal	**200 spaces[2]**
			Block 11 Subtotal	**200 spaces[2]**
			Block 12 Subtotal	**200 spaces[2]**
			Site Total	**2,262 spaces[2]**

Notes:

1. Based upon site statistics provided by BDP Quadrangle on April 6, 2026
2. Application of North Oakville Zoning By-law 2009-189 Section 5.7 (iv.) which amends any bicycle maximum requirement greater than 200 spaces to 200 spaces.
3. Uses that require 15 or more non-residential parking spaces, as specified in the Zoning By-Law
4. Where the application of ratios results in a fraction of a bicycle parking space, the required number of spaces shall be increased to the next highest whole number

Application of the bicycle parking standards set out in Zoning By-law 2009-189, with the application of Section 5.7 (iv.), would require a total bicycle parking supply of 2,262 spaces allocated to the residents, visitors and retail use.

8.2 Proposed Bicycle Parking Supply

Table 12 summarizes the proposed bicycle parking supply.

In total the development proposes 2,052 bicycle parking spaces, including 1,587 long-term and 465 short-term spaces (450 residential visitor and 15 retail). This is equivalent to the following rates:

- Resident (Long-Term) – 0.25 spaces / unit
- Residential Visitor (Short-Term) – 0.07 spaces / unit

The proposed bicycle parking supply will continue to be refined as the development advances through subsequent planning applications.

Table 12 Proposed – Site Bicycle Parking Supply

Land Use		Units / GFA	Proposed Bicycle Parking Supply
Block 1	Resident (Long-Term)	1,281 units	166 spaces
	Residential Visitor (Short-Term)		34 spaces
	Retail and Grocery (Short-Term)	8,681 m^2	9 spaces
		Block 1 Subtotal	**209 spaces**
Block 2	Resident (Long-Term)	1,298 units	166 spaces
	Residential Visitor (Short-Term)		34 spaces
	Retail (Short-Term)	1,618 m^2	2 spaces
		Block 2 Subtotal	**202 spaces**
Block 3	Resident (Long-Term)	248 units	117 spaces
	Residential Visitor (Short-Term)		32 spaces
		Block 3 Subtotal	**149 spaces**
Block 4	Resident (Long-Term)	1,009 units	166 spaces
	Residential Visitor (Short-Term)		34 spaces
	Retail (Short-Term)	2,392 m^2	2 spaces
		Block 4 Subtotal	**202 spaces**
Block 5	Resident (Long-Term)	487 units	166 spaces
	Residential Visitor (Short-Term)		34 spaces

Land Use		Units / GFA	Proposed Bicycle Parking Supply
	Retail (Short-Term)	1,785 m^2	2 spaces
		Block 5 Subtotal	**202 spaces**
Block 6	Resident (Long-Term)	422 units	166 spaces
	Residential Visitor (Short-Term)		34 spaces
		Block 6 Subtotal	**200 spaces**
Block 7	Resident (Long-Term)	118 units	60 spaces
	Residential Visitor (Short-Term)		11 spaces
		Block 7 Subtotal	**71 spaces**
Block 8	Resident (Long-Term)	466 units	148 spaces
	Residential Visitor (Short-Term)		52 spaces
		Block 8 Subtotal	**200 spaces**
Block 9	Resident (Long-Term)	145 units	73 spaces
	Residential Visitor (Short-Term)		14 spaces
		Block 9 Subtotal	**87 spaces**
Block 10	Resident (Long-Term)	336 units	144 spaces
	Residential Visitor (Short-Term)		56 spaces
		Block 10 Subtotal	**200 spaces**
Block 11	Resident (Long-Term)	232 units	108 spaces
	Residential Visitor (Short-Term)		22 spaces
		Block 11 Subtotal	**130 spaces**
Block 12	Resident (Long-Term)	378 units	166 spaces
	Residential Visitor (Short-Term)		34 spaces
		Block 12 Subtotal	**200 spaces**
		Long-Term Subtotal	**1,587 spaces**
		Short-Term Subtotal	**465 spaces**
		Site Total	**2,052 spaces**

Notes:

1. Based upon site statistics provided by BDP Quadrangle on April 6, 2026

9.0 LOADING CONSIDERATIONS

9.1 Loading Requirements

9.1.1 North Oakville Zoning By-law 2009-189

As per section 5.6.1 of North Oakville Zoning By-law 2009-189, there are no defined loading requirements for land uses other than Industrial. However, to meet the functional loading needs of the future site, loading facilities are proposed as part of each of the proposed development blocks.

Proposed loading space types and dimensions are defined as follows:

- Type ‘G’ – 13m long x 4m wide x 6.1m vertical clearance – to accommodate residential waste collection vehicles, single unit trucks and smaller
- Type ‘A’ – 17m long x 3.5m wide x 4.4m vertical clearance – to accommodate semi-trailer trucks (for grocery uses), single unit trucks and smaller
- Type ‘C’ – 6m long x 3.5m wide x 3m vertical clearance – to accommodate vans and smaller

9.2 Proposed Loading Supply

Table 13 summarizes the proposed loading supply for each development block and use. In total the development proposes to provide 31 loading spaces.

Appropriate loading facilities and manoeuvering areas have been provided for each building to meet the waste collection, loading, move-in/move-out and delivery needs of each building.

Vehicle Manoeuvring Diagrams (VMD’s) illustrating the proposed loading areas for each block are attached in **Appendix E**.

Table 13 Proposed – Loading Supply

Land Use		Units / GFA	Proposed Loading Supply
Block 1	Residential	1,281 units	2 Type 'G' loading spaces
	Non-Residential	4,248 m²	3 Type 'A' loading spaces
	Grocery	4,433 m²	
		Block 1 Subtotal	**5 loading spaces**
Block 2	Residential	1,298 units	3 Type 'G' loading spaces
	Non-Residential	1,618 m²	1 Type 'A' loading space
		Block 2 Subtotal	**4 loading spaces**
Block 3	Residential	248 units	1 Type 'G' loading space
		Block 3 Subtotal	**1 loading space**
Block 4	Residential	1,009 units	5 Type 'G' loading spaces
	Non-Residential	2,392 m²	--
		Block 4 Subtotal	**5 loading spaces**
Block 5	Residential	487 units	1 Type 'C' loading space 1 Type 'G' loading space
	Non-Residential	1,785 m²	--
		Block 5 Subtotal	**2 loading spaces**
Block 6	Residential	422 units	3 Type 'G' loading spaces
		Block 6 Subtotal	**3 loading spaces**
Block 7	Residential	118 units	1 Type 'G' loading space
		Block 7 Subtotal	**1 loading space**
Block 8	Residential	466 units	2 Type 'G' loading spaces
		Block 8 Subtotal	**2 loading spaces**
Block 9	Residential	145 units	1 Type 'G' loading space
		Block 9 Subtotal	**1 loading space**
Block 10	Residential	336 units	2 Type 'G' loading spaces
		Block 10 Subtotal	**2 loading spaces**
Block 11	Residential	232 units	2 Type 'G' loading spaces
		Block 11 Subtotal	**2 loading spaces**
Block 12	Residential	378 units	1 Type 'C' loading space 1 Type 'G' loading space

Land Use	Units / GFA	Proposed Loading Supply
Block 12 Subtotal		**3 loading spaces**
Type 'A' Loading Space Subtotal		**4 loading spaces**
Type 'C' Loading Space Subtotal		**2 loading spaces**
Type 'G' Loading Space Subtotal		**25 loading spaces**
Site Total		**31 loading spaces**

Notes:

1. Based upon site statistics provided by BDP Quadrangle on April 6, 2026

10.0 TRAFFIC VOLUME FORECASTING

The following section outlines the methodology adopted for forecasting future traffic volumes, as it pertains to intersections within the site's study area. Traffic volume forecasts serve as the basis upon which intersection capacity analysis has been completed, outlined in **Section 11.0**.

As noted in **Section 1.3**, traffic volume forecasts and operations on the broader area public street network were assessed in the October 2025 CGH Report for the EM4 JC7 JC9 Landowners Group and refined in this study at a more granular scale as it pertains to the Westerkirk Lands (the "site"). Traffic volume forecasts detailed in this section are based upon the general methodology and future total volumes outlined within the October 2025 CGH Report with adjustments to remove and reassign Westerkirk generated site traffic. The following outlines a summary of the volumes adopted from the October 2025 CGH Report and the forecasting approach for site generated traffic.

10.1 Traffic Analysis Scenarios & Conditions

10.1.1 Study Scenarios & Horizons

For the purposes of analysis, volumes have been forecasted for a typical weekday morning (AM) and afternoon (PM) peak hour.

Generally consistent with BA Group's August 2025 Terms of Reference and the October 2025 CGH Report, the following conditions have been assessed:

- **Existing Conditions – 2025**
  - The existing intersection of Trafalgar Road / Burnhamthorpe Road East.
- **Future Background Conditions – 2031 (Partial Buildout), 2036 (Full Buildout), & 2041 (+5 Years)**
  - Traffic activity on the future road network considering allowances made for the growth in area background traffic in addition to the existing conditions, which includes an allowance of traffic generated by area background developments, including the remaining EM4 JC7 JC9 Landowners Group Lands.
- **Future Total Conditions – 2031 (Partial Buildout), 2036 (Full Buildout), & 2041 (+5 Years)**
  - Traffic activity on the future road network, including on the new internal road network, associated with the phased (2031) and full build-out (2036) of the Westerkirk development in addition to the future background condition.

Note that the 2031, 2036, and 2041 horizons are consistent with the adopted study horizons in the October 2025 CGH Report and generally align with the assumed phasing of the subject site including partial build-out by 2031, full build-out by 2036, and the planned reallocation of the Trafalgar HOV lanes to BRT lanes by 2041.

Planned 2031, 2036 and 2041 lane configurations and traffic control are illustrated on **Figure 13**, **Figure 14** and **Figure 15**, respectively.

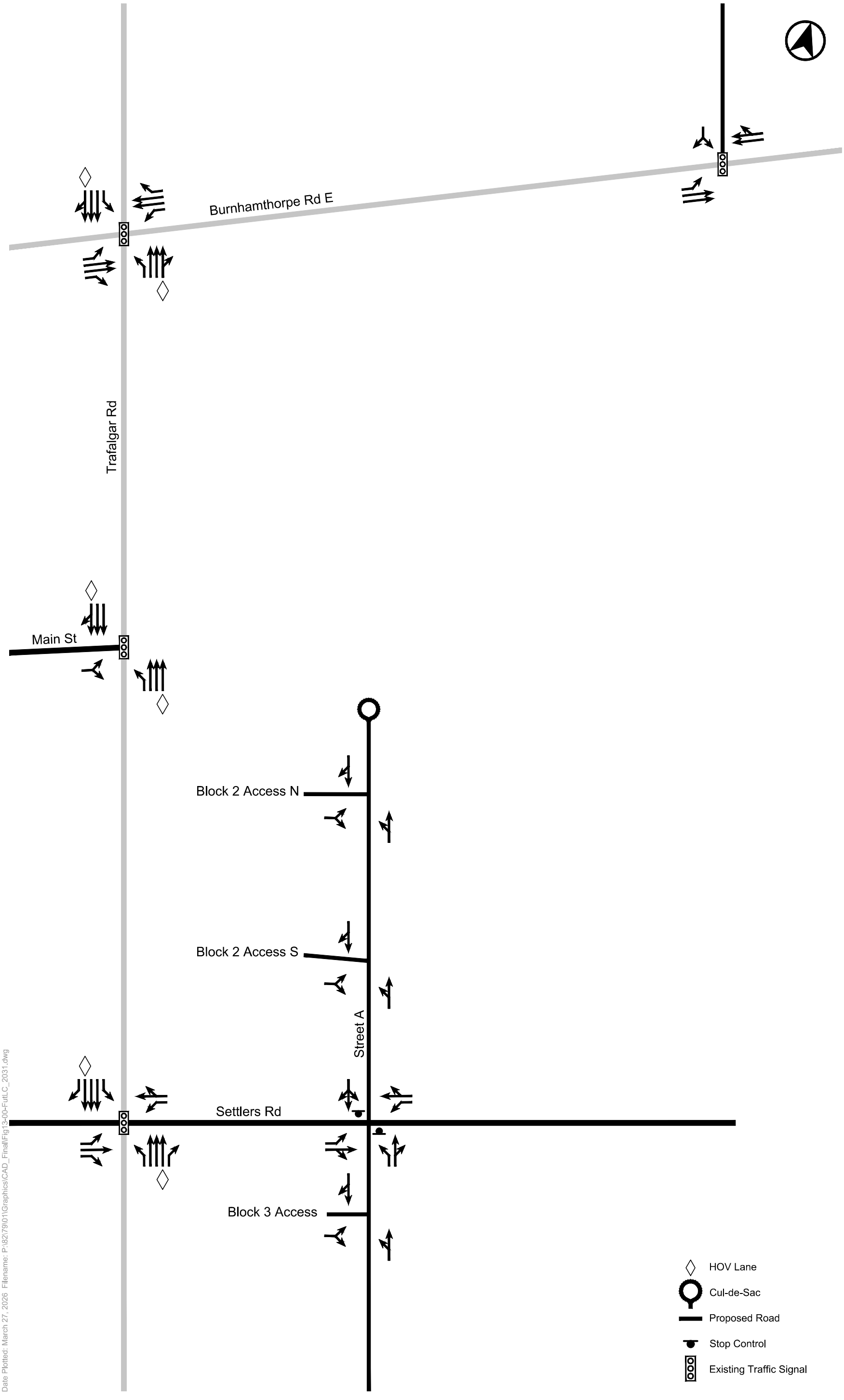


FIGURE 13 2031 LANE CONFIGURATIONS AND TRAFFIC CONTROL

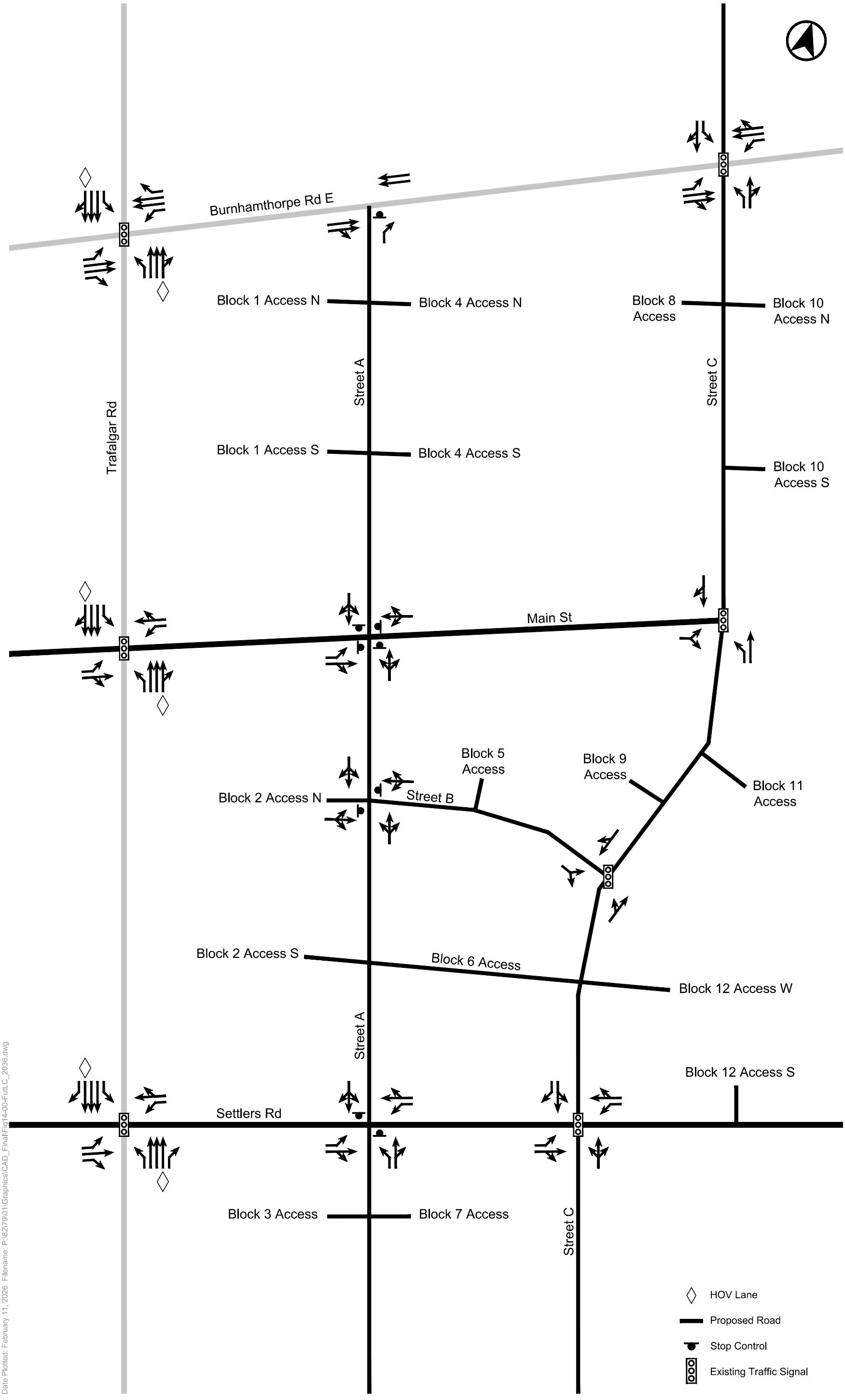


FIGURE 14 2036 LANE CONFIGURATIONS AND TRAFFIC CONTROL

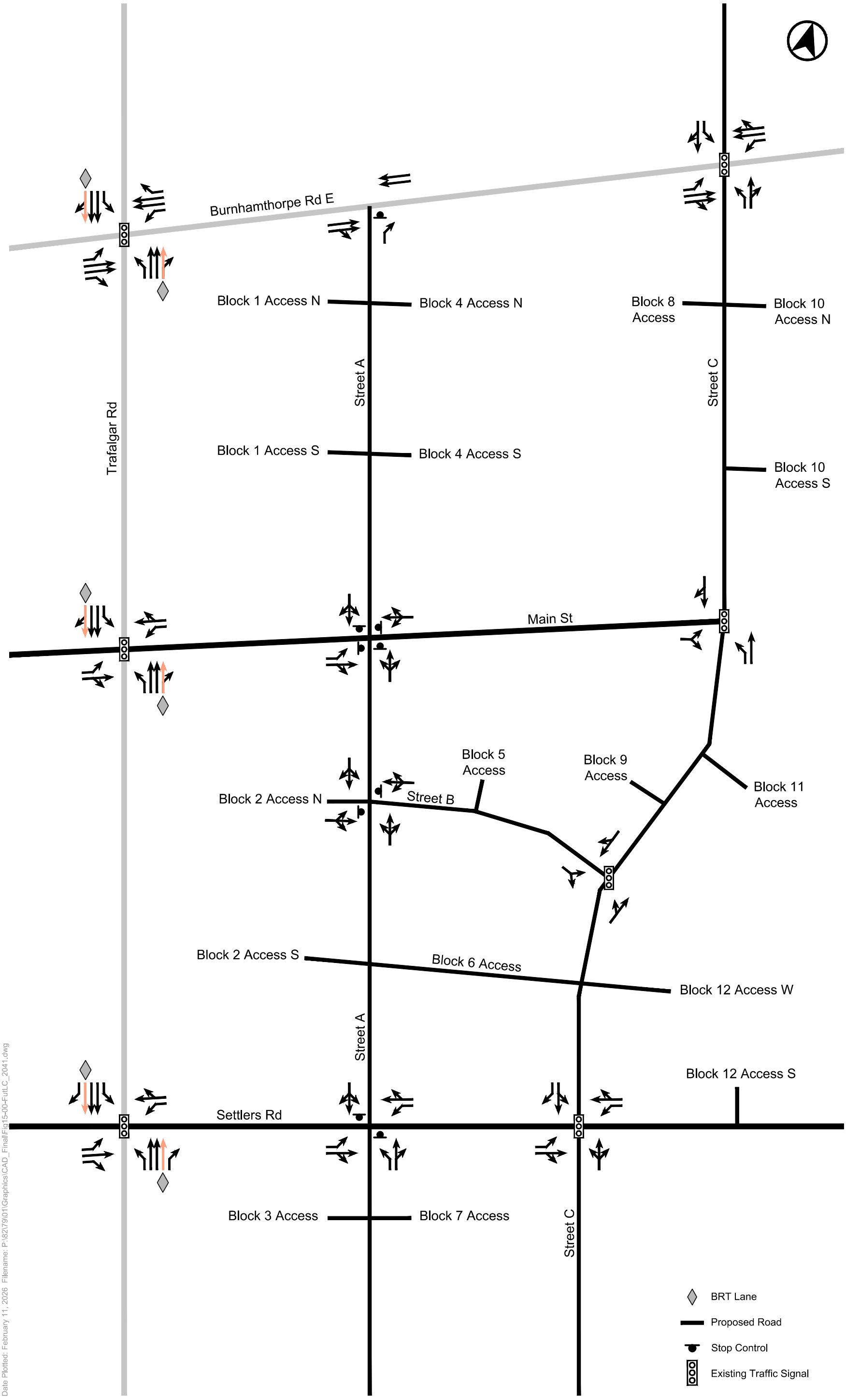


FIGURE 15 2041 LANE CONFIGURATIONS AND TRAFFIC CONTROL

10.1.2 Phasing

The proposed development will be delivered on a phased basis, which will be refined as the development proceeds through the approvals process. For the purposes of this analysis, Phase 1 is assumed in the 2031 horizon, while full buildout is assumed in the 2036 horizon. Due to limited knowledge of phasing across the remaining EM4 JC7 JC9 Landowners Group lands, it has been conservatively assumed that the remaining lands within the Landowners Group will be developed by 2031 under future background conditions, consistent with the October 2025 CGH Report.

Site statistics under Phase 1 and full build-out conditions are summarized below:

Phase 1 (Blocks 2 & 3)

- ~1,550 residential units
- ~1,650 m^2 retail GFA

Full Build-Out (Remainder of Blocks 1 – 14)

- ~6,500 residential units
- ~10,000 m^2 retail GFA
- ~4,600 m^2 grocery GFA
- Green space / parks
- Elementary school

10.1.3 Study Area

The following intersections have been evaluated as part of the intersection capacity analysis in this study, representing all signalized and unsignalized public road intersections planned within the vicinity of the site. Note that the street names included in brackets represent the street names used in the October 2025 CGH Report and have been included for ease of reference.

Signalized intersections:

- Trafalgar Road / Burnhamthorpe Road E
- Trafalgar Road / Main Street (Local Road 6)
- Trafalgar Road / Settlers Road
- Burnhamthorpe Road East / Street C (Collector Road 5)
- Settlers Road / Street C (Collector Road 5)
- Main Street (Local Road 6) / Street C (Collector Road 5)
- Street B / Street C (Collector Road 5)

Unsignalized intersections:

- Burnhamthorpe Road East / Street A (Collector Road 4)
- Settlers Road / Street A (Collector Road 4)
- Main Street / Street A (Collector Road 4)
- Street A (Collector Road 4) / Street B

10.2 Existing Traffic Volumes

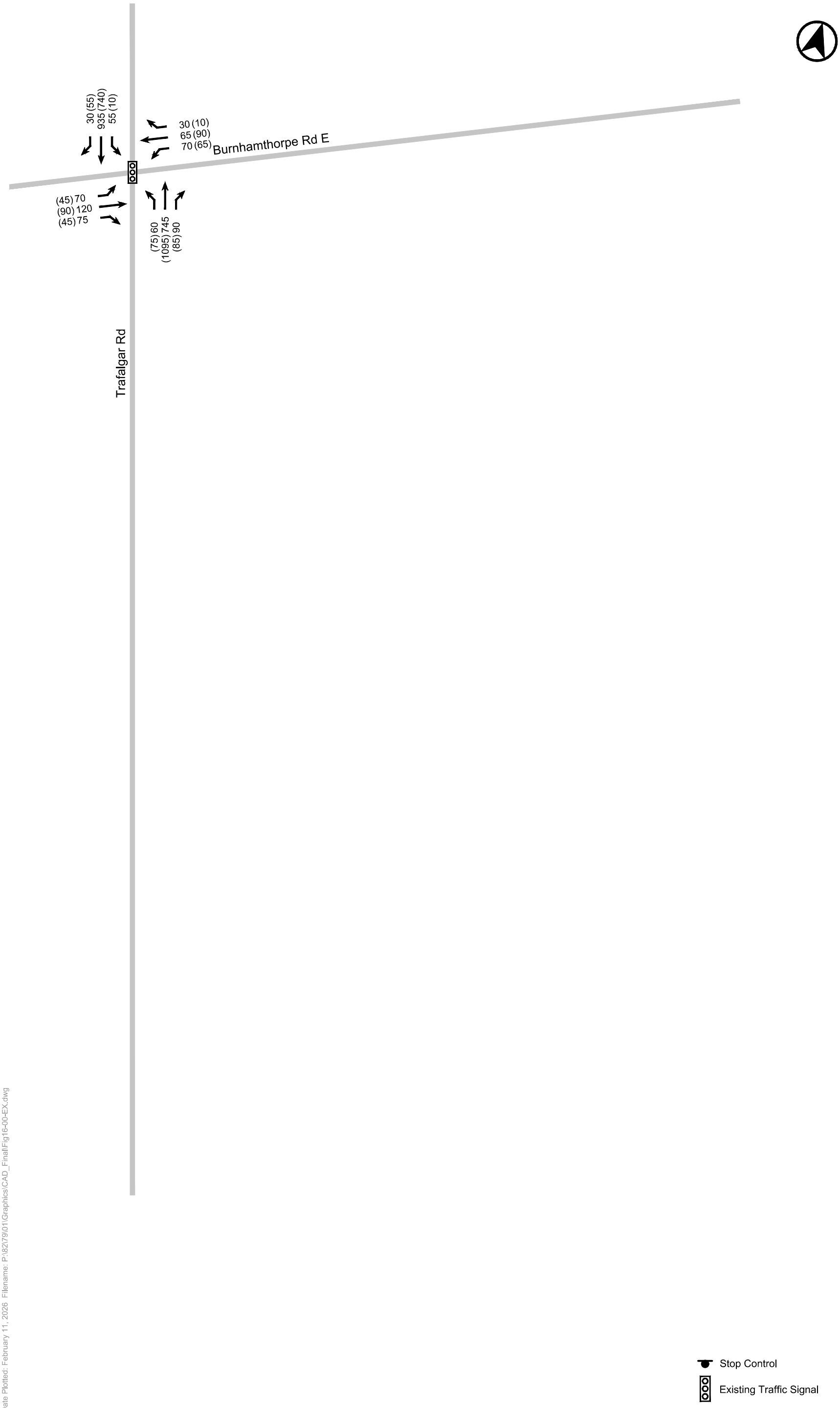
Existing baseline traffic volumes were established at existing intersections within the October 2025 CGH Report's study area for the weekday morning and afternoon peak hours from January to April 2024. A summary of the traffic count data as it pertains to the localized scope of this study is presented in **Table 14**.

Table 14 Existing Traffic Data Sources

Study Area Intersection	Date of Counts	Source
Trafalgar Road / Burnhamthorpe Road E	Wednesday, January 17th, 2024	October 2025 CGH Report (Ontario Traffic Inc.)

As per BA Group's August 2025 Terms of Reference, and consistent with the October 2025 CGH Report, an annual growth rate of 2% has been applied along Trafalgar Road and 3% along Burnhamthorpe Road East to grow 2024 volumes to an 'existing' 2025 condition.

Raw turning movement counts at the intersection are attached in **Appendix F**. Adopted 2025 existing traffic volumes during the weekday peak hours are illustrated on **Figure 16**.



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FIGURE 16 EXISTING TRAFFIC VOLUMES

10.3 Future Background Volumes

In forecasting future background conditions, a series of allowances were made within the October 2025 CGH Report, including area background developments provided by staff at the Town of Oakville, general corridor growth allowances recommended by the Town of Oakville and Halton Region, and consideration of Halton Region's 2031 EMME Model projections. Notably, as the focus of this study is on the proposed Westerkirk Lands, remaining development lands within the EM4 JC7 JC9 Landowners Group that were forecasted as 'site traffic' in the October 2025 CGH Report have been considered as background developments in this study, representing a site-specific future background condition.

The following sections outline a review of the assumptions within the October 2025 CGH Report, and notable changes to the future background condition as assumed in this study.

10.3.1 October 2025 CGH Report Future Volumes

Future total volumes in each planned horizon year outlined in the October 2025 CGH Report generally serve as the base future volumes for each horizon year in this study. Recognizing that future total volumes within the October 2025 CGH Report considered preliminary forecasts for the Westerkirk Lands, adjustments have been made to remove Westerkirk related site-traffic volumes to develop a site-specific future background condition. BA Group has coordinated with CGH Transportation to extract the Westerkirk site-traffic layer utilized within the October 2025 CGH Report such that it could be removed and replaced with BA Group's site traffic forecast as outlined in **Section 10.4**.

Future total volumes under 2031, 2036, and 2041 conditions as forecasted within the October 2025 CGH Report are illustrated on **Figure 17**, **Figure 18** and **Figure 19**. The Westerkirk site-traffic layer provided by CGH Transportation for removal in BA Group's forecast is illustrated on **Figure 20**, and has been removed from future total volumes in each horizon to develop a site-specific future background condition.

The following outlines a review of area background developments and general corridor growth allowances considered as part of the future background condition within the October 2025 CGH Report.

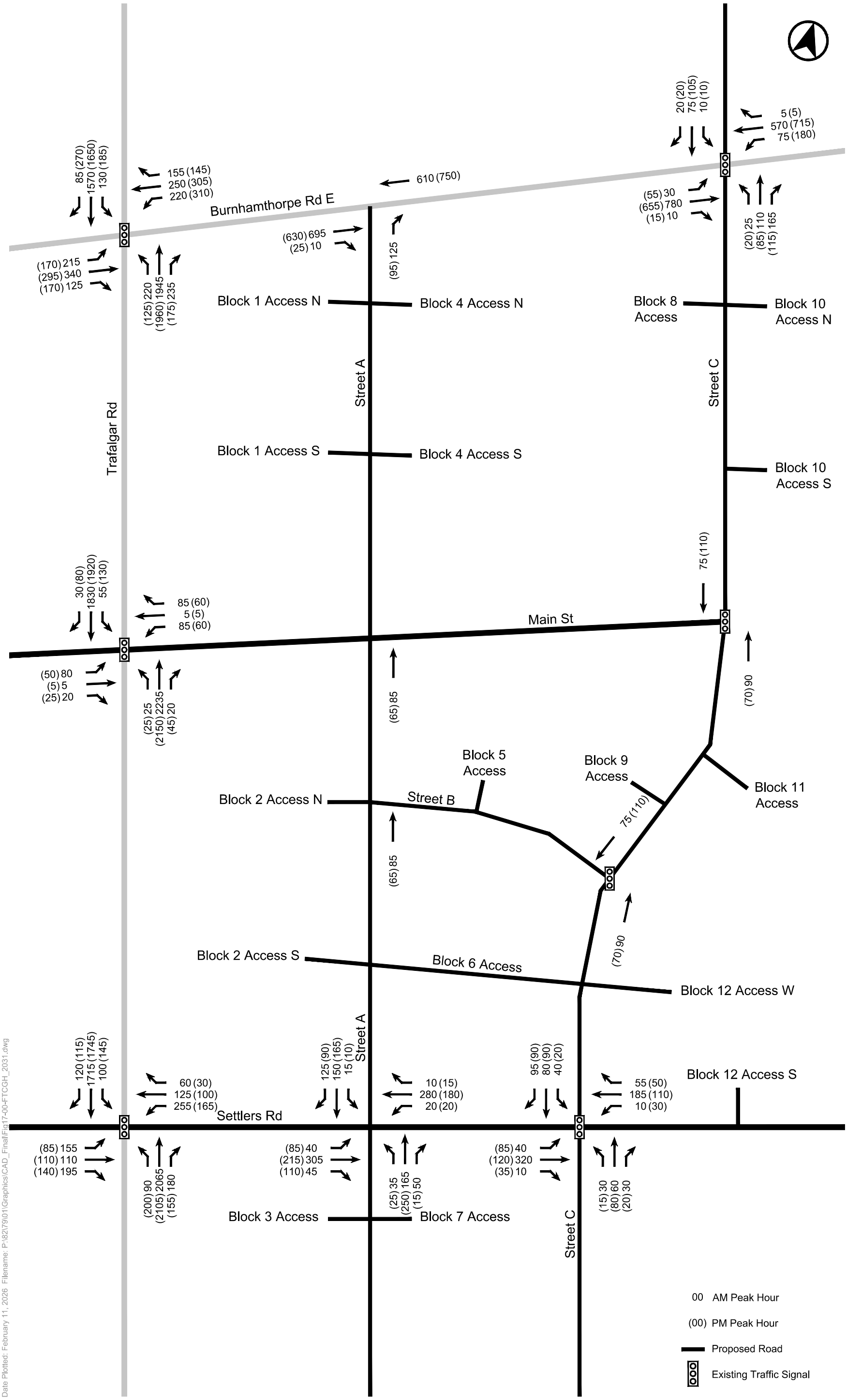


FIGURE 17 2031 TOTAL TRAFFIC VOLUMES FROM THE 2025 CGH REPORT

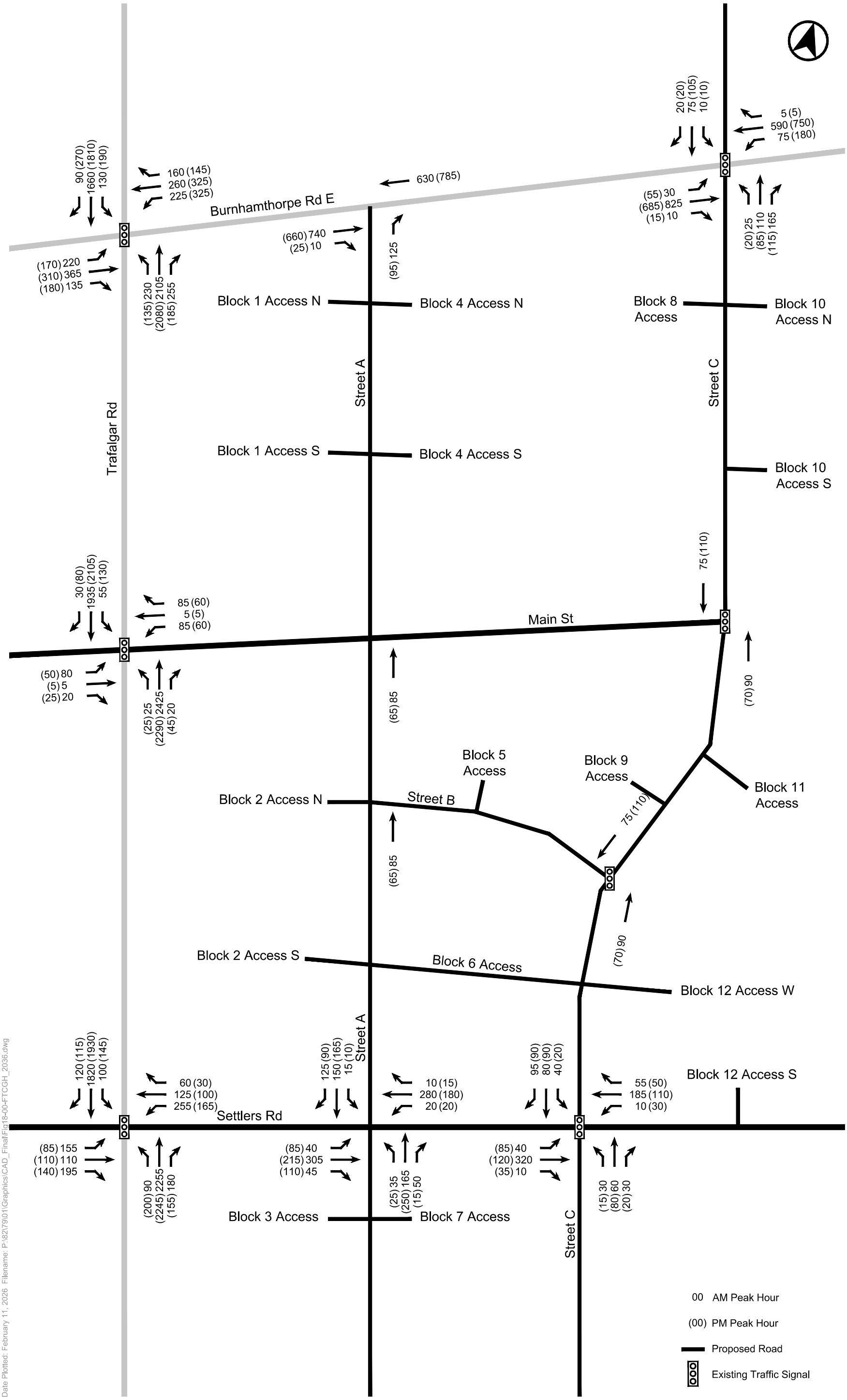


FIGURE 18 2036 TOTAL TRAFFIC VOLUMES FROM THE 2025 CGH REPORT

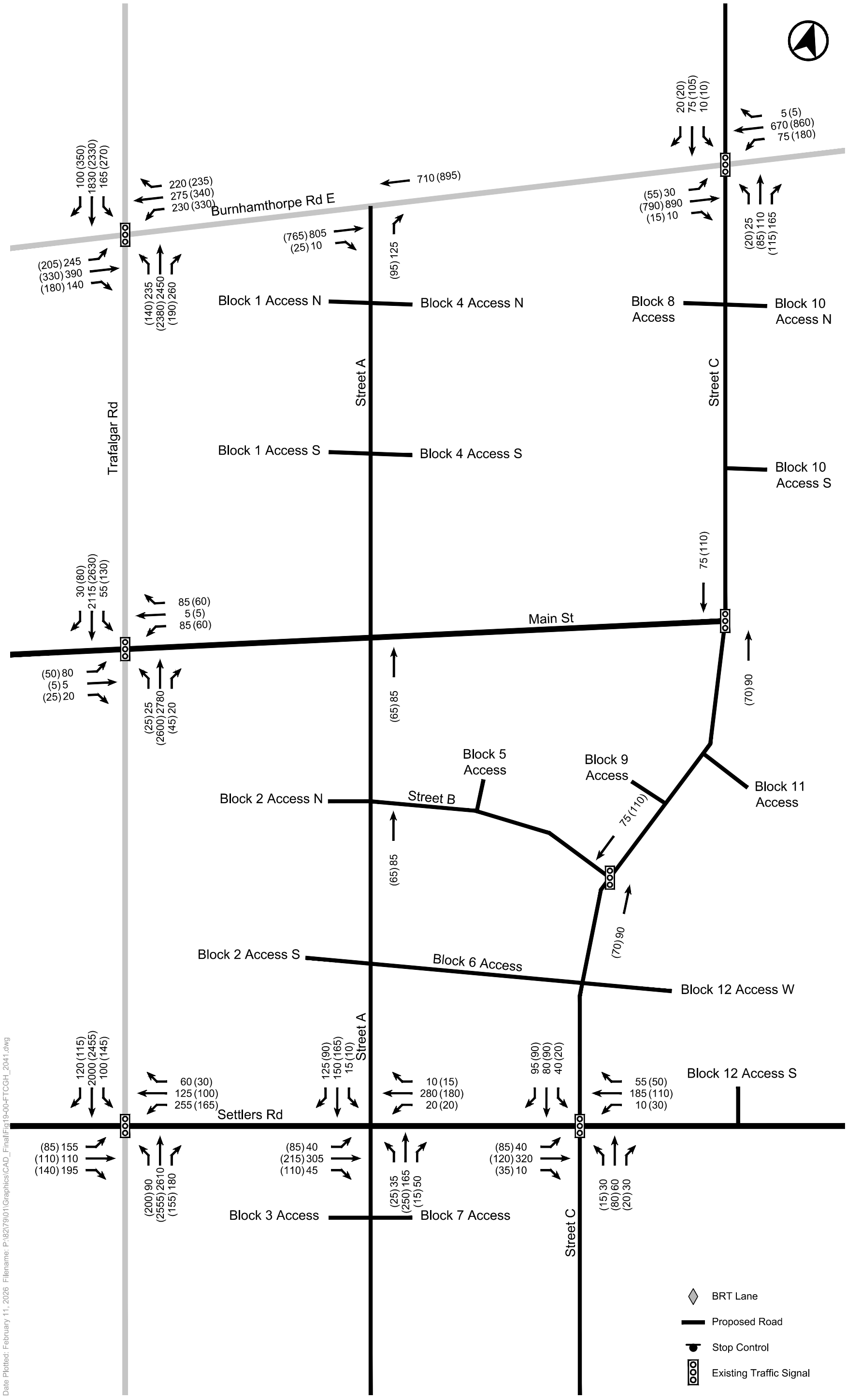
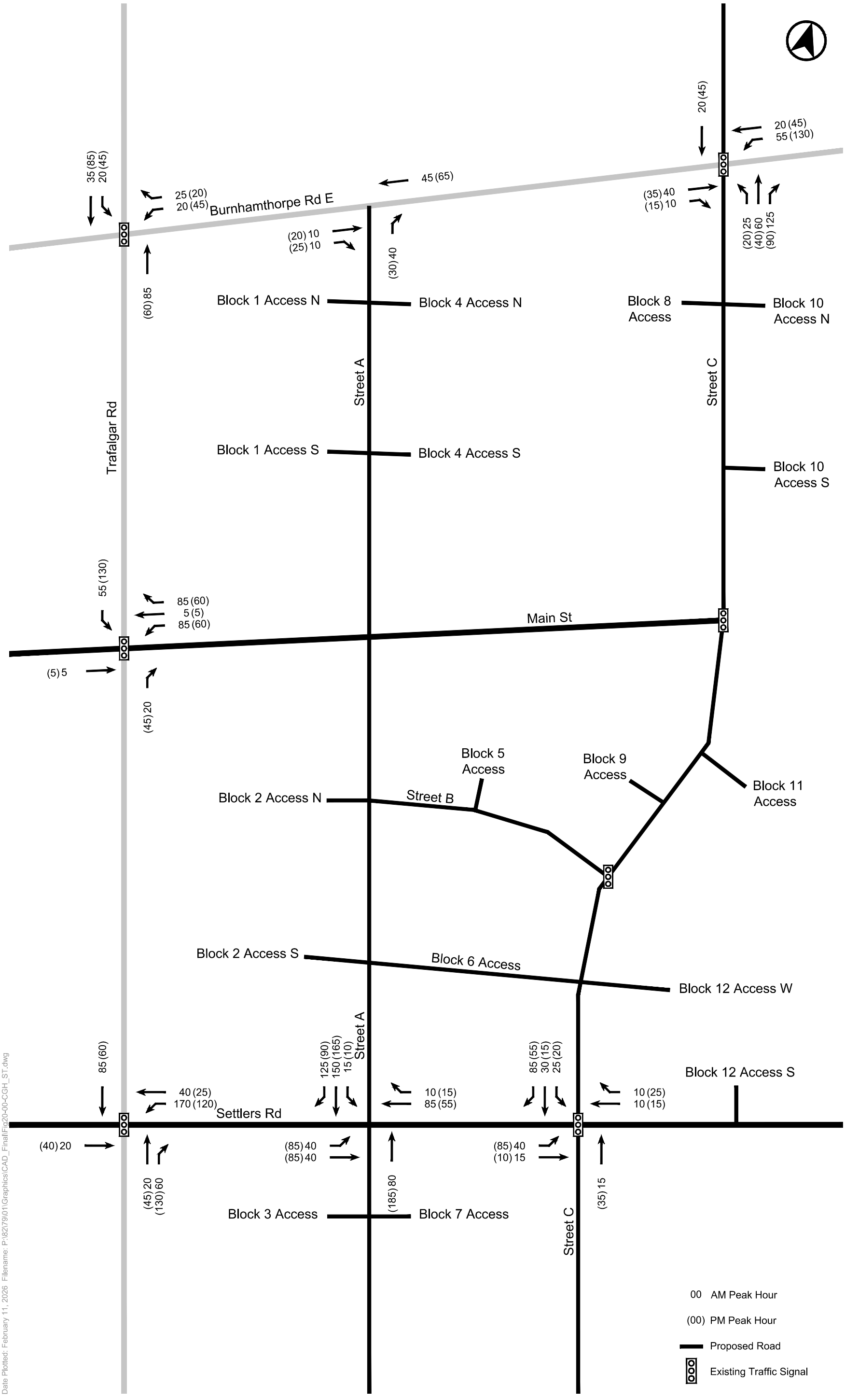


FIGURE 19 2041 TOTAL TRAFFIC VOLUMES FROM THE 2025 CGH REPORT



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FIGURE 20 WESTERKIRK SITE TRAFFIC VOLUMES FROM THE 2025 CGH REPORT - TO BE REMOVED

10.3.2 Area Background Developments

Area background development traffic volumes were established by CGH Transportation based on a review of other area development proposals that are anticipated to generate traffic within the study area upon their build out and occupation. As the purpose of this study is to assess the impact of the Westerkirk Lands on the area road network, the remaining developments within the EM4 JC7 JC9 Landowners Group have been considered as additional background developments from what was considered in the October 2025 CGH Report.

A total of 15 development proposals and / or studies have been considered, in addition to the remaining EM4 JC7 JC9 Landowners Group lands, representing a total of approximately 32,187 units, 618,000 m^2 of non-residential GFA, three elementary schools, and one secondary school, as summarized in **Table 15**. Note that one of the elementary schools is associated with the Tribaden Investments Inc lands immediately south of the site, which shares its proposed elementary school with the Westerkirk site.

Assumed development horizons for each development have been provided for reference in accordance with the October 2025 CGH Report, and have been considered, when completed, in each of the 2031, 2036, and 2041 horizon years.

Table 15 Area Background Developments

Development Name	Development Statistics	Horizon Year
Sherbourne Lodge Development	505 Units Commercial Block Elementary School	2026
Remington Eno Development	2,297 Units ~1,500 m^2 Non-Residential GFA	2026
Neighbourhood 9, 10, 11 Development	1,976 Units	2030
Sixth Oak Inc. School and Employment Lands	~35,500 m^2 Non-Residential GFA	2030
Star Oak Development[1]	~138,500 m^2 Non-Residential GFA	2028
Infrastructure Ontario (IO) Trafalgar Lands – Scenario 'B'[2]	3,946 Units ~366,000 m^2 Non-Residential GFA	Phase 1: 2031 Phase 2: 2041
Green Ginger – Trafalgar Lands	4,400 Units ~2,500 m^2 Non-Residential GFA	Phase 1: 2027 Phase 2: 2032
Bressa and Dunoak[3]	1,015 Units	<2031
Coscorp Joshua Creek	362 Units	<2031
ARGO Joshua Creek	659 Units	<2031
Mattamy Joshua Creek	1,115 Units Elementary School	2027
Joshua Creek Phase 4	154 Units	2027
ARGO Neyagawa	1,003 Units ~1,000 m^2 Non-Residential GFA	2028
Capoak and Redoak	1,153 Units	<2031
SmartCentres Oakville North	585 Units ~500 m^2 Non-Residential GFA	<2031
Remaining Landowners Group Lands (Excluding Westerkirk)	13,017 Units ~72,500 m^2 Non-Residential GFA Elementary School[4] Secondary School	2031
Total Background Development Statistics	**32,187 Units** **~618,000 m^2 Non-Residential GFA** **3 Elementary Schools** **1 Secondary School**	**--**

Notes:

1: Excludes Phase 1 Lands constructed in 2018.

2: Scenario B from Paradigm Transportation Solutions Limited's December 2021 report has been considered as the more conservative forecast of future conditions.

3: Bressa lands are fully developed in 2024, while Dunoak lands are partially complete. As a result, a 50% reduction has been applied to site statistics and site traffic volumes.

10.3.3 Corridor Growth Allowances

As part of the October 2025 CGH Report forecast, compounded annual growth rates were applied along the Trafalgar Road and Burnhamthorpe Road East corridors within the vicinity of the site, as recommended by staff at Halton Region and the Town of Oakville, and compared against forecasts within Halton Region's 2031 EMME Model.

A summary of the corridor growth rate and future background assumptions adopted within the October 2025 CGH Report is as follows:

- 2031, 2036, and 2041 future background volumes were initially calculated by summing up traffic volumes resulting from compounded annual corridor growth and traffic volumes generated by area background developments, in consideration of the following growth rates:
    - 2% per annum compounded growth rate along Trafalgar Road up to 2031;
    - 1% per annum compounded growth rate along Trafalgar Road from 2031 to 2041; and,
    - 3% per annum compounded growth rate along Burnhamthorpe Road East up to 2041.
- Comparisons were made between the additive approach and the regional volumes for each road segment and scenario, and the greater was used.
- Further adjustments were made to intersection movements along William Halton Parkway, which is outside of the scope of this Westerkirk study.

It was further noted by CGH Transportation that the region's EMME model considers a study area much larger than the October 2025 CGH Report and does not have information on population and employment statistics. Thus, it is not certain how many trips generated from within the EM4 JC7 JC9 Landowners Group study area is included in the EMME model forecast. A conservative approach was taken by assuming no reduction to EMME model and corridor growth rate forecasts would be applied to offset trips generated from within the study area.

As many of the intersections were forecasted to operate above capacity in the October 2025 CGH Report, BA Group has completed a review of effective corridor growth rates generated by area background developments to forecast a more realistic future background condition, recognizing that the subject study includes a more granular analyses of future intersections.

Table 16 summarizes the equivalent compounded annual growth rates from area background developments applied over the 16-year horizon period from 2025 to 2041.

Table 16 Effective Annual Growth from Background Developments

Corridor	Direction	Effective Annual Growth Rate	Agency Annual Growth Projections
Burnhamthorpe Road E	Eastbound	4.27% (4.40%)	3%
	Westbound	5.20% (7.96%)	
Trafalgar Road	Northbound	5.24% (4.24%)	2% from 2025 – 2031 & 1% from 2031 - 2041
	Southbound	2.07% (4.68%)	

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

As shown in **Table 16**, there is significant growth from area background developments, with annual growth rates ranging from 4% to 8% along Burnhamthorpe Road East and 2% to 6% along Trafalgar Road. Compounded over 16 years, this represents growth in the order of 95% to 340% along Burnhamthorpe Road East and 40% to 230% along Trafalgar Road from 2025 to 2041, excluding traffic generated by the Westerkirk development site. As such, area background developments are projected to significantly exceed the corridor growth allowances projected by Halton Region and the Town of Oakville.

Given traffic allowances adopted from area background developments represent significant growth along both corridors, adding the Regional annual corridor growth would represent an overly conservative and unrealistic scenario. It is considered appropriate to adopt a 0% general corridor growth rate along Burnhamthorpe Road East and Trafalgar Road.

Future background traffic volumes for each horizon year are illustrated in **Figure 21**, **Figure 22**, and **Figure 23**.

Notwithstanding the above, for comparison purposes, traffic operations analysis results detailed in **Section 11.0** have assumed both ‘base future total conditions’ reflective of BA Group’s modified corridor growth approach, and ‘sensitivity future total conditions’ reflective of additional corridor growth rates in line with Halton Region and the Town of Oakville’s projections.

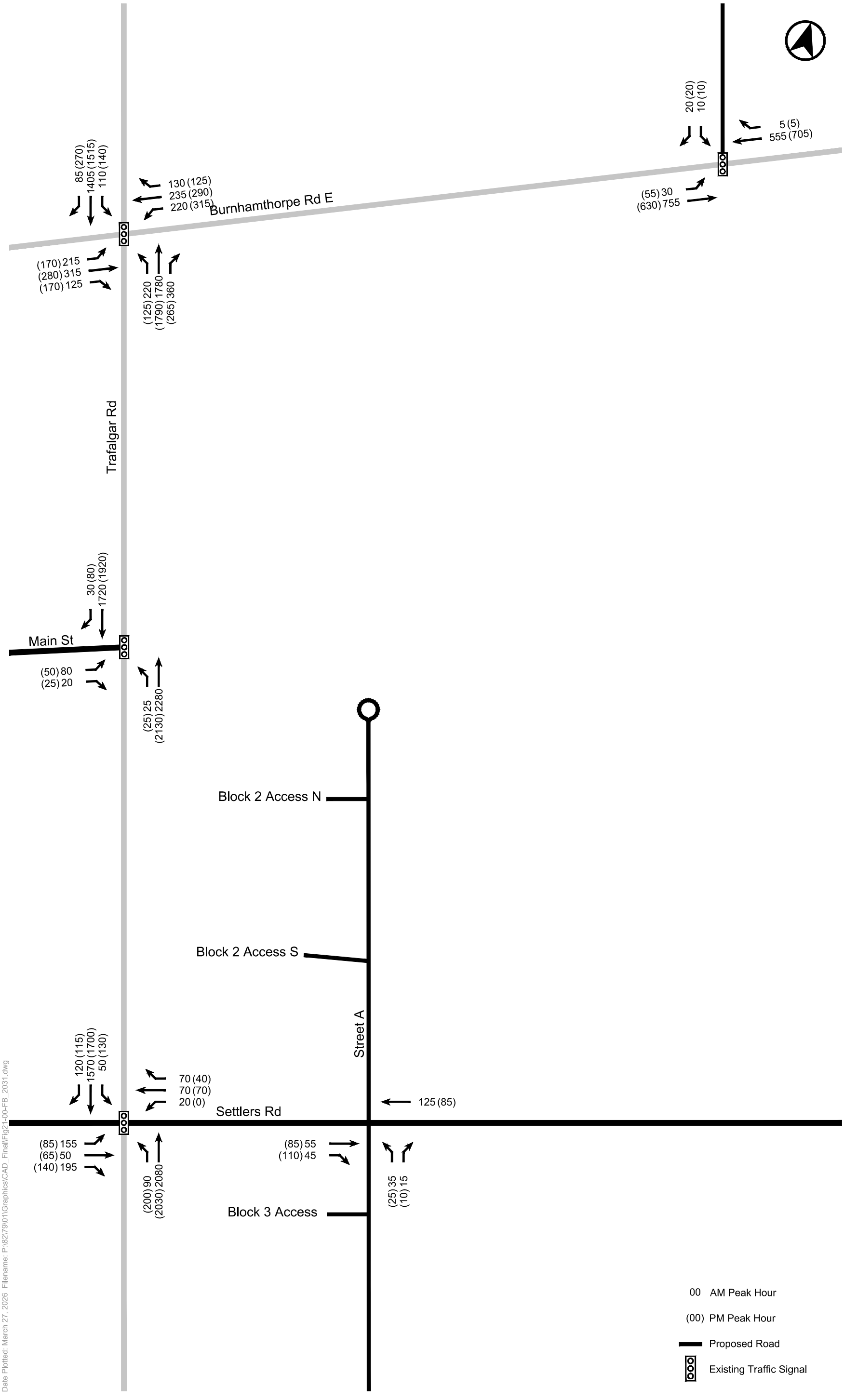
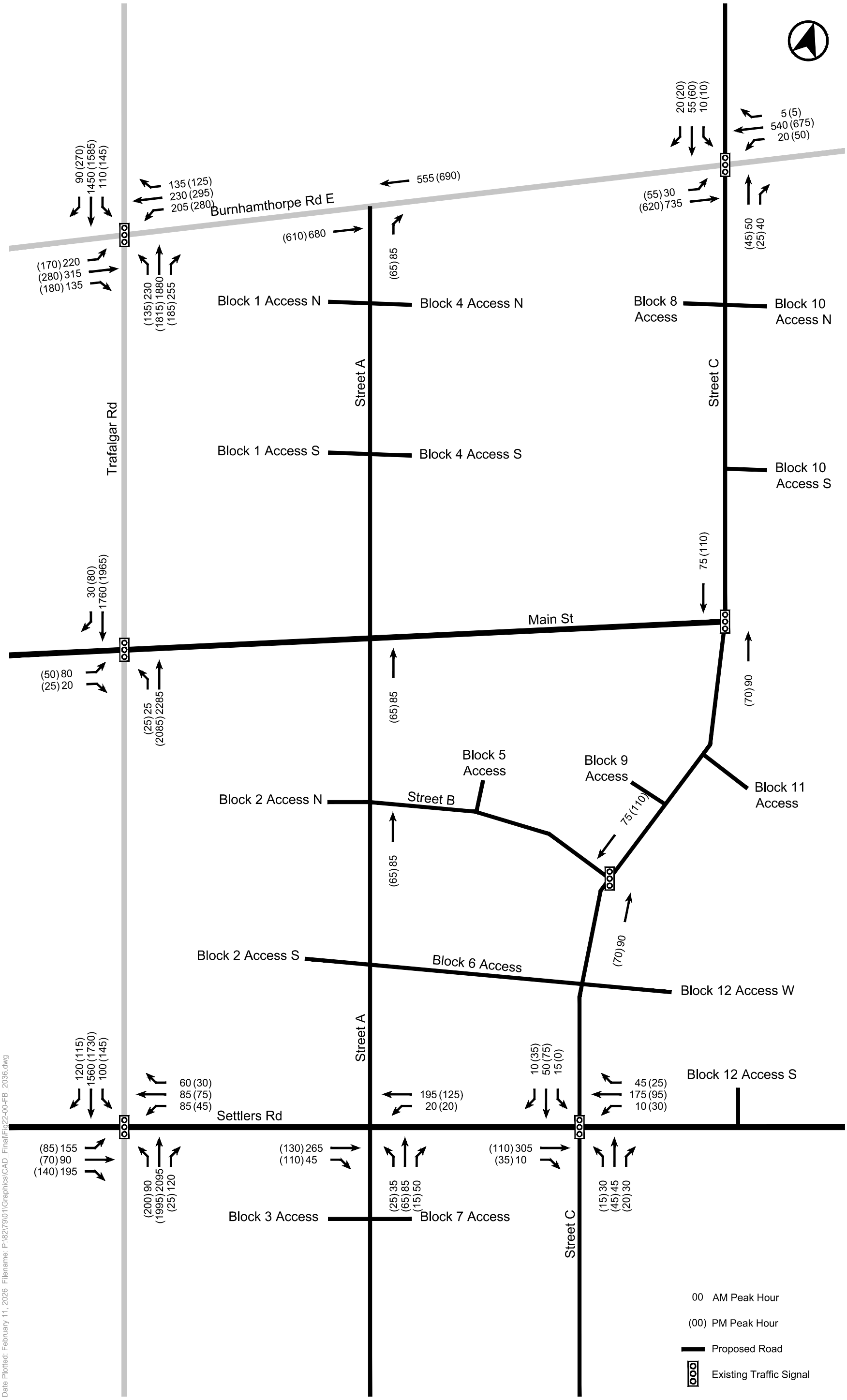


FIGURE 21 2031 FUTURE BACKGROUND TRAFFIC VOLUMES



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FIGURE 22 2036 FUTURE BACKGROUND TRAFFIC VOLUMES

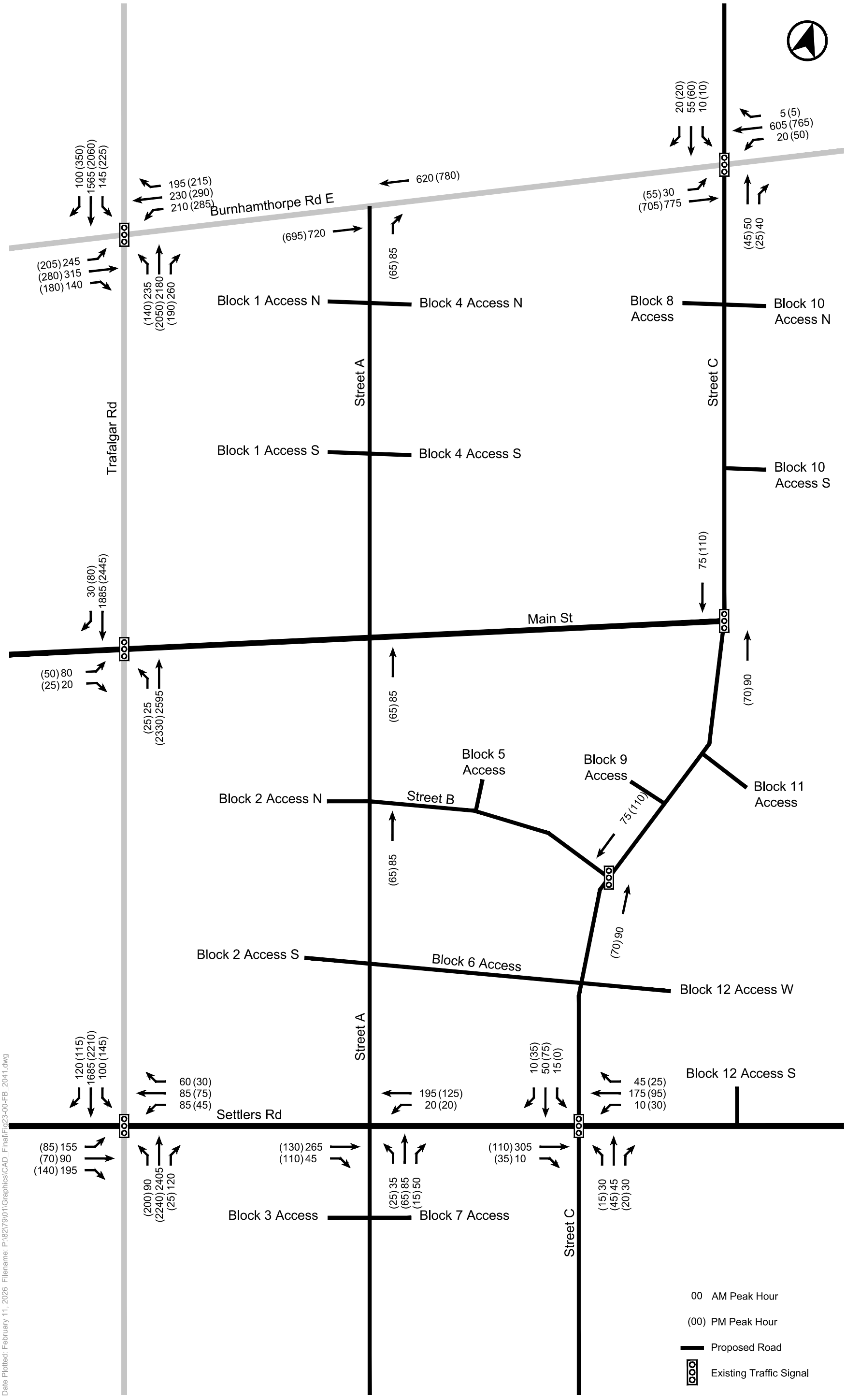


FIGURE 23 2041 FUTURE BACKGROUND TRAFFIC VOLUMES

10.4 Site Traffic Volumes

A site vehicular traffic volume forecast has been undertaken for the Westerkirk lands in general accordance with the methodology outlined in the October 2025 CGH Report. Adjustments have been made to account for a modified approach to vehicular mode shares under future conditions, the provision of a grocer within Block 1 of the site, localized interactions between land uses internal to and bordering the site, and in consideration of localized trip distributions for residential and commercial (general retail and grocer) traffic volume forecasts. Details of the adjustments are included in the following sections.

10.4.1 Trip Generation

10.4.1.1 Adopted Trip Generation Rates

The October 2025 CGH Report utilized vehicular trip generation rates from within the Institute of Transportation Engineers (ITE) Trip Generation Manual 11th Edition for the purposes of generating person trips within each of the EM4 JC7 JC9 Landowners Group development zones. A target mode share of 72% auto occupancy in 2031 was referenced from the Halton Region Transportation Master Plan (2011 TMP) and applied to ITE trip generation rates to derive target vehicular trip generation rates for land uses within the EM4 JC7 JC9 Landowners Group. This methodology is consistent with the neighbouring ARGO Trafalgar TIS prepared by CGH Transportation in 2023 and has been justified given the majority of historical ITE study data being within car dependent environments.

As the current traffic operations assessment is local in nature, BA Group has modified this approach to vehicular trip generation as it pertains to the Westerkirk lands to produce conservative results and recommendations, accounting for the following changes:

- The inclusion of a grocer within the development lands, which is anticipated to generate trips at a higher rate than general retail uses within the site;
- Revised ‘average’ trip generation rates as opposed to ‘fitted curve’ rates as a more conservative approach to forecasting residential trips within the site; and,
- A more conservative mode shift assumption under future conditions, in accordance with the ITE Trip Generation Handbook 3rd Edition, and the Halton Region 2011 TMP.

Application of the abovementioned adjustments is discussed in greater detail below. A comparison of adopted vehicle trip generation rates by land use between the October 2025 CGH Report and this report is summarized in **Table 17**, demonstrating a more conservative approach to site trip generation.

Grocer Trip Generation Rates

Through the development of the Westerkirk lands, a grocery store has been added to Block 1. As such, ITE trip generation rates for Land Use Code (LUC) 850 – Supermarket have been used for the grocer component of the proposed retail, which is more conservative than LUC 820 – Shopping Center. Note that due to the nature of the grocer and retail uses internal to the site operating as an integrated group of commercial establishments along a shared Street A, LUC 820 is believed to remain appropriate for the remaining retail uses, and trip generation rates derived from the fitted curve equations have assumed a total gross floor area (GFA) of approximately 14,600 m^2 for all retail uses, including the grocer, consistent with the October 2025 CGH Report.

Residential Trip Generation Rates

A total of approximately 6,500 residential units is proposed within the site. While the October 2025 CGH Report utilized 'fitted curve' trip generation rates for the total number of residential units within the site, LUC 222 – Multifamily Housing (High-Rise) utilizes proxy data from several high-rise developments with unit counts spanning upwards of 1,500 units. As the fitted curve equation is intended to be applied to individual high-rise developments as opposed to a collective of high-rise developments, the more conservative 'average' trip generation rates have been adopted as part of this study for residential site generated traffic.

Note that general retail and grocer trip generation rates have continued to utilize 'fitted curve' rates, which is consistent with the October 2025 CGH Report.

Mode Shift Assumptions

The ITE Trip Generation Handbook 3rd Edition was used to determine a baseline auto mode split applicable to ITE's vehicular trip generation rates, such that an adjustment factor could be applied to reduce the auto mode split to 72%, as forecasted within the Halton Region TMP. Section 5.5.2 of the handbook refers to the percentage of person trips associated with auto modes (auto driver & passenger) exceeding 95% in almost all cases, irrespective of land use.[1] As such, it has been assumed that ITE vehicular trip generation rates represent a 95% auto mode share, which can be proportionally adjusted to reflect the forecasted 72% auto share in 2031.

Table 17 Vehicular Trip Generation Rates

Land Use	AM Peak Hour			PM Peak Hour		
	In	Out	2-Way	In	Out	2-Way
October 2025 CGH Report[1]						
Residential Multifamily Housing (High-Rise) – per unit	0.04	0.12	0.16	0.12	0.07	0.19
Shopping Centre (>150k) – per 1,000 ft^2	0.56	0.35	0.91	1.66	1.79	3.45
This Study						
Residential Multifamily Housing (High-Rise) – per unit	0.05	0.15	0.20	0.15	0.09	0.24
Shopping Centre (>150k)[2] – per 1,000 ft^2	0.67	0.42	1.09	1.81	1.96	3.77
Supermarket (Grocer) – per 1,000 ft^2	1.28	0.89	2.17	3.39	3.39	6.78

Notes:
1. October 2025 CGH Report trip generation rates are consistent with average rate and fitted curve equations presented in Table 4 of the report, with CGH Transportation's assumed 28% mode split reduction to account for the future mode split of 72%
2. Utilizes the ITE Trip Generation 11th Edition fitted curve equation for LUC 820 (Shopping Centre) with an input size of 155,818 ft^2 (14,476 m^2).

[1] Section 5.5.2 of the Institute of Transportation Engineers Handbook 3rd Edition (September 2017) notes that "There are not enough samples in Appendix B data to derive precise percentages by mode for the land use types for which data were collected, However, in almost all cases, the percentage of total person trips in vehicles exceeds 95 percent. In some cases the averages by land use are 100 percent motor vehicle." Further, Section 5.5.2 notes that "If the analyst assumes a mode share of 95 percent of person trips are in vehicles, then the ITE vehicle trip generation rates/equations (when converted to person trips) represent 95 percent of the total person trips (both drivers and passengers). The other 5 percent are walk, bicycle, and transit trips."

10.4.1.2 Elementary School Trip Generation

Trip generation forecasts for the planned elementary school shared between the Westerkirk and Tribaden Investments Inc lands have been assumed in accordance with LUC 520 – Elementary School vehicular trip generation rates. This is consistent with the October 2025 CGH Report and summarized in **Table 18**.

Furthermore, as outlined in the October 2025 CGH Report, elementary school trips are assumed to be internal to the EM4 JC7 JC9 Landowners Group lands. Notwithstanding, trips generated by the elementary school that are assumed to originate from / be destined to Westerkirk's residential units have been considered as diverted link trips. The proportion of elementary school trips assumed to be associated with the Westerkirk lands was derived by the proportion of units within the Westerkirk lands vs. the overall Landowners Lands, rounded up to the nearest 10 two-way trips.

Table 18 Elementary School Trip Generation

Land Use	AM Peak Hour			PM Peak Hour		
	In	Out	2-Way	In	Out	2-Way
Adopted Trip Generation Rates (per student)	0.40	0.34	0.74	0.07	0.09	0.16
Total Elementary School Trip Generation (300 students[2])	**120**	**100**	**220**	**20**	**30**	**50**
Westerkirk Related Trips[1]	**40**	**40**	**80**	**10**	**10**	**20**

Notes:

1. Based on the 33% of total landowners group residential units planned within the Westerkirk site.
2. 300 students have been back calculated from trip generation rates and forecasts within the October 2025 CGH Report.

The elementary school is forecasted to generate a total of 220 and 50 two-way vehicular trips during the weekday morning and afternoon peak hours, respectively. Of this, 80 morning and 20 afternoon two-way vehicular trips are assumed to be attributed to the Westerkirk lands. This represents approximately 40 residential-related vehicles diverting to the school during the morning peak hour and 10 residential-related vehicles diverting to the school during the afternoon peak hour.

10.4.1.3 Secondary School Trip Generation

A secondary school is proposed within the neighbouring lands to the east of the site. While the secondary school is not proposed as part of the Westerkirk site, given its proximity, trip generation forecasts for the secondary school derived within the October 2025 CGH Report have been reviewed to determine the proportion of secondary school trips assumed to be attributed to the Westerkirk site. The October 2025 CGH Report utilized LUC 525 – High School vehicular trip generation rates within the ITE Trip Generation Manual 11th Edition, as summarized in **Table 19**.

Consistent with the October 2025 CGH Report, secondary school trips are assumed to be 80% internal to the EM4 JC7 JC9 Landowners Group lands and 20% external. Applying the 80% proportionally to all residential units within the landowner's group, 26% of secondary school trips are assumed to be attributed to the Westerkirk Lands. Due to the nature of secondary schools, these trips have assumed to be walking trips.

Table 19 Secondary School Trip Generation

Land Use	AM Peak Hour			PM Peak Hour		
	In	Out	2-Way	In	Out	2-Way
Adopted Trip Generation Rates (per student)	0.35	0.17	0.52	0.07	0.07	0.14
Total Secondary School Trip Generation (1,215 students[2])	**435**	**205**	**640**	**80**	**90**	**170**
Westerkirk Related Trips[1]	**115**	**55**	**170**	**20**	**25**	**45**

Notes:
1. Based on the 33% of total landowners group residential units planned within the Westerkirk site, and that 80% of secondary school trips are planned to be internal to the landowners group lands.
2. 1,215 students have been back calculated from trip generation rates and forecasts within the October 2025 CGH Report.

The neighbouring secondary school is forecasted to generate a total of 640 and 170 two-way person trips during the weekday morning and afternoon peak hours, respectively. Of this, 170 morning and 45 afternoon two-way person trips are assumed to be attributed to the Westerkirk Lands. Given the proximity of the site to the secondary school, it is assumed that all trips generated by the Westerkirk Lands will be predominately walking trips by students. Remaining trips generated by the secondary school have been considered as background trips, and have been added to the transportation network per the October 2025 CGH Report.

10.4.1.4 Residential Trip Generation

The application of residential trip generation rates derived in **Section 10.4.1.1** to the site's ~1,550 residential units proposed upon Phase 1 completion and ~6,500 residential units upon full build-out are summarized in **Table 20**. Trip generation reductions have been applied to the sites total residential trip generation forecast to account for walking trips to and from the neighbouring secondary school upon full build-out.

Table 20 Residential Site Trip Generation

Land Use	AM Peak Hour			PM Peak Hour		
	In	Out	2-Way	In	Out	2-Way
Adopted Trip Generation Rates (per unit)	0.05	0.15	0.20	0.15	0.09	0.24
Phase 1 (2031)						
Phase 1 Residential Site Trip Generation (~1,550 units)	**75**	**235**	**310**	**230**	**140**	**370**
Full Build-Out (2036)						
Residential Site Trip Generation (~6,500 units)	**325**	**975**	**1,300**	**975**	**585**	**1,560**
Internalization with Secondary School (**Table 19**)	55	115	170	25	20	45
Residential Site Vehicular Trip Generation (~6,500 units)	**270**	**860**	**1,130**	**950**	**565**	**1,515**

The residential component of the proposed Westerkirk site is forecasted to generate in the order of 310 and 370 two-way vehicular trips upon Phase 1 completion and 1,130 and 1,515 two-way vehicular trips upon full build-out during the weekday morning and afternoon peak hours, respectively.

10.4.1.5 General Retail Trip Generation

The application of general retail (shopping centre) trip generation rates derived in **Section 10.4.1.1** to the site's ~1,650 m^2 (17,760 ft^2) of non-residential GFA upon Phase 1 completion and ~10,000 m^2 (107,639 ft^2) of non-residential GFA upon full build-out, excluding the proposed grocer, is summarized in **Table 21**.

Table 21 General Retail Site Trip Generation

Land Use	AM Peak Hour			PM Peak Hour		
	In	Out	2-Way	In	Out	2-Way
Adopted Trip Generation Rates (per 1,000 ft^2)	0.67	0.42	1.09	1.81	1.96	3.77
Phase 1 (2031)						
Phase 1 General Retail Site Trip Generation (~1,650 m^2 | 17,760 ft^2)	**10**	**10**	**20**	**30**	**35**	**65**
Full Build-Out (2036)						
General Retail Site Trip Generation (~10,000 m^2 | 107,639 ft^2)	**70**	**45**	**115**	**195**	**210**	**405**

The general retail component of the proposed Westerkirk site is forecasted to generate in the order of 20 and 65 two-way vehicular trips upon Phase 1 completion and 115 and 405 two-way vehicular trips upon full build-out during the weekday morning and afternoon peak hours, respectively.

10.4.1.6 Grocer Trip Generation

The application of grocer (supermarket) trip generation rates derived in **Section 10.4.1.1** to the site's ~4,600 m^2 (49,514 ft^2) of grocery GFA within Block 1 of the site upon full build-out is summarized in **Table 22**.

Table 22 Grocer Site Trip Generation

Land Use	AM Peak Hour			PM Peak Hour		
	In	Out	2-Way	In	Out	2-Way
Adopted Trip Generation Rates (per 1,000 ft^2)	1.28	0.89	2.17	3.39	3.39	6.78
Grocer Site Trip Generation (~4,600 m^2 | 49,514 ft^2)	**65**	**40**	**105**	**170**	**165**	**335**

The grocer component of the proposed Westerkirk site is forecasted to generate in the order of 105 and 335 two-way vehicular trips upon full build-out during the weekday morning and afternoon peak hours, respectively.

10.4.1.7 Residential and Commercial Internalization

Given the various residential and commercial land uses proposed, internal interaction rates have been applied using Table 6.1 and Table 6.2 of ITE's Trip Generation Handbook 3rd Edition. These rates have been applied to each pair of land uses and in both directions (i.e., from residential to commercial and from commercial to residential) and the smaller number adopted, consistent with ITE methodology.

The interaction trips by land use are summarized in **Table 23**. Recognizing that many commercial trips rely on an automobile, all internal interaction trips have been assumed to be internal vehicular trips as a conservative measure and have been considered in the sites residential site traffic layer.

Table 23 Interaction Trips by Land Use

Land Use	AM Peak Hour		PM Peak Hour	
	In	Out	In	Out
Phase 1 (2031)				
Residential (With Commercial)	0	0	10	5
Commercial (With Residential)	0	0	5	10
Full Build-Out (2036)				
Residential (With Commercial)	5	10	100	35
Commercial (With Residential)	10	5	35	100

10.4.1.8 External Site Traffic Volumes

The total external site traffic for residential and commercial uses of the site is summarized in **Table 24**.

Given the nature of general retail and grocer establishments, a significant portion of commercial site traffic is expected to be pass-by trips. Thus, a 29% pass-by assumption has been applied to general retail, and a 24% pass-by assumption has been applied to grocer related external site trips during the weekday afternoon peak hour, consistent with the ITE Trip Generation Manual 11th Edition. Remaining commercial trips have been differentiated as primary site traffic volumes.

Table 24 Total External Site Trip Generation

Land Use	AM Peak Hour			PM Peak Hour		
	In	Out	2-Way	In	Out	2-Way
Phase 1 (2031)						
Residential (~1,550 Units)						
Phase 1 Residential Site Vehicular Trip Generation (**Table 20**)	75	235	310	230	140	370
Internalization with Commercial (**Table 23**)	0	0	0	10	5	15
Phase 1 External Residential Site Trip Generation	**75**	**235**	**310**	**220**	**135**	**355**
General Retail (~1,650 m^2 | 17,760 ft^2)						
Phase 1 General Retail Site Vehicular Trip Generation (**Table 21**)	10	10	20	30	35	65
Internalization with Residential (**Table 23**)	0	0	0	5	10	15
Phase 1 External General Retail Site Trip Generation	**10**	**10**	**20**	**25**	**25**	**50**
Pass-by	0	0	0	5	5	10
Primary	10	10	20	20	20	40
Phase 1 Total External Site Trip Generation	**85**	**245**	**330**	**245**	**160**	**405**
Full Build-Out (2036)						
Residential (~6,500 Units)						
Residential Site Vehicular Trip Generation (**Table 20**)	270	860	1,130	950	565	1,515
Internalization with Commercial (**Table 23**)	5	10	15	100	35	135
External Residential Site Trip Generation	**265**	**850**	**1,115**	**850**	**530**	**1,380**
General Retail (~10,000 m^2 | 107,639 ft^2)						
General Retail Site Vehicular Trip Generation (**Table 21**)	70	45	115	195	210	405
Internalization with Residential (**Table 23**)[1]	5	5	10	20	55	75
External General Retail Site Trip Generation	**65**	**40**	**105**	**175**	**155**	**330**
Pass-by	0	0	0	50	50	100
Primary	65	40	105	125	105	230

Land Use	AM Peak Hour			PM Peak Hour		
	In	Out	2-Way	In	Out	2-Way
Grocer (~4,600 m² | 49,514 ft²)						
Grocer Site Vehicular Trip Generation (**Table 22**)	65	40	105	170	165	335
Internalization with Residential (**Table 23**)[1]	5	0	5	15	45	60
External Grocer Site Trip Generation	**60**	**40**	**100**	**155**	**120**	**275**
Pass-by	0	0	0	35	35	70
Primary	60	40	100	120	85	205
Total External Site Trip Generation	**390**	**930**	**1,320**	**1,180**	**805**	**1,985**

Notes:
1. Commercial to Residential internalization has been split between the general retail and grocer component of the site in proportion to their total two-way trip generation in each peak hour.

The Westerkirk site is forecasted to generate in the order of 330 and 405 two-way external vehicular trips upon Phase 1 completion and 1,320 and 1,985 two-way external vehicular trips upon full build-out during the weekday morning and afternoon peak hours, respectively. External trip generation forecasts adopted within the October 2025 CGH Report are summarized in **Table 25** for comparison.

Table 25 External Site Trip Generation – Comparison with October 2025 CGH Report

Land Use	AM Peak Hour			PM Peak Hour		
	In	Out	2-Way	In	Out	2-Way
Westerkirk External Trip Generation – Source: CGH Transportation[1]	370	855	1,225	820	655	1,475
Total External Site Trip Generation (**Table 24**)	390	930	1,320	1,180	805	1,985
Net Change in External Trip Generation	**20**	**75**	**95**	**360**	**150**	**510**

Notes:
1. BA Group has coordinated with CGH Transportation to extract the Westerkirk site-traffic layer utilized within the October 2025 CGH Report, which has been referenced for the Westerkirk external trip generation.

Trip generation forecasts for the Westerkirk site adopted within the October 2025 CGH Report amount to in the order of 1,225 and 1,475 two-way external vehicular trips during the weekday morning and afternoon peak hours, respectively. Trip generation forecasts adopted within this report and analysis represents a net increase of 95 and 510 two-way external vehicular trips associated with the Westerkirk Lands upon full build-out as compared to the October 2025 CGH Report. The net change in trip generation can be attributed to the higher trip generation rates adopted within this report to produce conservative results and recommendations given a more localised study scope.

10.4.2 Trip Distribution & Assignment

Traffic distribution patterns for the residential and commercial (general retail and grocer) uses of the site have been established based upon a review of 2022 Transportation Tomorrow Survey (TTS) data. Trip generation and distribution data have been used to assign trips to study area intersections based upon the density of residential units and commercial GFA in each development block within the site.

TTS data used to derive site external distributions are attached in **Appendix G**.

10.4.2.1 Residential Trip Distribution & Assignment

Travel patterns for the forecasted residential site traffic have been developed based upon a review of 2022 TTS data for home-based vehicle trips to and from the study area during the weekday morning and afternoon peak periods. Given the undeveloped nature of the site, nearby mixed-use zones in the vicinity of Trafalgar Road and Dundas Street E were used as proxies to query travel distribution information from the TTS (i.e. TTS 2006 GTA traffic zones 4032,4034,4035 & 4036). It should be noted that the resulting distribution of inbound and outbound vehicular trips were derived from the peak direction of travel during the peak periods.

A summary of the adopted residential distribution for the site is provided in **Table 26**. Total residential site traffic volumes, inclusive of external and internal traffic volumes, are illustrated under Phase 1 conditions on **Figure 24** and under full build-out conditions on **Figure 25**.

Table 26 Residential Site Traffic Distribution

To/From	Inbound	Outbound
North	10%	10%
South	55%	60%
East	25%	20%
West	10%	10%
Total	**100%**	**100%**

10.4.2.2 Commercial Trip Distribution & Assignment

Travel patterns for the forecasted commercial (general retail and grocer) site traffic have been developed based upon a review of 2022 TTS data for market-based vehicle trips to and from the study area during the weekday afternoon peak period. Consistent with the residential distribution, nearby mixed-use zones in the vicinity of Trafalgar Road and Dundas Street E were used as proxies to query travel distribution information from the TTS (i.e. TTS 2006 GTA traffic zones 4032,4034,4035 & 4036). It should be noted that the resulting distribution of inbound and outbound vehicular trips were derived from the weekday afternoon peak period.

Recognizing that commercial trips are typically associated with neighbouring residential neighbourhoods, and that numerous residential subdivisions are planned to the north and west of the site, a 15% reduction to existing TTS southern distributions has been made and diverted to the north and west.

A summary of the adopted commercial distribution for the site is provided in **Table 27**. Total general retail site traffic volumes are illustrated under Phase 1 conditions on **Figure 26** and under full build-out conditions on **Figure 27**. Grocer related site traffic volumes are illustrated under full build-out conditions on **Figure 28**.

Table 27 Commercial Site Traffic Distribution

To/From	Inbound	Outbound
North	15%	10%
South	55%	60%
East	15%	10%
West	15%	20%
Total	**100%**	**100%**

Total site traffic volumes associated with the Westerkirk Lands, inclusive of site residential, general retail, and grocer (full build-out only) related traffic volumes, are illustrated under Phase 1 conditions on **Figure 29** and under full build-out conditions on **Figure 30.**

10.5 Future Total Volumes

Future total traffic volumes for each horizon year, reflective of the addition of future background traffic volumes and Westerkirk site traffic volumes, are illustrated in **Figure 31**, **Figure 32**, and **Figure 33**. Phase 1 site traffic volumes have been considered for the 2031 horizon year, whereas full build-out site traffic volumes have been considered for the 2036 and 2041 horizon year analyses.

For comparison purposes, traffic operations analysis results detailed in **Section 11.0** have assumed 'base future total conditions' reflective of BA Group's modified corridor growth approach, and 'sensitivity future total conditions' reflective of corridor growth rates in line with Halton Region and the Town of Oakville's projections. Sensitivity future total traffic volumes for each horizon year, reflective of the addition of base future total traffic volumes and general corridor growth rate allowances, are illustrated in **Figure 34**, **Figure 35**, and **Figure 36**.

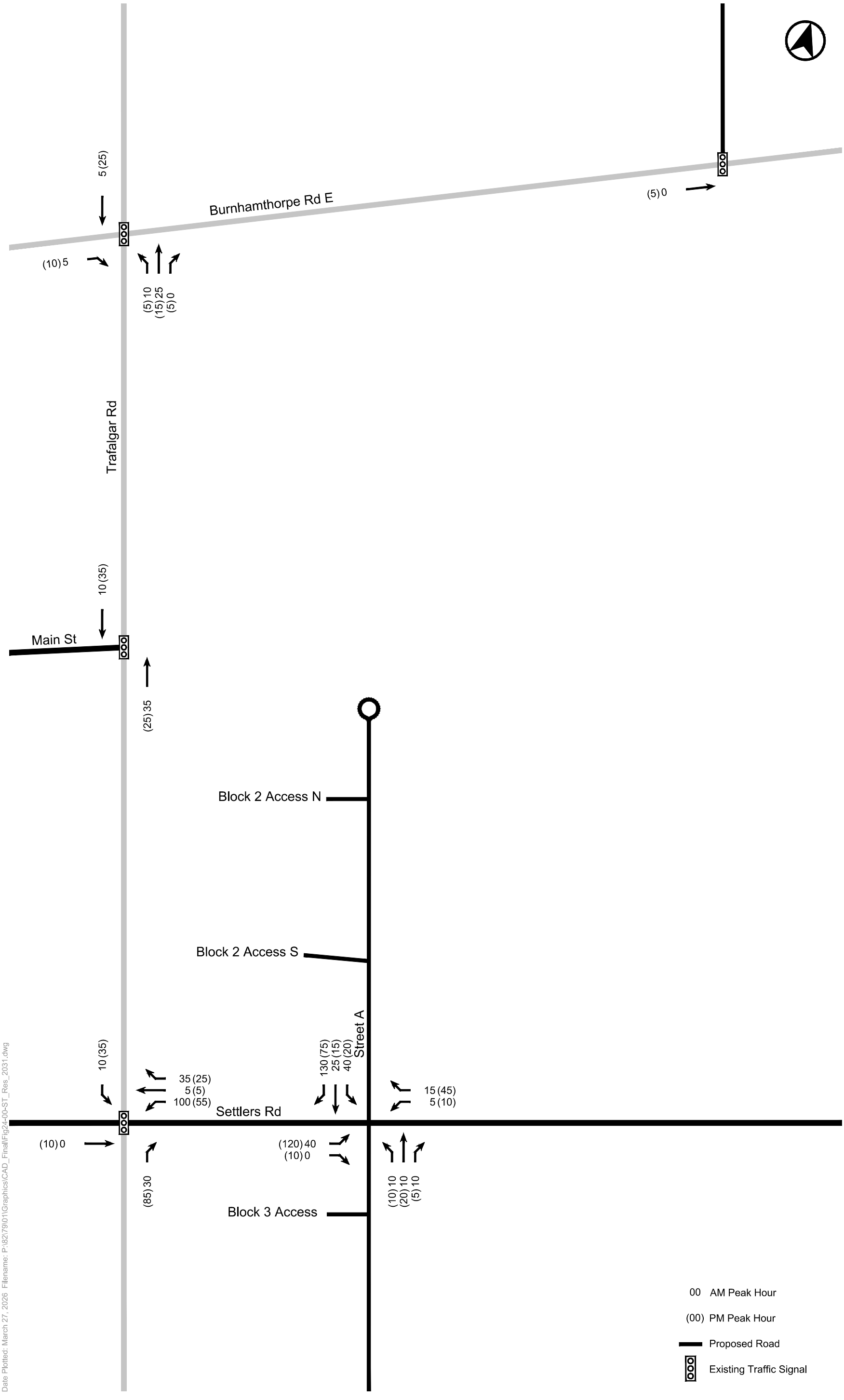


FIGURE 24 PHASE 1 (2031) RESIDENTIAL SITE TRAFFIC VOLUMES

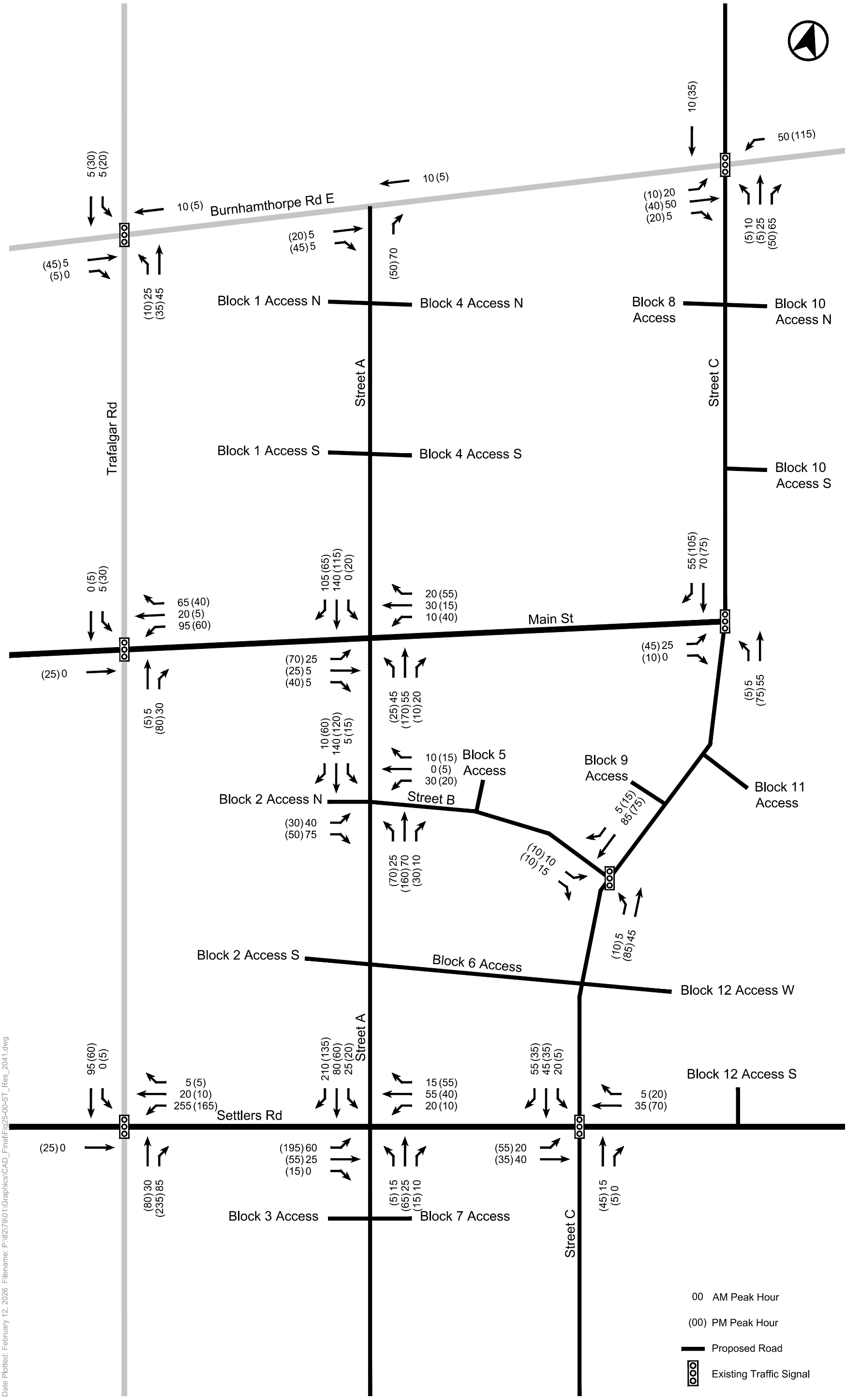


FIGURE 25 FULL BUILD-OUT (2036 & 2041) RESIDENTIAL SITE TRAFFIC VOLUMES

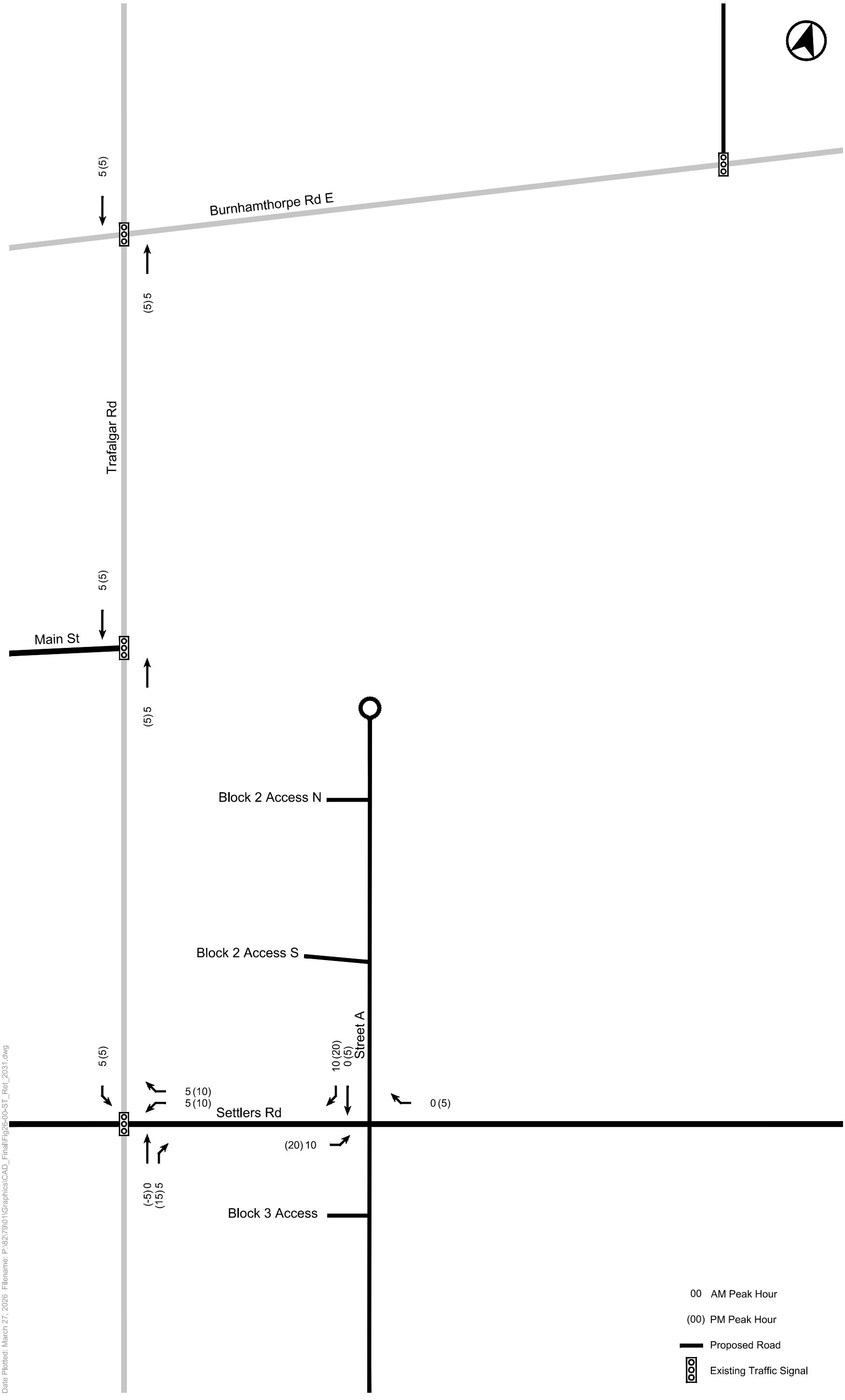


FIGURE 26 PHASE 1 (2031) GENERAL RETAIL SITE TRAFFIC VOLUMES

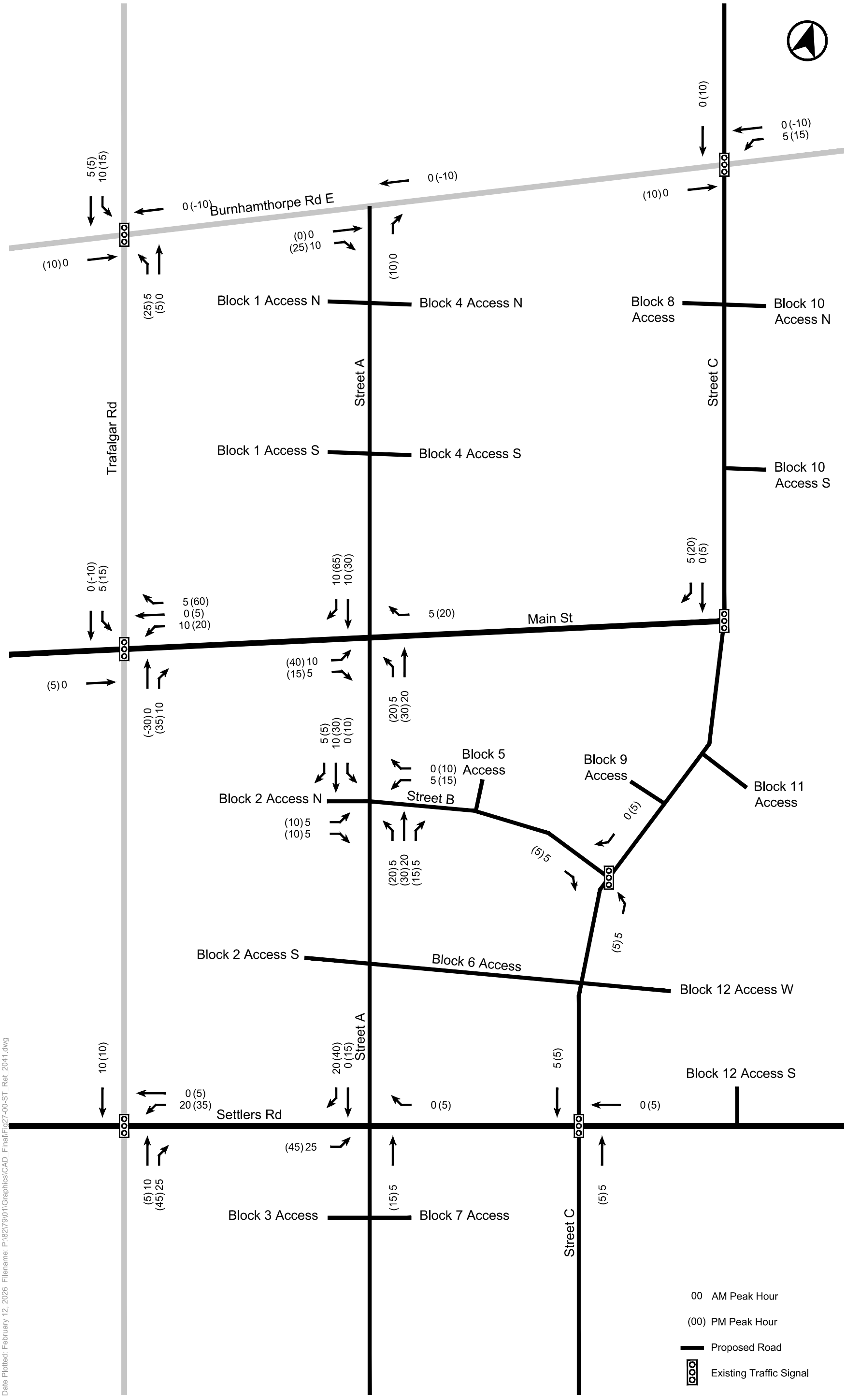


FIGURE 27 FULL BUILD-OUT (2036 & 2041) GENERAL RETAIL SITE TRAFFIC VOLUMES

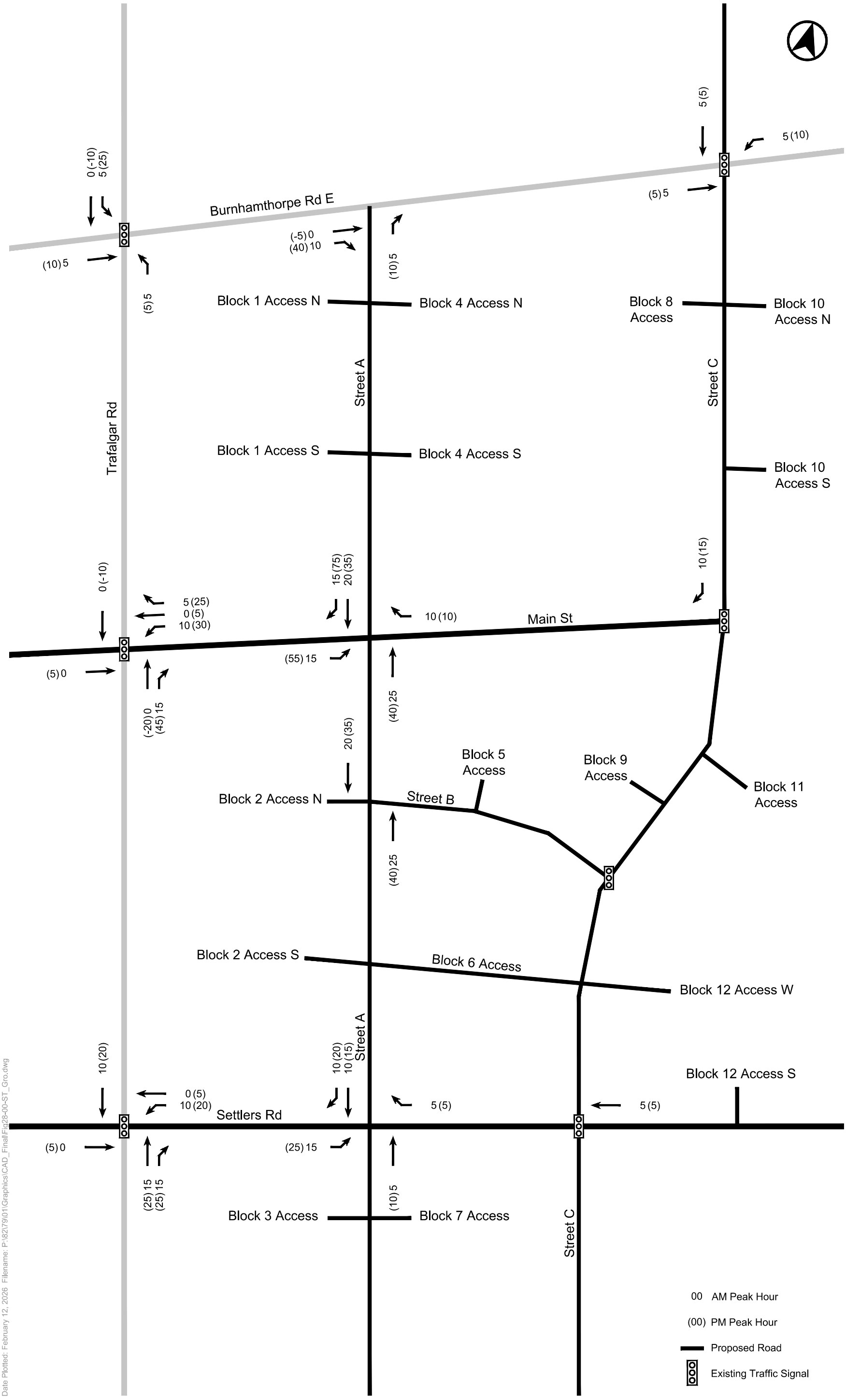


FIGURE 28 FULL BUILD-OUT (2036-2041) GROCER SITE TRAFFIC VOLUMES

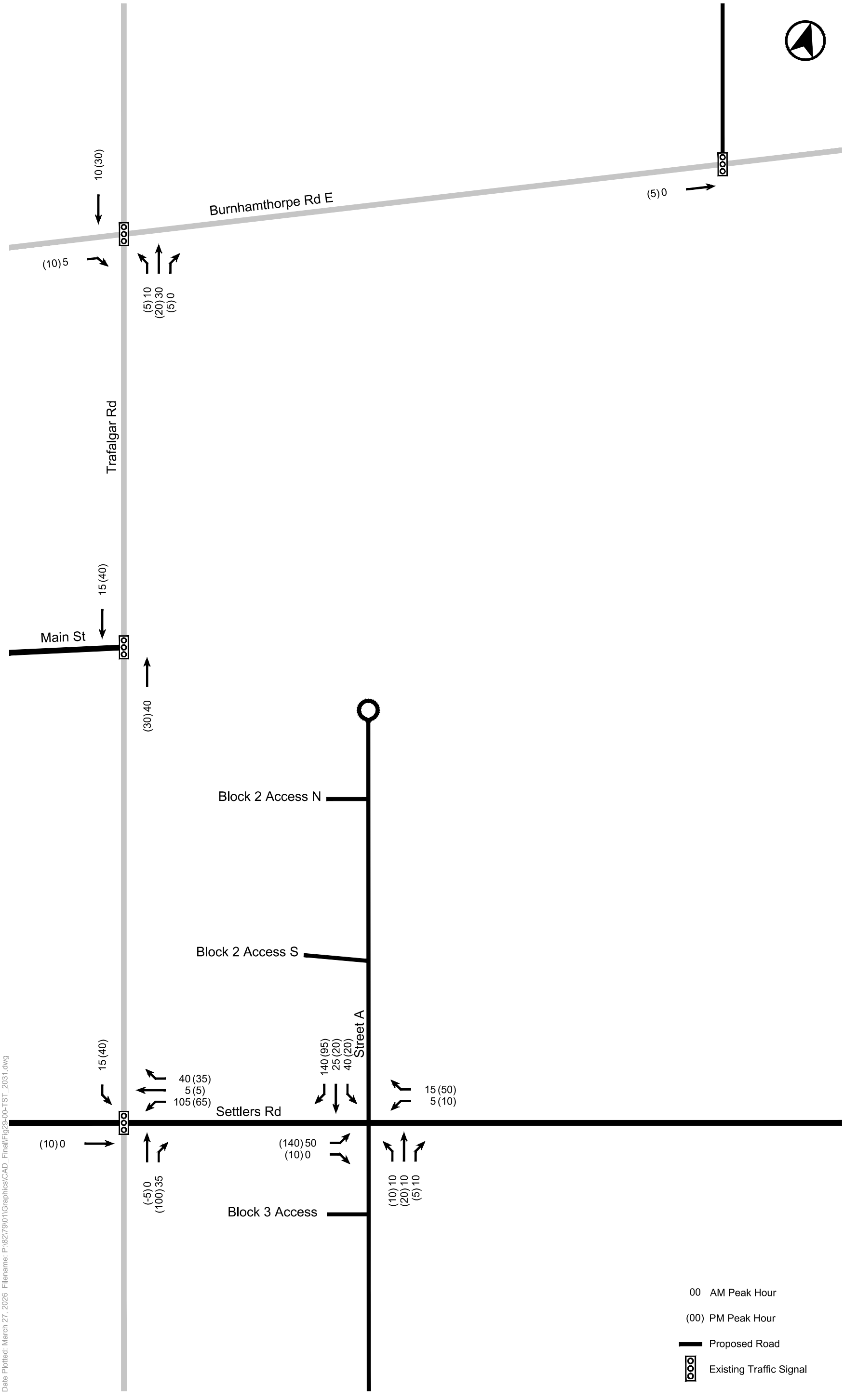


FIGURE 29 PHASE 1 (2031) TOTAL SITE TRAFFIC VOLUMES

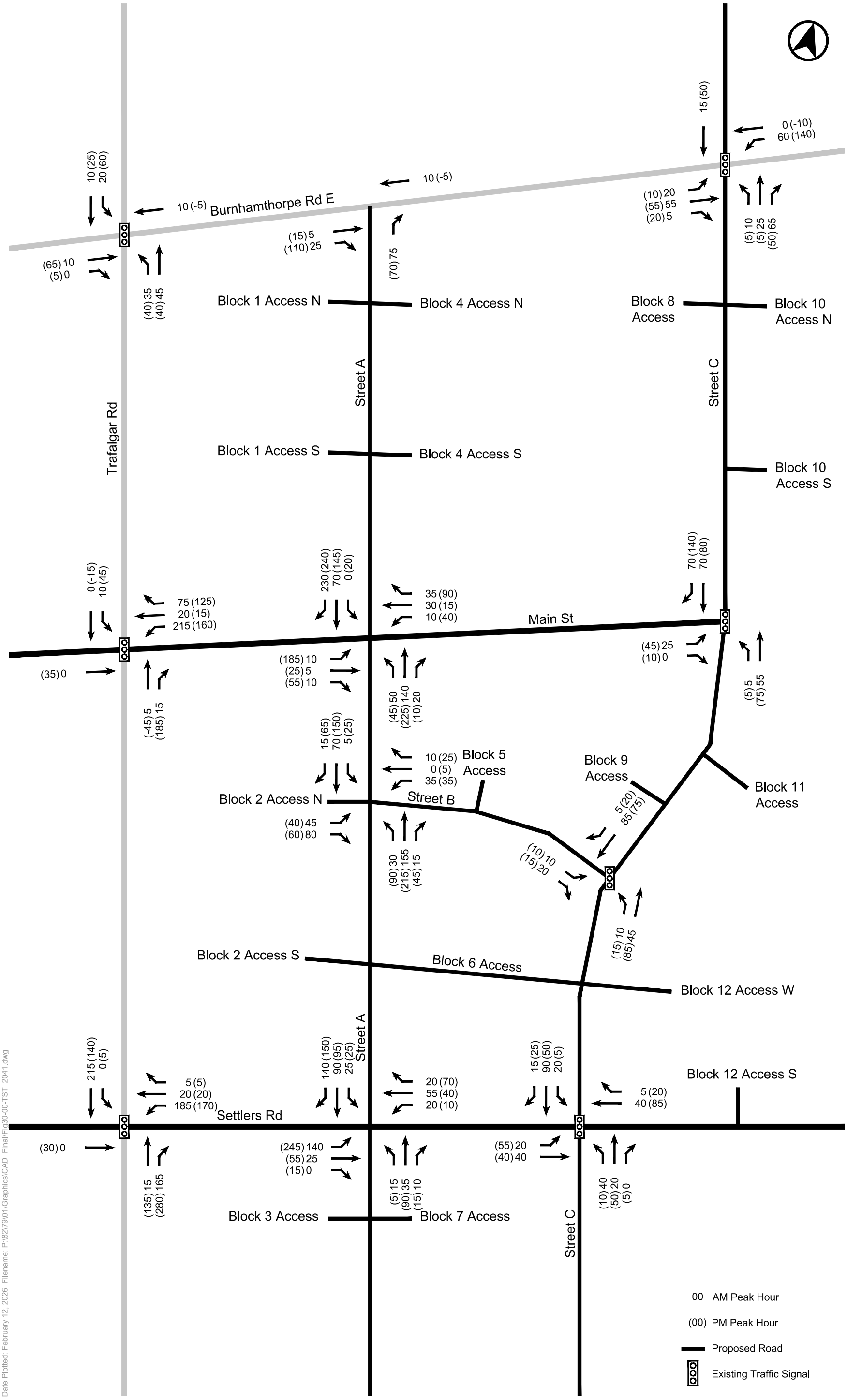


FIGURE 30 FULL BUILD-OUT (2036 & 2041) TOTAL SITE TRAFFIC VOLUMES

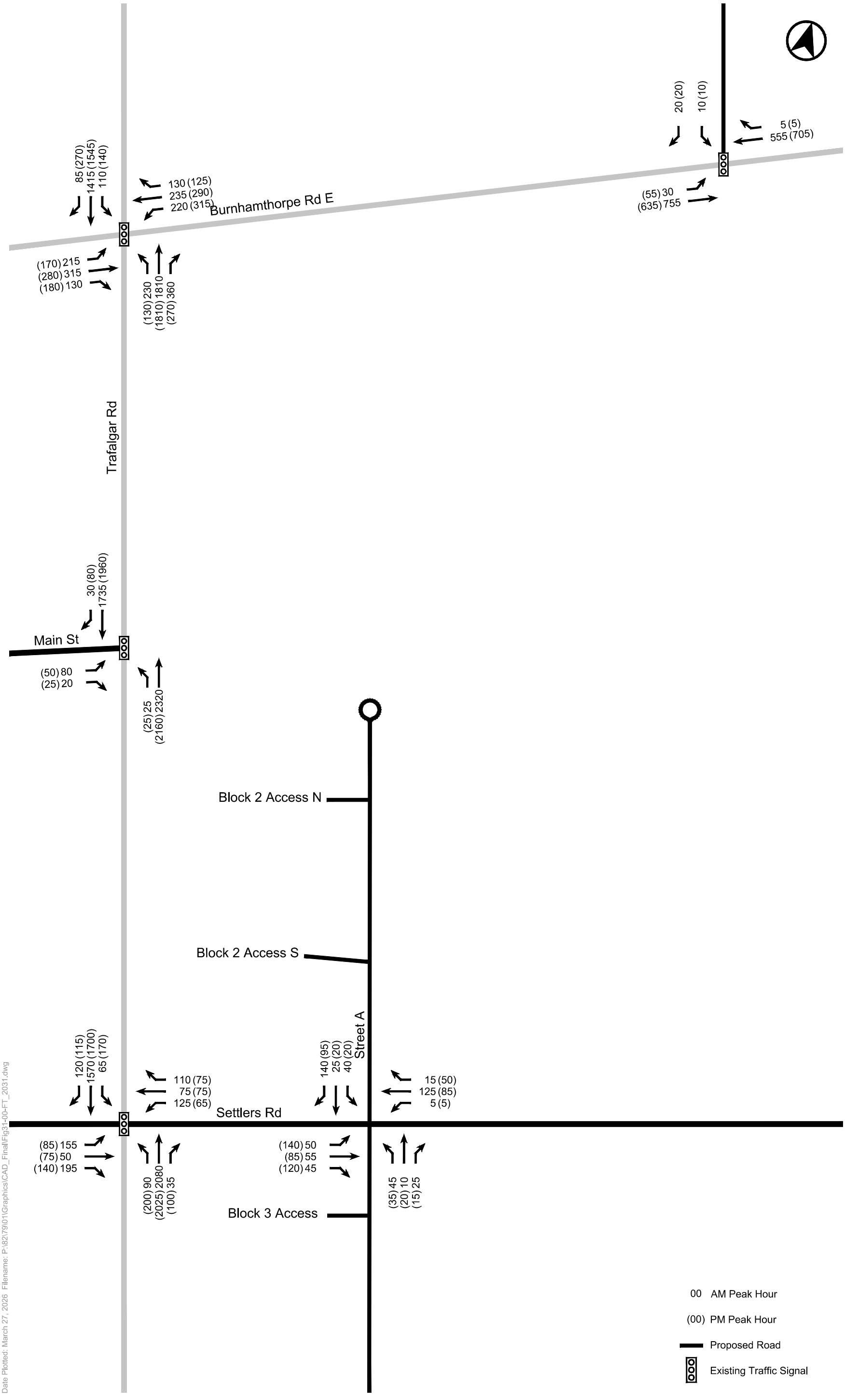
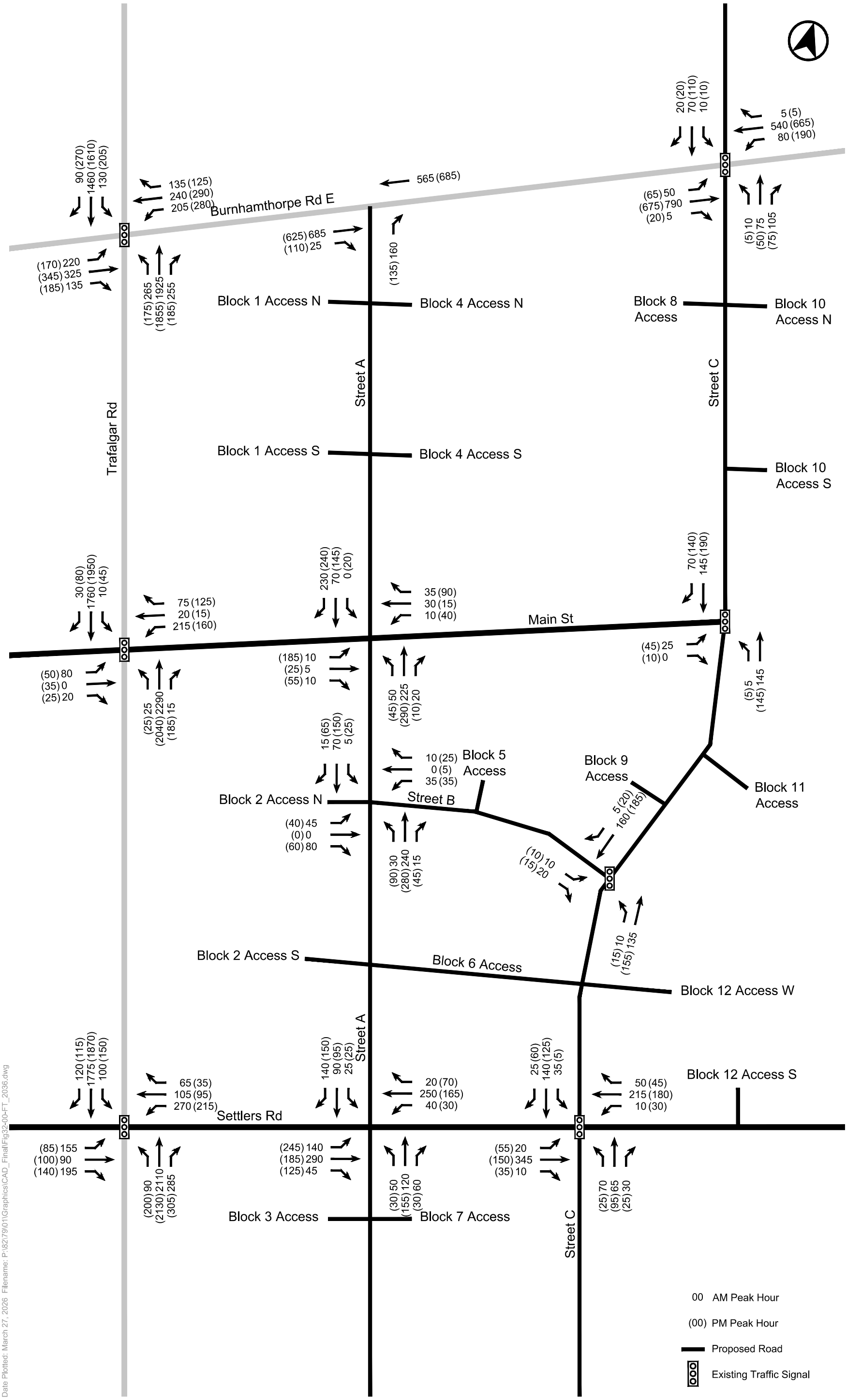


FIGURE 31 2031 FUTURE TOTAL TRAFFIC VOLUMES



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FIGURE 32 2036 FUTURE TOTAL TRAFFIC VOLUMES

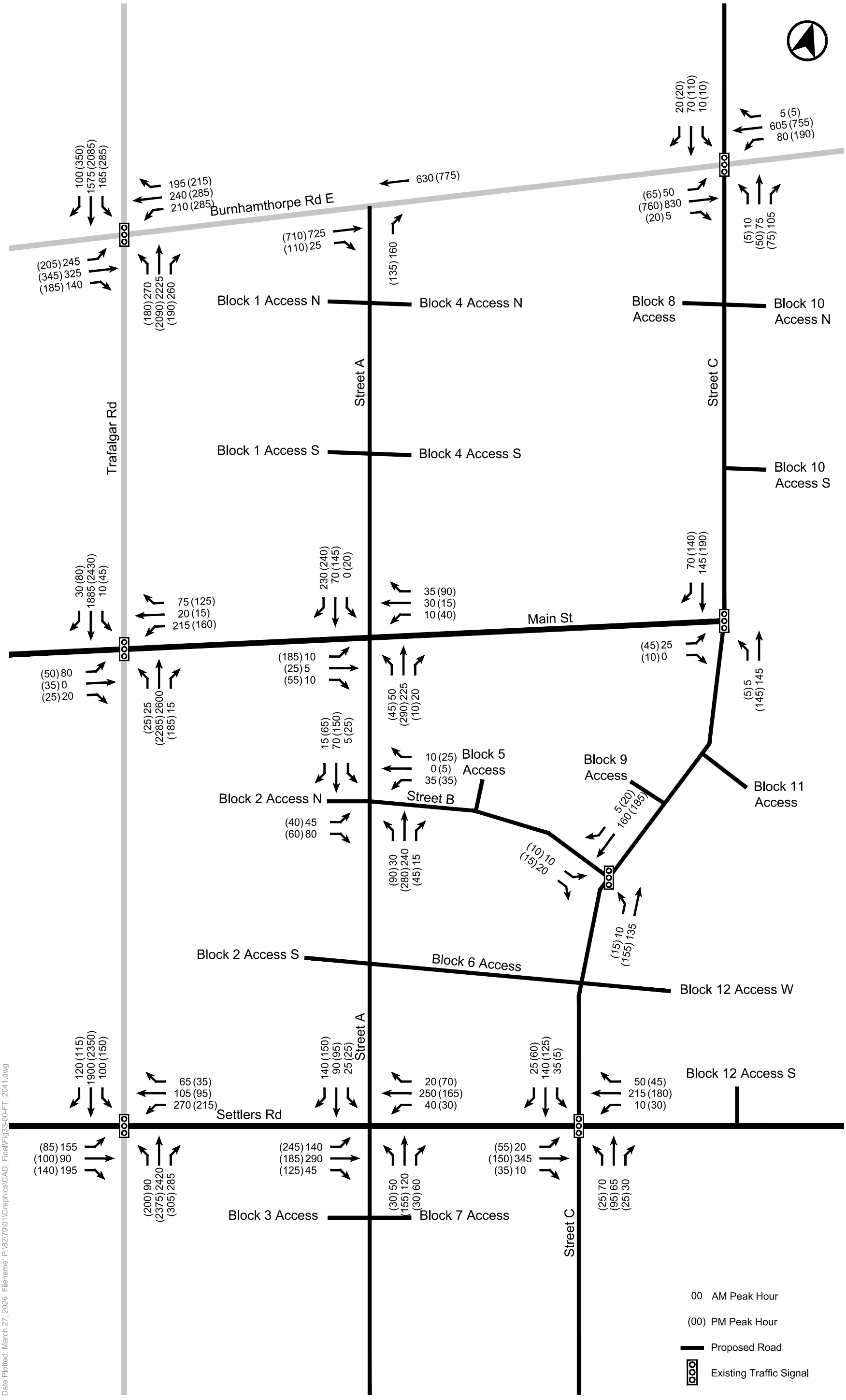


FIGURE 33 2041 FUTURE TOTAL TRAFFIC VOLUMES

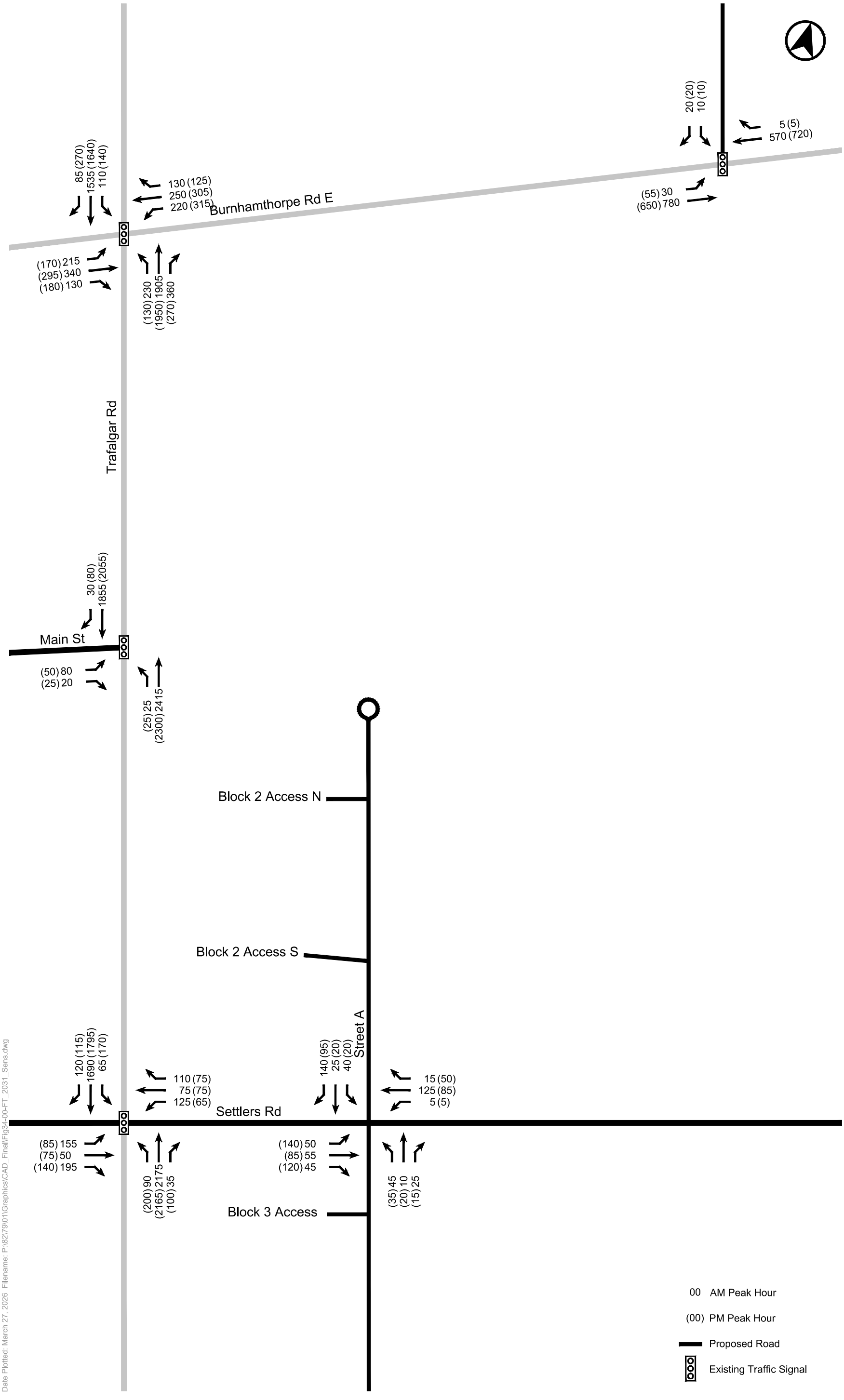


FIGURE 34 2031 FUTURE TOTAL TRAFFIC VOLUMES - SENSITIVITY WITH CORRIDOR GROWTH

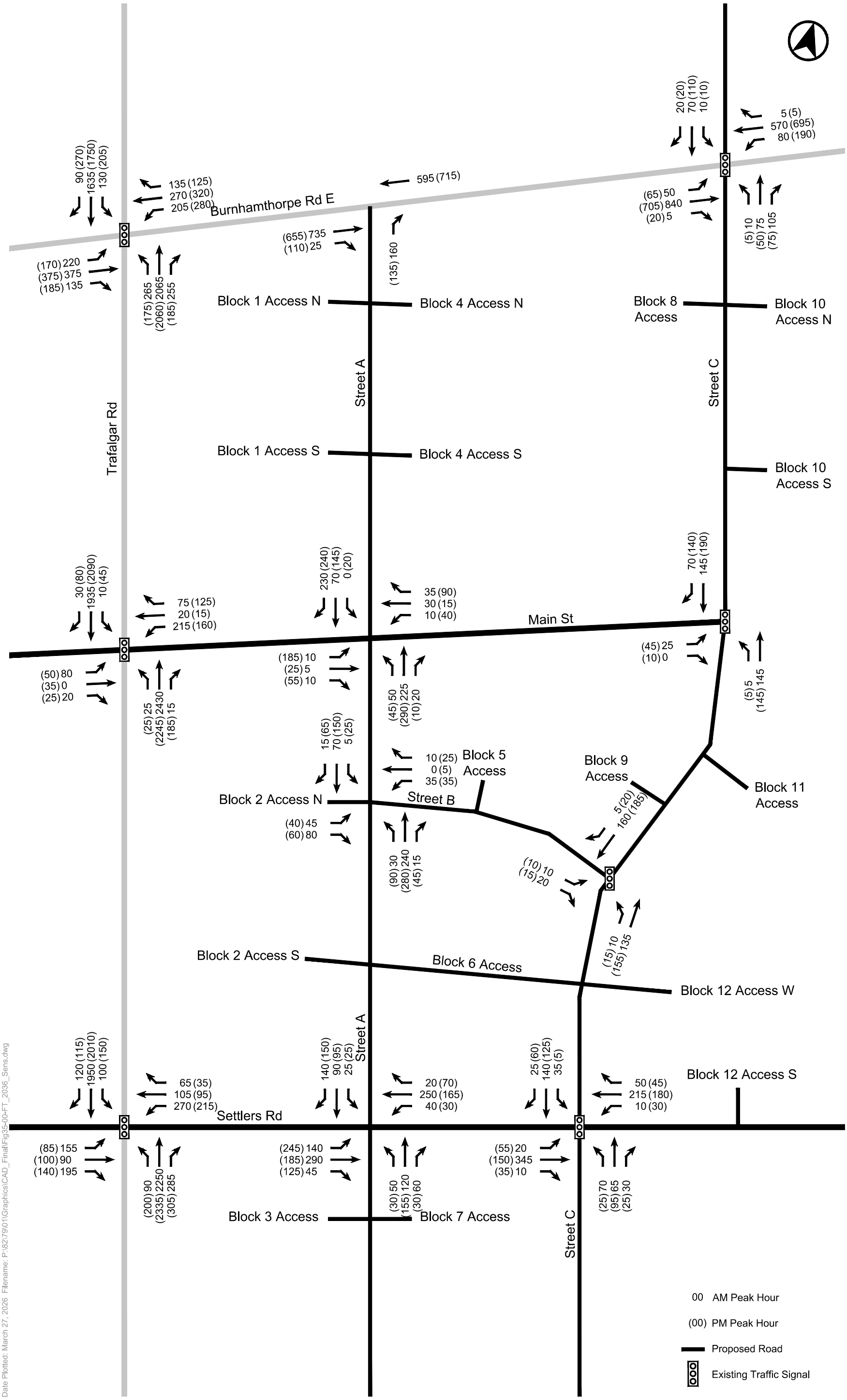


FIGURE 35 2036 FUTURE TOTAL TRAFFIC VOLUMES - SENSITIVITY WITH CORRIDOR GROWTH

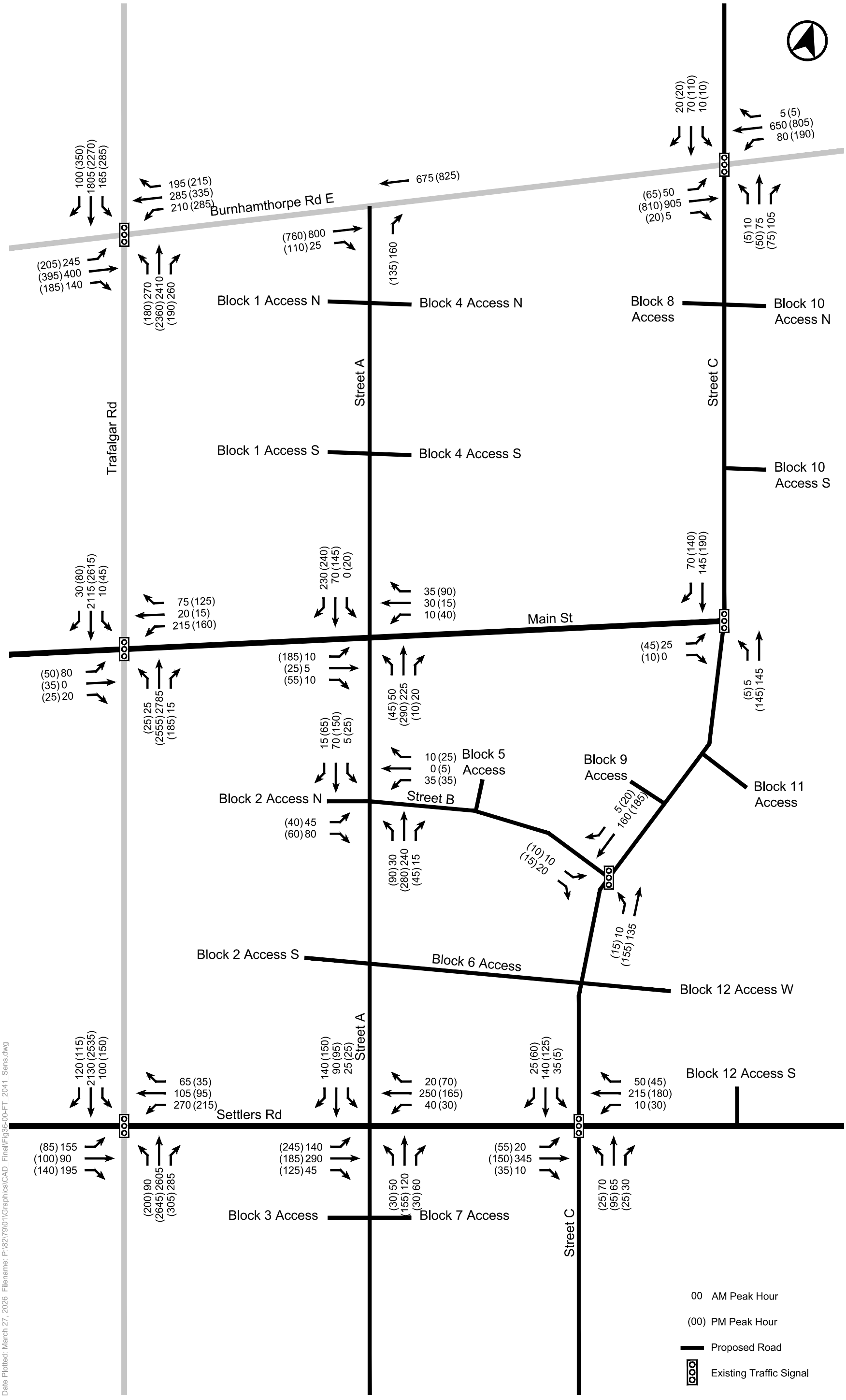


FIGURE 36 2041 FUTURE TOTAL TRAFFIC VOLUMES - SENSITIVITY WITH CORRIDOR GROWTH

11.0 TRAFFIC OPERATIONS ANALYSIS

11.1 Analysis Methodology

Traffic operations analysis for intersections within the study area have been undertaken for existing, future background, and future total conditions, in relation the phased build-out of the proposed Westerkirk development and three horizon years (2031, 2036, 2041). Intersection capacity analyses have been evaluated based on the methodology contained within the Highway Capacity Manual (HCM) 2000, as calculated by Synchro 11.0 software and in accordance with *Halton Regions Transportation Impact Study Guidelines (2015)*.

The following sections detail the analysis methodology and operations of the Synchro intersection capacity assessment. Detailed Synchro analysis worksheets are attached in **Appendix H.**

11.1.1 Signalized Intersections

For signalized intersections, the volume to capacity ratio (v/c) is an indicator of the capacity utilization for movements of an intersection where a v/c index of 1.00 indicates 'at or near theoretical capacity' conditions. 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.

HCM level of service (LOS) criteria for signalized intersections are as follows:

- LOS A: Control Delay ≤ 10s
- LOS B: 10s < Control Delay ≤ 20s
- LOS C: 20s < Control Delay ≤ 35s
- LOS D: 35s < Control Delay ≤ 55s
- LOS E: 55s < Control Delay ≤ 80s
- LOS F: Control Delay > 80s

In addition, 50th and 95th percentile queue lengths have been assessed at area signalized intersections to identify any locations where individual movement queues are projected to exceed available turning lane storage.

11.1.2 Unsignalized Intersections

Unsignalized intersection analyses will be assessed using standard capacity procedures for intersections operating under "Two-way" and "All-Way" STOP control. For unsignalized intersections, performance will be evaluated using Level of Service (LOS) results. LOS characterizes operational conditions for key movements in terms of the average delay experienced by vehicles attempting to complete a maneuver through the intersection. LOS 'A' represents a good level of service with short delays, while LOS 'F' represents a poor level of service with extended delays.

HCM level of service (LOS) criteria for unsignalized intersections are as follow:

- LOS A: Control Delay ≤ 10s
- LOS B: 10s < Control Delay ≤ 15s
- LOS C: 15s < Control Delay ≤ 25s
- LOS D: 25s < Control Delay ≤ 35s
- LOS E: 35s < Control Delay ≤ 50s
- LOS F: Control Delay > 50s

In addition, 95th percentile queue lengths have been assessed at area unsignalized intersections to identify any locations where individual movement queues are projected to exceed available turning lane storage.

11.2 Network Assumptions & Calibrations

Key analysis parameters were generally based on requirements contained within *Halton Regions Regional Guidelines for Using Synchro Version 6.0 (January 2006)*, herein referred to as the Halton Synchro Guidelines, and *Halton Regions Transportation Impact Study Guidelines (2015)*, herein referred to as the Halton TIS Guidelines, as follows:

Network Assumptions

Road network assumptions as it pertains to each horizon year are summarized in **Section 11.6.2.1**.

Base Saturation Flow Rates

Halton Synchro Guidelines specify a base saturation flow rate of 1,900 vehicles per hour per lane (vphpl) for signalized and unsignalized intersections. These default rates have been adopted for the purpose of analysis.

Heavy Vehicle Assumptions

Heavy and medium truck percentages incorporated into the analysis were based on information provided as part of intersection turning movement counts at Trafalgar Road / Burnhamthorpe Road East. Where future intersections exist, Synchro's default of 2% has been assumed for all movements.

Lost Time Adjustment

A Synchro default lost time adjustment factor of 0 seconds has been adopted at all signalized intersections within this analysis.

Existing Traffic Signal Timings

Existing traffic signal timings, phasing plans, and cycle lengths have been obtained at the intersection of Trafalgar Road / Burnhamthorpe Road East from the October 2025 CGH Report. These timings were utilized as the basis for forecasting signal timing plans at all signalized intersections within the study area.

Future Traffic Signal Timings

Existing traffic signal timings were generally maintained during the analysis of future conditions where possible, with signal timing splits optimized and protected-permissive turning phases considered as necessary, under future background and future total conditions at all intersections.

Newly proposed signalized intersections along Trafalgar Road and Burnhamthorpe Road East have adopted signal timing plans in line with the existing Trafalgar Road / Burnhamthorpe Road East traffic signal and have maintained a 120 second cycle length during peak hours. Signalized intersections proposed internal to the site and along collector or local roads have adopted 60 second cycle lengths during peak hours given their local nature, while maintaining a multiple of 120 seconds for signal coordination purposes.

With the widening of Trafalgar Road to six lanes and Burnhamthorpe Road East to four lanes under 2031 conditions and beyond, pedestrian flash don't walk times for east and westbound phases at intersections along Trafalgar Road and north and southbound phases at intersections along Burnhamthorpe Road East have been increased to accommodate the approximate future pedestrian crossing distance.

Peak Hour Factors

Peak hour factors have been extracted from existing traffic count information for the existing intersection analysis at Trafalgar Road / Burnhamthorpe Road East. Recognizing that many of the intersections assessed within the October 2025 CGH Report were projected to exceed capacity under future conditions, a peak hour factor of 1.00 has been assumed at all signalized intersections within the study area under future conditions, reflective of a busy urban condition.

Lane Utilization Factors

Under existing conditions, default Synchro lane utilization factors (LUF) have been adopted, which take into consideration the distribution of individual lane usage within each movement group.

With the widening of Trafalgar Road to six lanes under 2031 conditions, and the assumption that the curbside lanes will operate as High Occupancy Vehicle (HOV) lanes, a lane utilization factor of 0.80 has been assumed for northbound and southbound through lane groups at intersections along Trafalgar Road. This utilization factor is appropriate in that it represents 20% of total traffic utilizing the HOV lanes (for the proposed three lanes in each direction) and is consistent with the methodology outlined in the Halton TIS Guidelines.

With the planned reallocation of HOV lanes as BRT lanes under 2041 conditions, one lane has been removed from the Synchro model in each direction, and lane utilization factors have been returned to the Synchro default for two through lanes per direction.

11.3 EM4 JC7 JC9 TIS – October 2025 CGH Report

As part of the October 2025 CGH Report, planned network improvements were incorporated into the analysis for the 2031, 2036, and 2041 horizon years. **Table 28** includes the recommended improvements that pertain to the study area intersections of the subject site.

Table 28 Recommended Intersection Improvements per October 2025 CGH Report

Intersection	2031 Total Future	2036 Total Future	2041 Total Future
Trafalgar Road at Burnhamthorpe Road East (signalized)	• Permitted + protected left turn phases • EBR storage of 30m • Signal timing optimization	None	None
Burnhamthorpe Road East at Collector 4 / Street A (stop-controlled)	None	None	None
Burnhamthorpe Road East at Collector 5 / Street C (signalized)	• Signalization	None	None
Trafalgar Road at Local 6 / Main Street (signalized)	None	• EBL storage of 40m • WBL storage of 40m	None
Trafalgar Road at Settlers Road (signalized)	• Signal timing optimization • EBR storage of 40m • NBR storage of 40m • SBL storage of 70m • SBR storage of 30m	None	None
Settlers Road at Collector 4 / Street A (stop-controlled)	None	None	None
Settlers Road at Collector 6 / Street C (stop-controlled)	None	None	None

These improvements were adopted as a baseline for the purpose of this study. Further signal timing optimizations such as split optimization and protected-permissive turning phases are considered as necessary, under future background and future total conditions at all intersections within the study area. Where queue lengths are projected to exceed storage lane capacities under future conditions, further intersection storage lane improvements are recommended.

11.4 Traffic Signal Warrants

The following external and internal intersections providing access to the Westerkirk development have been contemplated as signalized intersections to support vehicular, active, and transit mobility throughout the district:

External

- Trafalgar Road / Main Street
- Trafalgar Road / Settlers Road
- Burnhamthorpe Road East / Street C

Internal

- Settlers Road / Street C
- Main Street / Street C
- Street B / Street C

Traffic signal warrants have been undertaken based on Ontario Traffic Manual (OTM) methodologies and are attached in **Appendix I**. Consistent with the OTM methodology for projected volumes using "Justification 7", each intersection has been identified as one of the following three cases for each horizon period analyses:

- **Case 1:** The traffic signal is certainly warranted – the suggested threshold for this condition is meeting 200% or more of Justifications 1 or 2.
- **Case 2:** The traffic signal might be warranted – falls between cases 1 and 3, somewhere between 100% and 199% of Justifications 1 or 2.
- **Case 3:** Signal warrant is unlikely – meets less than 100% of Justifications 1 or 2.

Based on this analysis, traffic signals at the intersections of Trafalgar Road / Main Street and Trafalgar Road / Settlers Road are projected to be certainly warranted (Case 1) under 2031 conditions and beyond. A traffic signal at the intersection of Burnhamthorpe Road East / Street C is projected to not likely be warranted (Case 3) under 2031 conditions, however, it is projected to possibly be warranted (Case 2) under 2036 conditions and beyond. Recognizing that all three intersections are proposed to permit all moves intersecting arterial road corridors, it is recommended that traffic signals be installed at each location alongside development of the EM4 JC7 JC9 Landowners Group Lands, and that reasonable underground signal related infrastructure be installed during initial construction of the intersections. Consistent with the October 2025 CGH Report, further justification for the proposed signalization of the Trafalgar Road / Main Street intersection is provided in **Section 11.4.1**.

Upon full buildout of the Site under 2036 conditions, a traffic signal at the internal intersection of Settlers Road / Street C is projected to possibly be warranted (Case 2), whereas traffic signals at the internal intersections of Main Street / Street C and Street B / Street C are projected to not likely be warranted (Case 3). While possibly not warranted, it is recommended and proposed that these intersections be constructed as signalized intersection prior to the full build-out of the Westerkirk Lands to support active mobility between residential neighbourhoods and the planned elementary and secondary schools to the southeast of the site.

Table 29 summarized the signal warrant clarification for each of the intersections and horizons assessed based upon the OTM methodology.

Table 29 Traffic Signal Warrant Summary

Intersection	OTM Classification	Recommendation
2031 (Phase 1 Site Buildout)		
Trafalgar Road / Main Street	**Case 1:** The traffic signal is certainly warranted	Proposed as traffic signals
Trafalgar Road / Settlers Road		
Burnhamthorpe Road East / Street C	**Case 3:** Signal warrant is unlikely	
2036 & 2041 (Full Site Buildout)		
Trafalgar Road / Main Street	**Case 1:** The traffic signal is certainly warranted	Proposed as traffic signals
Trafalgar Road / Settlers Road		
Burnhamthorpe Road East / Street C	**Case 2:** The traffic signal might be warranted	
Settlers Road / Street C		
Main Street / Street C	**Case 3:** Signal warrant is unlikely	
Street B / Street C		

11.4.1 Trafalgar Road / Main Street Signalization

Along Trafalgar Road, the signalized intersection of Trafalgar Road / Main Street is located 215 metres north of Settlers Road and 180 metres south of Burnhamthorpe Road East. This intersection has been signalized to better accommodate multi-modal travel including vehicular, pedestrian, and cyclist crossings at this intersection. North and southbound left turn lanes are provided along Trafalgar Road, while a westbound left turn lane is provided along Main Street.

The signal will benefit the area road network by providing a high-quality east-west pedestrian and cyclist crossing approximately midway along what would otherwise be a long (~405 metre) urbanized block between Burnhamthorpe Road East and Settlers Road, while still accommodating the progression of through traffic north and southbound along Trafalgar Road. The TAC *Geometric Design Guide for Canadian Roads* indicates that along arterial roadways within areas of intensification, a minimum of 200 metres between adjacent signalized intersections is recommended. The location of this intersection has, however, been optimized based on the surrounding development parcels it is intending to support, as the east leg of the intersection has been matched to the (confirmed) location of the west leg of the intersection.

A signal warrant has been undertaken for the development application of the Westerkirk lands on the east side of Trafalgar Road as part of this study. Based on the foregoing, a traffic signal is “certainly warranted” based on the OTM methodology and vehicular traffic volumes alone.

Furthermore, signalization of this intersection provides significant additional benefits to the area transportation network, including:

- Providing a safe pedestrian crossing mid-block along Trafalgar Road – the intersection would provide the only formal pedestrian crossing of Trafalgar Road between Burnhamthorpe Road East and Settlers Road, providing a safe pedestrian crossing opportunity along what would otherwise be a long (~405 metre) city block. As this section of Trafalgar Road continues to develop and densify, increasing numbers of residents, employees, and visitors will seek to cross the road. Long distances between formal pedestrian crossings – approximately 200 metres or more – result in lower compliance and safety issues as people choose to jaywalk rather than walk the extra distance to a signal.
- Connecting the 'main streets' of the two future communities – the east leg of Main Street, through the Westerkirk lands, is intended to be the 'main retail street' of the mixed-use, complete community that is being planned. The signal would provide east-west pedestrian connectivity between the two communities on the east and west sides of Trafalgar Road, providing a pedestrian-friendly entry point into both communities.
- Connecting to transit stops – The intersection would provide a formal crossing opportunity for pedestrians and cyclists between the future BRT stops along Trafalgar Road and the two future communities along both sides of Trafalgar Road.

The choice to implement a signal should take into consideration the needs and safety of vulnerable road users (i.e., pedestrians, cyclists, and transit riders). Similarly, minimum intersection spacing guidelines exist primarily for the purpose of ensuring vehicular traffic progression through adjacent signals but should be balanced with the needs of other travel modes as well as the needs of adjacent land uses (e.g. urban streetscapes, which attract more pedestrians and cyclists to both sides of the street).

11.5 Internal Intersection Analysis

Analysis results for area signalized and unsignalized intersections internal to the Westerkirk lands are summarized in **Table 30** and **Table 31**, respectively. Overall, all internal intersections are projected to operate within capacity and at an acceptable LOS D or better under future conditions.

Notably, as the entirety of the site is assumed to be built by the 2036 horizon, and area background and corridor growth allowances are limited to external intersections bordering Trafalgar Road and Burnhamthorpe Road East, future internal intersection operations under 2036 and 2041 scenarios are identical.

Table 30 Internal Signalized Intersection Analysis – Future Conditions

Lane Groups	2031 Future Background		2031 Future Total		2036 & 2041 Future Background		2036 & 2041 Future Total	
	v/c	LOS	v/c	LOS	v/c	LOS	v/c	LOS
Settlers Road / Street C								
EBL	Intersection does not exist under Phase 1 (2031) conditions				--		0.04 (0.10)	A (A)
EBTR					0.30 (0.13)	A (A)	0.37 (0.19)	A (A)
WBL					0.02 (0.04)	A (A)	0.02 (0.05)	A (A)
WBTR					0.20 (0.11)	A (A)	0.27 (0.23)	A (A)
NBLTR					0.33 (0.25)	B (B)	0.49 (0.37)	B (B)
SBLT					0.25 (0.26)	B (B)	0.49 (0.34)	B (B)
SBR					0.01 (0.02)	B (B)	0.02 (0.04)	B (B)
Overall					**0.30 (0.16)**	**A (A)**	**0.41 (0.27)**	**A (A)**
Main Street / Street C								
EBLR	Intersection does not exist under Phase 1 (2031) conditions				--		0.25 (0.25)	C (C)
NBL							0.01 (0.01)	A (A)
NBT					0.07 (0.05)	A (A)	0.11 (0.12)	A (A)
SBTR					0.06 (0.08)	A (A)	0.16 (0.27)	A (A)
Overall					**0.06 (0.08)**	**A (A)**	**0.17 (0.27)**	**A (A)**
Street B / Street C								
EBLR	Intersection does not exist under Phase 1 (2031) conditions				--		0.08 (0.12)	C (C)
NBLT					0.07 (0.05)	A (A)	0.12 (0.13)	A (A)
SBTR					0.06 (0.08)	A (A)	0.13 (0.16)	A (A)
Overall					**0.06 (0.08)**	**A (A)**	**0.13 (0.15)**	**A (A)**

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

Table 31 Internal Unsignalized Intersection Analysis – Future Conditions

Lane Groups	2031 Future Background		2031 Future Total		2031 & 2041 Future Background		2031 & 2041 Future Total	
	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS
Settlers Road / Street A								
EBL	0.0 (0.0)	A (A)	7.6 (7.8)	A (A)	0.0 (0.0)	A (A)	8.2 (8.3)	A (A)
WBL	0.0 (0.0)	A (A)	7.4 (7.7)	A (A)	7.9 (7.8)	A (A)	8.1 (8.0)	A (A)
NBL	9.6 (9.6)	A (A)	12.8 (13.5)	B (B)	11.1 (10.1)	B (B)	27.8 (33.1)	D (D)
NBTR	8.8 (9.1)	A (A)	9.4 (11.3)	A (B)	12.2 (10.9)	B (B)	19.0 (28.9)	C (D)
SBLTR	0.0 (0.0)	A (A)	10.9 (11.0)	B (B)	0.0 (0.0)	A (A)	22.2 (35.0)	C (D)
Main Street / Street A								
EBLTR	Intersection does not exist under Phase 1 (2031) conditions				--		8.4 (15.4)	A (C)
WBLTR							8.6 (11.9)	A (B)
NBLTR							10.1 (17.3)	B (C)
SBLTR							9.1 (18.1)	A (C)
Street A / Street B / Block 2 Access North								
EBLTR	Intersection does not exist under Phase 1 (2031) conditions				--		10.9 (14.6)	B (B)
WBLTR							13.2 (17.4)	B (C)
NBLTR							0.9 (2.2)	A (A)
SBLTR							0.5 (1.0)	A (A)

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

11.6 External Intersection Analysis

11.6.1 Existing Conditions

11.6.1.1 Road Network Assumptions

Under existing conditions, the study area encompasses the intersection of Trafalgar Road / Burnhamthorpe Road East. Trafalgar Road is an existing four-lane road with auxiliary left turn lanes at the intersection, and Burnhamthorpe Road East is an existing two-lane road with auxiliary left turn lanes at the intersection.

11.6.1.2 Trafalgar Road / Burnhamthorpe Road E

Existing intersection capacity analysis results for the intersection of Trafalgar Road / Burnhamthorpe Road East are summarized in **Table 32**.

Under existing conditions, the intersection operates at an acceptable level of service and within its theoretical capacity with overall v/c ratios of 0.57 and 0.58 during the weekday morning and afternoon peak hours, respectively. Intersection operations under future conditions are provided in **Section 11.6.2.2**.

Table 32 Trafalgar Road / Burnhamthorpe Road East – Existing Conditions

Lane Group	Existing	
	v/c	LOS
EBL	0.28 (0.23)	C (C)
EBTR	0.50 (0.41)	C (C)
WBL	0.31 (0.33)	C (C)
WBTR	0.23 (0.32)	C (C)
NBL	0.32 (0.22)	B (A)
NBTR	0.59 (0.62)	B (B)
SBL	0.18 (0.06)	A (A)
SBTR	0.52 (0.37)	A (A)
Overall	**0.57 (0.58)**	**B (B)**

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

11.6.2 Future Conditions

11.6.2.1 Road Network Assumptions

Under future conditions, road network assumptions have been assumed consistent with the October 2025 CGH Report for the 2031, 2036, and 2041 horizon years. The exception is the phasing of the Westerkirk lands, whereby only Phase 1 is projected to be built by 2031, with the full build-out planned prior to 2036. A summary of the external road network assumptions by horizon year assumed for the purposes of this analysis is provided below:

2031 Conditions

Under 2031 conditions, the following road network revisions are assumed to be completed within the study area:

- Trafalgar Road is widened to six lanes, with curbside lanes operating as HOV lanes, auxiliary left turn lanes provided all signalized intersections along the corridor, and auxiliary right turn lanes provided at the intersection with Settlers Road;
- Burnhamthorpe Road East is widened to four lanes, with auxiliary left turn lanes provided all signalized intersections along the corridor, and auxiliary right turn lanes provided at the intersection with Trafalgar Road;
- Full build-out of the external road network contemplated within the October 2025 CGH Report, including Settlers Road, Main Street (Local Road 6) west of Trafalgar Road, and Street A (Collector Road 4) and Street C (Collector Road 5) north of Burnhamthorpe Road E; and,
- Interim build-out of Street A to provide Phase 1 of the Westerkirk lands with access to Settlers Road and Trafalgar Road (via Settlers Road).

2036 Conditions

Under 2036 conditions, the road network within the study area is assumed to remain consistent with 2031 conditions with the exception of the following:

- Full build-out of the Westerkirk lands, including all internal road network connections to Trafalgar Road, Burnhamthorpe Road East, and Settlers Road.

2041 Conditions

Under 2041 conditions, the road network within the study area is assumed to remain consistent with 2036 conditions with the exception of the reallocation of the curbside HOV lanes along Trafalgar Road to BRT lanes, reducing through lane capacity for vehicles along Trafalgar Road.

Traffic operations analysis results for area external intersections under future conditions are summarized in the following sections.

11.6.2.2 Trafalgar Road / Burnhamthorpe Road E

Intersection capacity analysis results for the intersection of Trafalgar Road / Burnhamthorpe Road East under future conditions are summarized in **Table 33**.

Under 2031 future background conditions, with the widening of Trafalgar Road (including curbside HOV lanes) and Burnhamthorpe Road East, addition of 2025 – 2031 area background developments, and inclusive of the remaining EM4 JC7 JC9 Landowners Group Lands, the intersection is projected to operate at an acceptable level of service and within its theoretical capacity with overall v/c ratios of 0.93 and 1.00 during the weekday morning and afternoon peak hours, respectively. Under 2031 future total conditions, inclusive of Phase 1 of the proposed Westerkirk site, the intersection is projected to continue to operate at an acceptable level of service and within its theoretical capacity with overall v/c ratios of 0.94 and 1.00 during both peak hours. The addition of Phase 1 site traffic volumes, as demonstrated under 2031 future total conditions, has a minor impact on overall intersection operations, and can be accommodated at this intersection.

Under 2036 future background conditions, with the extension of Street A and Street C through the site, and the addition of 2032 – 2036 area background developments, the intersection is projected to continue to operate at an acceptable level of service and within its theoretical capacity with overall v/c ratios of 0.91 and 0.91 during the weekday morning and afternoon peak hours, respectively. Under 2036 future total conditions, inclusive of the full buildout of the proposed Westerkirk site, the intersection is projected to continue to operate at an acceptable level of service and within its theoretical capacity with overall v/c ratios of 0.93 and 0.98 during both peak hours. Full build-out of the Westerkirk site is projected to continue to have a minor impact on overall intersection operations and can be accommodated at this intersection.

Under 2041 conditions, with the addition of 2037 – 2041 area background developments, and the reallocation of curbside HOV lanes along Trafalgar Road to BRT lanes, the intersection is projected to exceed its theoretical capacity under future background conditions, with overall v/c ratios of 1.08 and 1.13 during the weekday morning and afternoon peak hours, respectively. Under 2041 future total conditions, with the addition of site-generated traffic, the intersection is projected to continue to exceed its theoretical capacity, with overall v/c ratios of 1.12 and 1.22 during both peak hours.

Overall, it is projected that the impact of the proposed development on the intersection is minor. While the intersection is projected to operate over its theoretical capacity under 2041 conditions, this is projected to occur regardless of the subject site.

Future total sensitivity analyses under 2031 and 2036 conditions, inclusive of corridor growth allowances in line with Halton Region and the Town of Oakville's projections are discussed in **Section 11.6.3** for comparison purposes. Recognizing that future background traffic allowances along Trafalgar Road under 2041 conditions exceed the corridors capacity following the removal of one lane in each direction for the BRT, a corridor growth allowance sensitivity has been omitted for 2041 conditions. An alternative sensitivity analysis has been conducted with consideration of a mode shift for through traffic along Trafalgar Road such that the corridor can operate within capacity, subject to no road network improvements. This sensitivity is discussed in **Section 11.6.4**.

Table 33 Trafalgar Road / Burnhamthorpe Road East – Future Conditions

Lane Group	2031 Future Background		2031 Future Total		2036 Future Background		2036 Future Total		2041 Future Background		2041 Future Total	
	v/c	LOS	v/c	LOS	v/c	LOS	v/c	LOS	v/c	LOS	v/c	LOS
EBL	0.74 (0.81)	D (E)	0.74 (0.81)	D (E)	0.75 (0.59)	D (D)	0.76 (0.57)	D (C)	0.84 (0.84)	E (E)	0.85 (0.80)	E (D)
EBT	0.55 (0.37)	D (D)	0.55 (0.37)	D (D)	0.55 (0.51)	D (D)	0.56 (0.58)	D (D)	0.55 (0.51)	D (D)	0.56 (0.58)	D (D)
EBR	0.08 (0.18)	D (D)	0.08 (0.22)	D (D)	0.09 (0.19)	D (D)	0.09 (0.23)	D (D)	0.09 (0.25)	D (D)	0.09 (0.27)	D (D)
WBL	0.87 (0.98)	E (F)	0.87 (0.98)	E (F)	0.81 (0.88)	D (E)	0.82 (0.94)	D (E)	0.83 (1.08)	E (F)	0.84 (1.16)	E (F)
WBT	0.43 (0.26)	D (C)	0.43 (0.26)	D (C)	0.42 (0.51)	D (D)	0.43 (0.47)	D (D)	0.42 (0.52)	D (D)	0.44 (0.47)	D (D)
WBR	0.08 (0.08)	D (C)	0.08 (0.08)	D (C)	0.09 (0.08)	D (D)	0.09 (0.08)	D (D)	0.26 (0.35)	D (D)	0.27 (0.33)	D (D)
NBL	0.79 (0.71)	D (C)	0.80 (0.74)	D (D)	0.80 (0.72)	D (C)	0.83 (0.94)	D (E)	0.85 (0.74)	D (D)	0.98 (0.97)	F (F)
NBT(R)	0.95 (0.97)	C (D)	0.96 (0.98)	D (D)	0.95 (0.96)	C (D)	0.97 (1.00)	D (D)	1.20 (1.19)	F (F)	1.23 (1.23)	F (F)
NBR	--								0.27 (0.18)	B (B)	0.27 (0.18)	B (B)
SBL	0.59 (0.80)	C (D)	0.59 (0.80)	C (D)	0.59 (0.67)	C (C)	0.70 (0.94)	C (E)	0.78 (0.93)	D (E)	0.88 (1.20)	E (F)
SBT(R)	0.75 (0.85)	C (C)	0.76 (0.87)	C (C)	0.78 (0.87)	C (C)	0.82 (0.90)	C (C)	0.98 (1.14)	D (F)	0.99 (1.17)	D (F)
SBR	--								0.06 (0.37)	B (B)	0.06 (0.38)	B (B)
Overall	**0.93 (1.00)**	**C (D)**	**0.94 (1.00)**	**D (D)**	**0.91 (0.91)**	**C (D)**	**0.93 (0.98)**	**D (D)**	**1.08 (1.13)**	**E (F)**	**1.12 (1.22)**	**E (F)**

Notes:

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



11.6.2.3 Trafalgar Road / Main Street

Intersection capacity analysis results for the intersection of Trafalgar Road / Main Street are summarized in **Table 34**.

Under 2031 and 2036 future background and future total conditions, with the widening of Trafalgar Road (including curbside HOV lanes) and Burnhamthorpe Road East, and the phased addition of area background developments and site traffic volumes, the intersection is projected to operate within its theoretical capacity, and site traffic can be accommodated at this intersection.

As noted in **Section 11.6.2.2**, the Trafalgar Road corridor is projected to operate over its theoretical capacity under 2041 conditions, regardless of the site. As such, the intersection is projected to approach or exceed its theoretical capacity with overall v/c ratios of 1.07 and 0.92 under future total conditions during the weekday morning and afternoon peak hours, respectively. Note that during the weekday morning peak hour, the northbound shared through-right lane group is expected to operate above capacity, with a v/c ratio of 1.15.

Future total sensitivity analyses under 2031 and 2036 conditions, inclusive of corridor growth allowances in line with Halton Region and the Town of Oakville's projections are discussed in **Section 11.6.3** for comparison purposes. Recognizing that traffic volumes along Trafalgar Road at this intersection would be capacity constrained to the north and south by the neighbouring signalized intersections at Burnhamthorpe Road East and Settlers Road under 2041 conditions, it is not possible for north and southbound approach volumes at this intersection to meet that which is assumed under base future total conditions. A sensitivity is discussed in **Section 11.6.4** to assess a condition in which the Trafalgar Road corridor operates within capacity under 2041 conditions, in consideration of a mode shift for through traffic, and no road network improvements.

Table 34 Trafalgar Road / Main Street – Future Conditions

Lane Group	2031 Future Background		2031 Future Total		2036 Future Background		2036 Future Total		2041 Future Background		2041 Future Total	
	v/c	LOS	v/c	LOS	v/c	LOS	v/c	LOS	v/c	LOS	v/c	LOS
EBL	--				0.44 (0.32)	D (D)	0.51 (0.24)	D (D)	0.45 (0.33)	D (D)	0.52 (0.25)	D (D)
EBLR	0.39 (0.32)	D (D)	0.39 (0.33)	D (D)	--							
EBTR	--				0.01 (0.02)	C (D)	0.01 (0.13)	D (D)	0.01 (0.02)	D (D)	0.01 (0.18)	D (D)
WBL					--		0.68 (0.68)	D (D)	--		0.71 (0.69)	D (D)
WBTR							0.10 (0.17)	C (D)			0.24 (0.47)	C (D)
NBL	0.23 (0.32)	A (A)	0.24 (0.34)	A (A)	0.20 (0.21)	A (A)	0.22 (0.23)	B (B)	0.24 (0.37)	A (B)	0.36 (0.37)	B (B)
NBT(R)	0.69 (0.63)	A (A)	0.70 (0.63)	A (A)	0.70 (0.62)	A (A)	0.90 (0.81)	C (B)	0.99 (0.85)	C (B)	1.15 (0.91)	F (B)
NBR	--				--		--		--		0.01 (0.16)	A (A)
SBL							0.11 (0.34)	B (B)			0.14 (0.67)	A (D)
SBT(R)	0.53 (0.60)	A (A)	0.54 (0.61)	A (A)	0.61 (0.67)	A (A)	0.72 (0.72)	B (B)	0.72 (0.90)	A (B)	0.84 (0.98)	B (C)
SBR	--				--				0.02 (0.06)	A (A)	0.02 (0.07)	A (A)
Overall	**0.64 (0.59)**	**A (A)**	**0.65 (0.59)**	**A (A)**	**0.73 (0.63)**	**A (A)**	**0.87 (0.76)**	**C (B)**	**0.95 (0.83)**	**B (B)**	**1.07 (0.92)**	**E (C)**

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

11.6.2.4 Trafalgar Road / Settlers Road

Intersection capacity analysis results for the intersection of Trafalgar Road / Settlers Road are summarized in **Table 35**.

Under 2031 and 2036 future background and future total conditions, with the widening of Trafalgar Road (including curbside HOV lanes) and Burnhamthorpe Road East, and the phased addition of area background developments and site traffic volumes, the intersection is projected to operate within its theoretical capacity, and site traffic can be accommodated at this intersection.

Under 2041 conditions, with the addition of area background developments, and the reallocation of curbside HOV lanes along Trafalgar Road to BRT lanes, the intersection is projected to exceed its theoretical capacity under future background conditions, with overall v/c ratios of 1.07 and 0.99 during the weekday morning and afternoon peak hours, respectively. Note that although the overall intersection v/c ratio is within its theoretical capacity during the weekday afternoon peak hour, the north and southbound approaches are expected to operate well above their theoretical capacity. Under 2041 future total conditions, with the addition of site-generated traffic, the intersection is projected to continue to exceed its theoretical capacity, with overall v/c ratios of 1.16 and 1.15 during both peak hours.

Future total sensitivity analyses under 2031 and 2036 conditions, inclusive of corridor growth allowances in line with Halton Region and the Town of Oakville's projections are discussed in **Section 11.6.3** for comparison purposes. As noted in **Section 11.6.2.2**, the Trafalgar Road corridor is projected to operate over its theoretical capacity under 2041 conditions, regardless of the site. A sensitivity is discussed in **Section 11.6.4** to assess a condition in which the Trafalgar Road corridor operates within capacity under 2041 conditions, in consideration of a mode shift for through traffic, and no road network improvements.

Table 35 Trafalgar Road / Settlers Road – Future Conditions

Lane Group	2031 Future Background		2031 Future Total		2036 Future Background		2036 Future Total		2041 Future Background		2041 Future Total	
	v/c	LOS	v/c	LOS	v/c	LOS	v/c	LOS	v/c	LOS	v/c	LOS
EBL	0.67 (0.43)	D (D)	0.70 (0.49)	D (D)	0.69 (0.43)	D (D)	0.70 (0.45)	D (D)	0.69 (0.43)	D (D)	0.70 (0.45)	D (D)
EBT	0.14 (0.22)	C (D)	0.14 (0.25)	C (D)	0.26 (0.24)	D (D)	0.25 (0.34)	D (D)	0.26 (0.24)	D (D)	0.25 (0.34)	D (D)
EBR	0.13 (0.09)	C (D)	0.14 (0.09)	C (D)	0.13 (0.09)	D (D)	0.24 (0.09)	D (D)	0.13 (0.09)	D (D)	0.24 (0.09)	D (D)
WBL	0.07 (--)	C (--)	0.34 (0.32)	C (D)	0.26 (0.17)	C (C)	0.76 (0.68)	D (D)	0.26 (0.17)	C (C)	0.76 (0.68)	D (D)
WBTR	0.24 (0.32)	C (D)	0.27 (0.41)	C (D)	0.25 (0.21)	C (C)	0.29 (0.25)	C (C)	0.25 (0.21)	C (C)	0.29 (0.25)	C (C)
NBL	0.54 (0.73)	B (C)	0.57 (0.74)	C (C)	0.57 (0.79)	B (D)	0.57 (0.82)	C (D)	0.57 (1.01)	C (F)	0.57 (1.04)	C (F)
NBT	0.86 (0.78)	C (B)	0.95 (0.79)	C (B)	0.94 (0.85)	C (C)	0.97 (0.95)	D (C)	1.36 (1.21)	F (F)	1.41 (1.34)	F (F)
NBR	--		0.02 (0.08)	B (A)	0.09 (0.02)	B (B)	0.32 (0.33)	B (B)	0.09 (0.02)	B (B)	0.32 (0.34)	B (B)
SBL	0.36 (0.56)	B (B)	0.41 (0.68)	C (C)	0.54 (0.73)	C (C)	0.55 (0.78)	C (D)	0.54 (0.73)	C (C)	0.55 (0.78)	C (D)
SBT	0.68 (0.69)	B (B)	0.72 (0.69)	C (B)	0.69 (0.80)	C (C)	0.80 (0.89)	C (C)	0.93 (1.21)	C (F)	1.08 (1.33)	E (F)
SBR	0.09 (0.10)	B (B)	0.09 (0.10)	B (B)	0.09 (0.09)	B (B)	0.09 (0.09)	B (B)	0.09 (0.09)	B (B)	0.09 (0.09)	B (B)
Overall	**0.80 (0.73)**	**C (B)**	**0.81 (0.74)**	**C (C)**	**0.81 (0.76)**	**C (C)**	**0.90 (0.91)**	**C (C)**	**1.07 (0.99)**	**F (F)**	**1.16 (1.15)**	**F (F)**

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



11.6.2.5 Burnhamthorpe Road East / Street C

Intersection capacity analysis results for the intersection of Burnhamthorpe Road East / Street C are summarized in **Table 36**.

Under 2031, 2036, and 2041 future background and future total conditions, with the widening of Trafalgar Road (including curbside HOV/BRT lanes) and Burnhamthorpe Road East, and the phased addition of area background developments and site traffic volumes, the intersection is projected to operate within its theoretical capacity, and site traffic can be accommodated at this intersection.

Future total sensitivity analyses under 2031 and 2036 conditions, inclusive of corridor growth allowances in line with Halton Region and the Town of Oakville's projections are discussed in **Section 11.6.3** for comparison purposes.

11.6.2.6 Burnhamthorpe Road East / Street A

Intersection capacity analysis results for the intersection of Burnhamthorpe Road East / Street A are summarized in **Table 37**.

Under 2031, 2036, and 2041 future background and future total conditions, with the widening of Trafalgar Road (including curbside HOV/BRT lanes) and Burnhamthorpe Road East, and phased addition of area background developments and site traffic volumes, the intersection is projected to operate within its theoretical capacity, and site traffic can be accommodated at this intersection.

Future total sensitivity analyses under 2031 and 2036 conditions, inclusive of corridor growth allowances in line with Halton Region and the Town of Oakville's projections are discussed in **Section 11.6.3** for comparison purposes.

Table 36 Burnhamthorpe Road East / Street C – Future Conditions

Lane Group	2031 Future Background		2031 Future Total		2036 Future Background		2036 Future Total		2041 Future Background		2041 Future Total	
	v/c	LOS	v/c	LOS	v/c	LOS	v/c	LOS	v/c	LOS	v/c	LOS
EBL	0.06 (0.12)	A (A)	0.06 (0.12)	A (A)	0.07 (0.15)	A (A)	0.14 (0.23)	A (B)	0.07 (0.17)	A (A)	0.14 (0.25)	A (B)
EBT(R)	0.31 (0.26)	A (A)	0.31 (0.26)	A (A)	0.37 (0.35)	A (A)	0.48 (0.50)	A (B)	0.39 (0.39)	A (A)	0.51 (0.55)	A (B)
WBL	--				0.05 (0.11)	A (A)	0.30 (0.38)	A (A)	0.06 (0.11)	A (A)	0.31 (0.41)	A (A)
WBTR	0.23 (0.29)	A (A)	0.23 (0.29)	A (A)	0.28 (0.30)	A (A)	0.34 (0.30)	A (A)	0.31 (0.33)	A (A)	0.37 (0.34)	A (A)
NBL	--				--		0.03 (0.02)	B (B)	--		0.03 (0.02)	B (B)
NBTR					0.20 (0.20)	B (B)	0.29 (0.25)	B (C)	0.21 (0.22)	B (C)	0.29 (0.26)	B (C)
SBL					0.05 (0.06)	B (B)	0.03 (0.05)	B (B)	0.05 (0.06)	B (C)	0.03 (0.05)	B (C)
SBLR	0.08 (0.08)	C (C)	0.08 (0.08)	C (C)	--							
SBTR	--				0.20 (0.27)	B (C)	0.16 (0.40)	B (C)	0.20 (0.29)	B (C)	0.16 (0.40)	B (C)
Overall	**0.28 (0.26)**	**A (A)**	**0.28 (0.26)**	**A (A)**	**0.33 (0.34)**	**A (A)**	**0.41 (0.45)**	**A (B)**	**0.34 (0.38)**	**A (A)**	**0.43 (0.49)**	**A (B)**

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

Table 37 Burnhamthorpe Road East / Street A – Future Conditions

Lane Group	2031 Future Background		2031 Future Total		2036 Future Background		2036 Future Total		2041 Future Background		2041 Future Total	
	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS
NBR	Intersection does not exist under Phase 1 (2031) conditions				9.9 (9.7)	A (A)	10.6 (10.4)	B (B)	10.1 (10.1)	B (B)	10.8 (10.8)	B (B)

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

11.6.3 Future Corridor Growth Sensitivity

Intersection capacity analysis results for all external intersections within the study area under 2031, 2036, and 2041 conditions are presented in **Section 11.6.2**. Results highlight that all intersections operate with appropriate levels of service and within capacity under 2031 and 2036 conditions, and that intersections along the Trafalgar Road corridor exceed theoretical capacity under 2041 conditions. The Trafalgar Road corridor is projected to exceed capacity irrespective of the proposed site, as a result of the reallocation of planned curbside HOV lanes as BRT lanes, and no adjustments to mode split assumptions from 2031 or 2036.

Recognizing that future background assumptions adopted by BA Group differ from the October 2025 CGH Report, which included an allowance for corridor growth rates in line with Halton Region and the Town of Oakville's projections, a sensitivity analysis has been prepared under 2031 and 2036 conditions for comparison purposes. A corridor growth sensitivity has been omitted under 2041 conditions, as future background traffic allowances along Trafalgar Road under 2041 conditions exceed the corridors capacity following the removal of one lane in each direction for the BRT. An alternative sensitivity analysis has been conducted under 2041 conditions with consideration of a mode shift for through traffic along Trafalgar Road such that the corridor can operate within capacity, subject to no road network improvements. This sensitivity is discussed in **Section 11.6.4**.

As noted in **Section 10.3.3**, it is BA Group's opinion that general corridor growth rates are not necessary, as area background developments already represents a significant growth along the Trafalgar Road and Burnhamthorpe Road East corridors. Regional model forecasts are likely to double count growth as it pertains to area background developments considered. Notwithstanding, traffic operations analysis results for area external intersections under 2031 and 2036 horizon years are summarized in the following sections.

11.6.3.1 Trafalgar Road / Burnhamthorpe Road E

Intersection capacity analysis results for the intersection of Trafalgar Road / Burnhamthorpe Road East are summarized in **Table 38**.

Under 2031 base future total conditions, the intersection is projected to operate at an acceptable level of service and within its theoretical capacity with overall v/c ratios of 0.94 and 1.00 during the weekday morning and afternoon peak hours, respectively. Under 2036 base future total conditions, the intersection is projected to continue to operate at an acceptable level of service and within its theoretical capacity with overall v/c ratios of 0.93 and 0.98 during both peak hours. As noted in **Section 11.6.3.1**, site traffic volumes have a minor impact on overall intersection operations and can be accommodated at this intersection.

Under 2031 sensitivity future total conditions, with the addition of City and Regional corridor growth allowances in addition to planned area background development related traffic volumes, the intersection is projected to operate with overall v/c ratios of 0.98 and 1.05 during the weekday morning and afternoon peak hours, respectively. Note that the northbound shared through-right lane group is expected to operate above capacity during both peak hours, with v/c ratios of 1.01 and 1.05, respectively.

Under 2036 sensitivity future total conditions, the intersection is projected to operate with overall v/c ratios of 0.98 and 1.05 during the weekday morning and afternoon peak hours, respectively. Note that the northbound shared through-right lane group is expected to operate above capacity during both peak hours, with v/c ratios of 1.04 and 1.06, respectively. Furthermore, the westbound left and southbound left lane groups are expected to operate above capacity during the weekday afternoon peak hour, with v/c ratios of 1.03 and 1.02, respectively.

Notwithstanding, the impact of site traffic on intersection volumes under 2031 and 2036 future total conditions is in the order of 0.5% – 1.5% and 2% – 3%, respectively, during the peak hours. If City and Regional projected corridor growth rates were to occur in addition to planned area background development related traffic volumes, the intersection is projected to operate above theoretical capacity under 2031 conditions and beyond, irrespective of the site. It is reasonable to assume that as the intersection approaches capacity under future conditions, some peak period drivers traveling along Trafalgar Road will be 'displaced'; either to alternative routes of travel, alternative travel modes, or to travel outside of peak hours.

Table 38 Trafalgar Road / Burnhamthorpe Road East – Future Corridor Growth Sensitivity

Lane Group	2031 Future Total		2031 Future Total (Sensitivity)		2036 Future Total		2036 Future Total (Sensitivity)	
	v/c	LOS	v/c	LOS	v/c	LOS	v/c	LOS
EBL	0.74 (0.81)	D (E)	0.75 (0.82)	D (E)	0.76 (0.57)	D (C)	0.77 (0.61)	D (D)
EBT	0.55 (0.37)	D (D)	0.58 (0.39)	D (D)	0.56 (0.58)	D (D)	0.61 (0.61)	D (D)
EBR	0.08 (0.22)	D (D)	0.08 (0.22)	D (D)	0.09 (0.23)	D (D)	0.09 (0.25)	D (D)
WBL	0.87 (0.98)	E (F)	0.89 (1.00)	E (F)	0.82 (0.94)	D (E)	0.86 (1.03)	E (F)
WBT	0.43 (0.26)	D (C)	0.44 (0.27)	D (C)	0.43 (0.47)	D (D)	0.46 (0.51)	D (D)
WBR	0.08 (0.08)	D (C)	0.08 (0.08)	D (C)	0.09 (0.08)	D (D)	0.09 (0.08)	D (D)
NBL	0.80 (0.74)	D (D)	0.84 (0.74)	D (D)	0.83 (0.94)	D (E)	0.84 (0.95)	D (E)
NBTR	0.96 (0.98)	D (D)	1.01 (1.05)	D (E)	0.97 (1.00)	D (D)	1.04 (1.06)	E (E)
SBL	0.59 (0.80)	C (D)	0.59 (0.80)	C (D)	0.70 (0.94)	C (E)	0.70 (1.02)	C (F)
SBTR	0.76 (0.87)	C (C)	0.82 (0.91)	C (C)	0.82 (0.90)	C (C)	0.93 (0.95)	D (D)
Overall	**0.94 (1.00)**	**D (D)**	**0.98 (1.05)**	**D (D)**	**0.93 (0.98)**	**D (D)**	**0.98 (1.05)**	**D (D)**

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

11.6.3.2 Trafalgar Road / Main Street

Intersection capacity analysis results for the intersection of Trafalgar Road / Main Street are summarized in **Table 39**.

Under 2031 and 2036 future total conditions, the intersection is projected to operate within its theoretical capacity, irrespective of corridor growth allowances.

Table 39 Trafalgar Road / Main Street – Future Corridor Growth Sensitivity

Lane Group	2031 Future Total		2031 Future Total (Sensitivity)		2036 Future Total		2036 Future Total (Sensitivity)	
	v/c	LOS	v/c	LOS	v/c	LOS	v/c	LOS
EBL	--				0.51 (0.24)	D (D)	0.51 (0.25)	D (D)
EBLR	0.39 (0.33)	D (D)	0.39 (0.35)	D (D)	--			
EBTR	--				0.01 (0.13)	D (D)	0.01 (0.13)	D (D)
WBL					0.68 (0.68)	D (D)	0.68 (0.69)	D (D)
WBTR					0.10 (0.17)	C (D)	0.10 (0.18)	C (D)
NBL	0.24 (0.34)	A (A)	0.29 (0.36)	A (B)	0.22 (0.23)	B (B)	0.22 (0.23)	B (B)
NBTR	0.70 (0.63)	A (A)	0.72 (0.67)	A (A)	0.90 (0.81)	C (B)	0.95 (0.88)	C (B)
SBL	--				0.11 (0.34)	B (B)	0.11 (0.34)	C (B)
SBTR	0.54 (0.61)	A (A)	0.57 (0.63)	A (A)	0.72 (0.72)	B (B)	0.79 (0.77)	B (B)
Overall	**0.65 (0.59)**	**A (A)**	**0.67 (0.63)**	**A (A)**	**0.87 (0.76)**	**C (B)**	**0.91 (0.81)**	**C (B)**

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

11.6.3.3 Trafalgar Road / Settlers Road

Intersection capacity analysis results for the intersection of Trafalgar Road / Settlers Road are summarized in **Table 40**.

Under 2031 base future total conditions, the intersection is projected to operate at an acceptable level of service and within its theoretical capacity with overall v/c ratios of 0.81 and 0.74 during the weekday morning and afternoon peak hours, respectively. Under 2036 base future total conditions, the intersection is projected to continue to operate at an acceptable level of service and within its theoretical capacity with overall v/c ratios of 0.90 and 0.91 during both peak hours. Site traffic can be accommodated at this intersection.

Under 2031 future total conditions, with the addition of City and Regional corridor growth allowances in addition to area background development related traffic volumes, the intersection is projected to continue to operate at an acceptable level of service and within its theoretical capacity with overall v/c ratios of 0.84 and 0.77 during the weekday morning and afternoon peak hours, respectively. Furthermore, under 2036 future total conditions, the intersection is projected to approach its theoretical capacity with overall v/c ratios of 0.94 and 0.97 during the morning and afternoon peak hours, respectively. Note that the northbound through lane group is expected to operate above capacity during both peak hours, with a v/c ratio of 1.04.

Notwithstanding, the impact of site traffic on the critical northbound through lane group under 2036 future total conditions is in the order of 1% – 1.5% during both peak hours. If City and Regional projected corridor growth rates were to occur in addition to planned area background development related traffic volumes, the intersection is projected to operate at or near capacity under 2036 conditions, irrespective of the site. As noted in **Section 11.6.3.1**, it is reasonable to assume that as the intersection approaches capacity under future conditions, some peak period drivers traveling along Trafalgar Road will be ‘displaced’; either to alternative routes of travel, alternative travel modes, or to travel outside of peak hours.

Table 40 Trafalgar Road / Settlers Road – Future Corridor Growth Sensitivity

Lane Group	2031 Future Total		2031 Future Total (Sensitivity)		2036 Future Total		2036 Future Total (Sensitivity)	
	v/c	LOS	v/c	LOS	v/c	LOS	v/c	LOS
EBL	0.70 (0.49)	D (D)	0.69 (0.49)	D (D)	0.70 (0.45)	D (D)	0.70 (0.45)	D (D)
EBT	0.14 (0.25)	C (D)	0.14 (0.25)	C (D)	0.25 (0.34)	D (D)	0.25 (0.34)	D (D)
EBR	0.14 (0.09)	C (D)	0.14 (0.09)	C (D)	0.24 (0.09)	D (D)	0.24 (0.09)	D (D)
WBL	0.34 (0.32)	C (D)	0.34 (0.32)	C (D)	0.76 (0.68)	D (D)	0.76 (0.68)	D (D)
WBTR	0.27 (0.41)	C (D)	0.27 (0.42)	C (D)	0.29 (0.25)	C (C)	0.29 (0.25)	C (C)
NBL	0.57 (0.74)	C (C)	0.57 (0.74)	C (C)	0.57 (0.82)	C (D)	0.57 (0.82)	C (D)
NBT	0.95 (0.79)	C (B)	0.99 (0.85)	D (C)	0.97 (0.95)	D (C)	1.04 (1.04)	E (E)
NBR	0.02 (0.08)	B (A)	0.02 (0.08)	B (A)	0.32 (0.33)	B (B)	0.32 (0.34)	B (B)
SBL	0.41 (0.68)	C (C)	0.41 (0.68)	C (C)	0.55 (0.78)	C (D)	0.55 (0.78)	C (D)
SBT	0.72 (0.69)	C (B)	0.78 (0.72)	C (B)	0.80 (0.89)	C (C)	0.88 (0.96)	C (D)
SBR	0.09 (0.10)	B (B)	0.09 (0.10)	B (B)	0.09 (0.09)	B (B)	0.09 (0.09)	B (B)
Overall	**0.81 (0.74)**	**C (C)**	**0.84 (0.77)**	**C (C)**	**0.90 (0.91)**	**C (C)**	**0.94 (0.97)**	**D (D)**

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

11.6.3.4 Burnhamthorpe Road East / Street C

Intersection capacity analysis results for the intersection of Burnhamthorpe Road East / Street C are summarized in **Table 41**. Under 2031 and 2036 future total conditions, the intersection is projected to operate within its theoretical capacity, irrespective of corridor growth allowances.

Table 41 Burnhamthorpe Road East / Street C – Future Corridor Growth Sensitivity

Lane Group	2031 Future Total		2031 Future Total (Sensitivity)		2036 Future Total		2036 Future Total (Sensitivity)	
	v/c	LOS	v/c	LOS	v/c	LOS	v/c	LOS
EBL	0.06 (0.12)	A (A)	0.06 (0.12)	A (A)	0.14 (0.23)	A (B)	0.14 (0.24)	A (B)
EBT(R)	0.31 (0.26)	A (A)	0.32 (0.27)	A (A)	0.48 (0.50)	A (B)	0.51 (0.52)	A (B)
WBL	--				0.30 (0.38)	A (A)	0.32 (0.39)	A (A)
WBTR	0.23 (0.29)	A (A)	0.24 (0.30)	A (A)	0.34 (0.30)	A (A)	0.35 (0.31)	A (A)
NBL	--				0.03 (0.02)	B (B)	0.03 (0.02)	B (B)
NBTR					0.29 (0.25)	B (C)	0.29 (0.25)	B (C)
SBL					0.03 (0.05)	B (B)	0.03 (0.05)	B (B)
SBLR	0.08 (0.08)	C (C)	0.08 (0.08)	C (C)	--			
SBTR	--				0.16 (0.40)	B (C)	0.16 (0.40)	B (C)
Overall	**0.28 (0.26)**	**A (A)**	**0.29 (0.27)**	**A (A)**	**0.41 (0.45)**	**A (B)**	**0.43 (0.46)**	**A (B)**

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

11.6.3.5 Burnhamthorpe Road East / Street A

Intersection capacity analysis results for the intersection of Burnhamthorpe Road East / Street A are summarized in **Table 42**. Under 2031 and 2036 future total conditions, the intersection is projected to operate within its theoretical capacity, irrespective of corridor growth allowances.

Table 42 Burnhamthorpe Road East / Street A – Future Corridor Growth Sensitivity

Lane Group	2031 Future Total		2031 Future Total (Sensitivity)		2036 Future Total		2036 Future Total (Sensitivity)	
	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS
NBR	Intersection does not exist under Phase 1 (2031) conditions				10.6 (10.4)	B (B)	10.5 (10.3)	B (B)

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

11.6.4 Future Mode Shift Sensitivity

Intersection capacity analysis results for all external intersections within the study area under 2031, 2036 and 2041 conditions are presented in **Section 11.6.2**. Results highlight that all intersections operate with appropriate levels of service and within capacity under 2031 and 2036 conditions, and that intersections along the Trafalgar Road corridor exceed theoretical capacity under 2041 conditions. The Trafalgar Road corridor is projected to exceed capacity irrespective of the proposed site, as a result of the reallocation of planned curbside HOV lanes as BRT lanes, and no adjustments to mode split assumptions from 2031 or 2036.

Recognizing that future traffic allowances along Trafalgar Road under 2041 conditions exceed the corridors capacity following the removal of a lane in each direction for the BRT, an alternative sensitivity analysis has been conducted that considers a mode shift for through traffic along Trafalgar Road such that the corridor can operate within capacity, subject to no road network traffic capacity improvements.

As part of the sensitivity analysis, the decrease in vehicular trips is assumed to result in an increase in alternatives modes of transportation (e.g. increased carpooling, transit, cycling, and walking trips). Furthermore, it is expected that as major intersections along the corridor reach capacity, some peak period drivers will be 'displaced'; either to alternative routes of travel, alternative travel modes (e.g. the proposed BRT along Trafalgar Road), or to travel outside of peak hours.

It is also important to note that, although vehicle travel demand forecasts for the site are based on trip generation rates that generally reflect the site's future condition, background development traffic considered in this analysis are based on trip generation assumptions made within their respective Transportation Impact Studies, many of which are more reflective of existing area travel behaviors (i.e., a heavier reliance on vehicular travel). It is reasonable to assume that these behaviors, namely the decision to travel during peak times by personal vehicle, would change in response to available road network capacity. This general area travel pattern shift is anticipated to accelerate as the planned Trafalgar Road BRT becomes a more convenient alternative mode of travel.

The results of this analysis for intersections along the Trafalgar Road corridor under 2041 future total conditions are summarized in **Table 43**.

Based on the analysis, it is forecasted that a 26% reduction to weekday morning and 25% reduction to weekday afternoon peak hour traffic volumes north and southbound along Trafalgar Road would be necessary for all intersection lane groups along the corridor to operate within capacity under 2041 future total conditions. The shift in roughly one quarter of corridor volumes can largely be attributed to the reduction in through lanes along Trafalgar Road by a factor of one third, from three lanes per direction, including an HOV lane, to two lanes per direction.

As the intersections of Trafalgar Road / Burnhamthorpe Road East, Trafalgar Road / Main Street and Trafalgar Road / Settlers Road are projected to exceed their theoretical capacity prior to the 2041 horizon, with the reallocation of planned curbside HOV lanes along Trafalgar Road as BRT lanes, mode shift targets would be necessary for the corridor to remain within its theoretical peak hour capacity.

Table 43 2041 Future Mode Shift Sensitivity Conditions

Lane Group	2041 Future Total		2041 Future Total (Sensitivity)	
	v/c	LOS	v/c	LOS
Trafalgar Road / Burnhamthorpe Road E				
EBL	0.85 (0.80)	E (D)	0.84 (0.68)	E (D)
EBT	0.56 (0.58)	D (D)	0.56 (0.58)	D (D)
EBR	0.09 (0.27)	D (D)	0.09 (0.20)	D (D)
WBL	0.84 (1.16)	E (F)	0.83 (0.96)	E (E)
WBT	0.44 (0.47)	D (D)	0.43 (0.47)	D (D)
WBR	0.27 (0.33)	D (D)	0.24 (0.14)	D (D)
NBL	0.98 (0.97)	F (F)	0.77 (0.97)	C (E)
NBT	1.23 (1.23)	F (F)	0.84 (0.99)	C (D)
NBR	0.27 (0.18)	B (B)	0.27 (0.17)	B (B)
SBL	0.88 (1.20)	E (F)	0.87 (0.99)	D (F)
SBT	0.99 (1.17)	D (F)	0.74 (0.84)	C (C)
SBR	0.06 (0.38)	B (B)	0.06 (0.39)	B (B)
Overall	**1.12 (1.22)**	**E (F)**	**0.85 (1.01)**	**C (D)**
Trafalgar Road / Main Street				
EBL	0.52 (0.25)	D (D)	0.52 (0.21)	D (C)
EBTR	0.01 (0.18)	D (D)	0.01 (0.12)	D (C)
WBL	0.71 (0.69)	D (D)	0.70 (0.62)	D (D)
WBTR	0.24 (0.47)	C (D)	0.22 (0.37)	C (C)
NBL	0.36 (0.37)	B (B)	0.17 (0.27)	A (A)
NBT	1.15 (0.91)	F (B)	0.84 (0.71)	B (B)
NBR	0.01 (0.16)	A (A)	0.01 (0.16)	A (A)
SBL	0.14 (0.67)	A (D)	0.14 (0.42)	A (B)
SBT	0.84 (0.98)	B (C)	0.63 (0.75)	B (B)
SBR	0.02 (0.07)	A (A)	0.02 (0.07)	A (A)
Overall	**1.07 (0.92)**	**E (C)**	**0.83 (0.72)**	**B (B)**

Lane Group	2041 Future Total		2041 Future Total (Sensitivity)	
	v/c	LOS	v/c	LOS
Trafalgar Road / Settlers Road				
EBL	0.70 (0.45)	D (D)	0.70 (0.45)	D (D)
EBT	0.25 (0.34)	D (D)	0.25 (0.34)	D (D)
EBR	0.24 (0.09)	D (D)	0.22 (0.09)	D (D)
WBL	0.76 (0.68)	D (D)	0.76 (0.68)	D (D)
WBTR	0.29 (0.25)	C (C)	0.29 (0.25)	C (C)
NBL	0.57 (1.04)	C (F)	0.57 (0.88)	C (E)
NBT	1.41 (1.34)	F (F)	0.99 (0.99)	D (D)
NBR	0.32 (0.34)	B (B)	0.32 (0.33)	B (B)
SBL	0.55 (0.78)	C (D)	0.55 (0.78)	C (D)
SBT	1.08 (1.33)	E (F)	0.81 (0.99)	C (D)
SBR	0.09 (0.09)	B (B)	0.09 (0.09)	B (B)
Overall	**1.16 (1.15)**	**F (F)**	**0.91 (0.94)**	**D (D)**

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

11.7 Queueing Assessment

Summary tables including 50th and 95th percentile vehicular queue lengths for all movements and scenarios at signalized intersections and 95th percentile vehicular queue lengths for all movements and scenarios at unsignalized intersections are attached in **Appendix J**.

Based on the foregoing, 50th and 95th percentile queue lengths at signalized intersections are projected to be appropriate and are generally within available storage lengths under all scenarios and horizon years, with exceptions discussed in the following sections. 95th percentile queue lengths at unsignalized intersections are projected to be appropriate and within available storage lengths under all scenarios and horizon years.

11.7.1 Trafalgar Road / Burnhamthorpe Road E

Under existing conditions, 50th and 95th percentile queues for all movements at the intersection of Trafalgar Road / Burnhamthorpe Road East are projected to be within available storage lengths.

Under 2031 and 2036 future background conditions, with the widening of Trafalgar Road (including curbside HOV lanes) and Burnhamthorpe Road East, and the phased addition of area background developments, the eastbound left and westbound left lane groups are projected to operate with 50th and 95th percentile queues in excess of planned 50 metre storage lane capacities assumed within the October 2025 CGH Report during both peak hours (2031 afternoon only for 50th percentile westbound left). Under 2031 and 2036 future total conditions, inclusive of phased Westerkirk site traffic volumes, both lane groups are projected to continue to operate in excess of planned 50 metre storage lane capacities during the same peak hours.

It is further noted that under 2031 and 2036 future background and future total conditions, the northbound through lane group is projected to operate with 95th percentile queues extending beyond the upstream traffic signal at Main Street, irrespective of Westerkirk site traffic volumes. Notwithstanding, 50th percentile queues are not projected to extend beyond the upstream signal under future background or future total conditions.

Under 2041 future background conditions, with the addition of 2037 – 2041 area background developments, and the reallocation of curbside HOV lanes along Trafalgar Road to BRT lanes, the westbound left and northbound through lane groups are projected to operate with 50th and 95th percentile queues in excess of planned storage lane capacities assumed within the October 2025 CGH Report during both peak hours (afternoon only for 50th percentile westbound left). Furthermore, the eastbound left and westbound right lane groups are projected to operate with 95th percentile queues in excess of planned storage lane capacities assumed within the October 2025 CGH Report during both peak hours (afternoon only for westbound right). Under 2041 future total conditions, inclusive of Westerkirk site traffic volumes, all the above-mentioned lane groups are projected to continue to operate in excess of planned storage lane capacities during the same peak hours, in addition to the northbound left lane group's 95th percentile queue during the morning peak hour and the southbound left lane group's 95th percentile queue during the afternoon peak hour.

Overall, the impact of the proposed development on intersection queues is minor. While the intersection is projected to operate over its theoretical capacity under 2041 base conditions, this is projected to occur regardless of the site and should not be considered for determining appropriate storage lane lengths.

Recognizing that future traffic allowances along Trafalgar Road under 2041 conditions exceed the corridors capacity following the removal of a lane in each direction for the BRT, an alternative mode shift sensitivity analysis has been conducted. Under 2041 future total sensitivity conditions, the eastbound left, westbound left, northbound through, and southbound left lane groups are projected to continue to operate with 95th percentile queues in excess of planned storage lane capacities assumed within the October 2025 CGH Report during both peak hours, similar to 2036 base future total conditions. All turning movements are projected to operate with decreased 50th and 95th percentile queues relative to 2041 base future total conditions.

Based on the foregoing assessment, consideration should be given to the extension of the eastbound left and westbound left turn lane storages to 70 and 110 metres, respectively, at the intersection of Trafalgar Road / Burnhamthorpe Road East alongside planned road widenings.

11.7.2 Trafalgar Road / Main Street

Under 2031 future background and future total conditions, with the widening of Trafalgar Road (including curbside HOV lanes) and Burnhamthorpe Road East, and the phased addition of area background developments and site traffic volumes, 50th and 95th percentile queues for all movements are projected to be within available storage lengths during both peak hours.

Under 2036 future background conditions, the southbound through lane group is projected to operate with 95th percentile queues extending beyond the upstream traffic signal at Burnhamthorpe Road East during the afternoon peak hour. Under 2036 future total conditions, inclusive of site traffic volumes, the northbound through lane group is additionally projected to operate with 95th percentile queues extending beyond the upstream traffic signal at Settlers Road during the morning peak hour. Notwithstanding, 50th percentile queues are not projected to extend beyond the upstream signal under future background or future total conditions.

Under 2041 future background conditions, with the addition of 2037 – 2041 area background developments, and the reallocation of curbside HOV lanes along Trafalgar Road to BRT lanes, the northbound through and southbound through lane groups are projected to operate with 95th percentile queues in excess of planned storage lane capacities during both peak hours. Under 2041 future total conditions, inclusive of site traffic volumes, all the above-mentioned lane groups are projected to continue to operate in excess of planned storage lane capacities during the same peak hours, in addition to the northbound through lane group's 50th percentile queue during the morning peak hour.

As noted in **Section 11.7.1**, the Trafalgar Road corridor is projected to operate over its theoretical capacity under 2041 base conditions, regardless of the site, and should not be considered for determining appropriate storage lane lengths.

Recognizing that future traffic allowances along Trafalgar Road under 2041 conditions exceed the corridors capacity following the removal of a lane in each direction for the BRT, an alternative mode shift sensitivity analysis has been conducted. Under 2041 future total sensitivity conditions, the northbound through lane group is projected to continue to operate with 95th percentile queues extending beyond the upstream traffic signal at Settlers Road during the morning peak hour, demonstrating an improvement from 2036 base future total conditions. All turning movements are projected to operate with decreased 50th and 95th percentile queues relative to 2041 base future total conditions.

11.7.3 Trafalgar Road / Settlers Road

Under 2031 future background, 2031 future total and 2036 future background conditions, with the widening of Trafalgar Road (including curbside HOV lanes) and Burnhamthorpe Road East, and the phased addition of area background developments and site traffic volumes, 50th and 95th percentile queues for all movements are projected to be within available storage lengths during both peak hours.

Under 2036 future total conditions, inclusive of site traffic volumes, the northbound right lane group is projected to operate with 95th percentile queues in excess of the planned 40 metre storage lane capacity assumed within the October 2025 CGH Report during both peak hours. Notwithstanding, 50th percentile queues are not projected to extend beyond the storage lanes capacity under future total conditions.

Under 2041 future background conditions, with the addition of 2037 – 2041 area background developments, and the reallocation of curbside HOV lanes along Trafalgar Road to BRT lanes, the southbound through lane group is projected to operate with 50th and 95th percentile queues extending beyond the upstream traffic signal at Main Street (afternoon only for 50th percentile queue). Furthermore, the northbound left and northbound through lane groups are projected to operate with 95th percentile queues in excess of planned storage lane capacities assumed within the October 2025 CGH Report during both peak hours (afternoon only for northbound left). Under 2041 future total conditions, inclusive of site traffic volumes, all the above-mentioned lane groups are projected to continue to operate in excess of planned storage lane capacities during the same peak hours, in addition to the northbound right lane group's 95th percentile queue during both peak hours.

As noted in **Section 11.7.1**, the Trafalgar Road corridor is projected to operate over its theoretical capacity under 2041 base conditions, regardless of the site, and should not be considered for determining appropriate storage lane lengths.

Recognizing that future traffic allowances along Trafalgar Road under 2041 conditions exceed the corridors capacity following the removal of a lane in each direction for the BRT, an alternative mode shift sensitivity analysis has been conducted. Under 2041 future total sensitivity conditions, the northbound right and southbound through lane groups are projected to continue to operate with 95th percentile queues in excess of their planned storage lane capacities assumed within the October 2025 CGH Report during both peak hours (afternoon only for southbound through), demonstrating an improvement from 2036 base future total conditions. All turning movements are projected to operate with decreased 50th and 95th percentile queues relative to 2041 base future total conditions.

Based on the foregoing assessment, consideration should be given to the extension of the northbound left and northbound right turn lane storages to 100 and 60 metres, respectively, at the intersection of Trafalgar Road / Settlers Road alongside planned road widenings.

Appendix A:
Reduced Scale Architectural Plans



1 SITE PLAN
A105.S

SITE PLAN LEGEND

- PROPERTY LINE
- LINE OF UNDER GROUND GARAGE BELOW
- MAIN BUILDING ENTRANCE
- RETAIL ENTRANCE
- EXIT
- VEHICLE / LOADING ENTRANCE / EXIT
- FIRE HYDRANT
- SIAMESE CONNECTION
- TYPICAL PARKING SPACE
- TYPICAL B.F. PARKING SPACE
- BUILDING ENVELOPE

Date	No.	Description
REVISION RECORD		

2026-04-06	Issued for ZBA	

ISSUE RECORD

BDP. Quadrangle

Quadrangle Architects Limited
The Well, 8 Spadina Avenue, Suite 2100, Toronto, ON M5V 0S8
t 416 598 1240 www.bdpquadrangle.com

340 Burnhamthorpe Road East and 3437 Trafalgar Road
Oakville, Ontario

for
1816986 Ontario Inc.

24064	1:750	SR	SK
PROJECT	SCALE	DRAWN	REVIEWED

Site Plan

A105.S

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1 A201.S GROUND FLOOR OVERALL PLAN

Area Usage Legend

- AMENITY
- BICYCLE
- Bulk
- CACF
- ELEVATOR CORE
- EXITS
- EXTERIOR AMENITY
- GARBAGE
- LOADING
- LOBBY
- LOCKERS
- MOVING ROOM
- PARKING
- RESIDENTIAL
- RETAIL
- SERVICE

Date	No.	Description

REVISION RECORD

2026-04-06 | Issued for ZBA

ISSUE RECORD

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340 Burnhamthorpe Road East
and 3437 Trafalgar Road
Oakville, Ontario

for
1816986 Ontario Inc.

24064 | 1 : 750 | SR | SK
PROJECT | SCALE | DRAWN | REVIEWED

Ground Floor Plan

A201.S

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1 A202.S UPPER GROUND FLOOR Overall Plan

Area Usage Legend

- BICYCLE
- ELEVATOR CORE
- EXITS
- LOBBY
- LOCKERS
- MOVING ROOM
- PARKING
- RESIDENTIAL

Date	No.	Description
REVISION RECORD		
2026-04-06		Issued for ZBA

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340 Burnhamthorpe Road East
and 3437 Trafalgar Road
Oakville, Ontario

for
1816986 Ontario Inc.

24064 1 : 750 SR SK
PROJECT SCALE DRAWN REVIEWED

Upper Ground Floor Plan

A202.S

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1 A203.S FLOOR 2 Overall Plan

Area Usage Legend

- AMENITY
- ELEVATOR CORE
- EXITS
- EXTERIOR AMENITY
- LOCKERS
- PARKING
- RESIDENTIAL
- SERVICE

Date	No.	Description

REVISION RECORD

2026-04-06 | Issued for ZBA

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340 Burnhamthorpe Road East
and 3437 Trafalgar Road
Oakville, Ontario

for
1816986 Ontario Inc.

24064 1 : 750 SR SK
PROJECT SCALE DRAWN REVIEWED

Level 2-3 Floor Plan

A203.S

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PARKING PROVIDED

		Residential Spaces		Commercial Spaces		Total
		Resident	Visitor	Retail	Grocery	
BLOCK 1	Level 2nd	418	169			418
	Upper Ground		47			47
	Ground		45			45
	P1	114		41	327.0	580
	P2 P3	872				872
	Total	1,404	262	41	327	1,964
	Ratio	1.02	0.19	1/100 sm	1/100sm	
BLOCK 2	Level 2nd	330				330
	Upper Ground	159	45			159
	Ground		240			240
	P1	446		26		472
	P2	220				220
	Total	1,157	285	26	0	1,653
	Ratio	1.08	0.15	1/100 sm		
BLOCK 3	P1	54	37			91
	P2 P3	146	0			146
	Total	200	37	0	0	237
	Ratio	0.97	0.18			
BLOCK 4	P1	270	221	21		512
	P2 P3	509	0			509
	Total	1179	221	24		1384
	Ratio	1.17	0.22	1/100 sm		
BLOCK 5	P2	197	0	78		197
	P3 P4 P5	352	0			352
	Total	493	73	78		584
	Ratio	1.61	0.15	1/100 sm		
BLOCK 6	P2	197	93	0		290
	P3	272	0			272
	Total	469	93	0		236
	Ratio	1.10	0.11			
BLOCK 7	P1	110	18	0		128
	Total	110	18	0		128
	Ratio	0.93	0.15			
BLOCK 8	P2	242	70	0		242
	P3	242	0			242
	Total	412	70	0		482
	Ratio	0.88	0.11			
BLOCK 9	P2	93	23	0		93
	P3	76	0			76
	Total	127	22	0		169
	Ratio	0.88	0.11			
BLOCK 10	P2	231	50	0		265
	Total	231	50	0		265
	Ratio	0.64	0.15			
BLOCK 11	P2	221	33	0		266
	Total	221	33	0		266
	Ratio	1.09	0.11			
BLOCK 12	P2	233	57	0		290
	Total	233	57	0		290
	Ratio	0.67	0.11			
TOTAL	No. of Parking	6,414	963	99	327	7,703
	Ratio	1.00	0.15	1/30 sm	1/100sm	

BICYCLE

		Residential Spaces		Commercial Spaces		Total
		Short Term	Long Term			
BLOCK 1		29	206			209
	Ratio	N/A	N/A	1/1000 sm		
BLOCK 2		34	168	2		202
	Ratio	N/A	N/A	1/1000 sm		
BLOCK 3		37	112			149
	Ratio	0.1	0.3			
BLOCK 4		31	166			197
	Ratio	N/A	N/A	1/1000 sm		
BLOCK 5		34	166			200
	Ratio	N/A	N/A	1/1000 sm		
BLOCK 6		34	166			200
	Ratio	N/A	N/A			
BLOCK 7		11	60			71
	Ratio	0.1	0.5			
BLOCK 8		57	143			200
	Ratio	N/A	N/A			
BLOCK 9		73	24			97
	Ratio	0.5	0.5			
BLOCK 10		56	144			200
	Ratio	N/A	N/A			
BLOCK 11		33	104			138
	Ratio	0.1	0.3			
BLOCK 12		91	N/A			200
	Ratio	N/A	N/A			
TOTAL		490	1,687	11		2052

Area Usage Legend

- BICYCLE
- ELEVATOR CORE
- EXITS
- GARBAGE
- LOBBY
- LOCKERS
- PARKING
- SERVICE

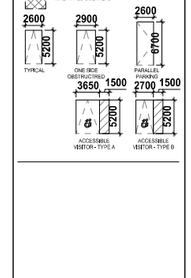


PARKING NOTES:

1. MINIMUM PARKING SPACE SIZES (UNLESS OTHERWISE NOTED):
   - 2600mm WIDE X 5200mm LONG (NO SIDES OBSTRUCTED)
   - 2900mm WIDE X 5200mm LONG (ONE SIDE OBSTRUCTED)
   - 3200mm WIDE X 5200mm LONG (TWO SIDES OBSTRUCTED)
2. MAINTAIN MINIMUM DRIVE AISLE WIDTH OF 7000mm UNLESS OTHERWISE NOTED.
3. MAINTAIN MINIMUM HEADROOM CLEARANCE OF 2100mm THROUGHOUT.

PARKING LEGEND:

- C — COMMERCIAL PARKING SPACE
- R — RESIDENTIAL PARKING SPACE
- V — VISITOR PARKING SPACE
- E — EXISTING PARKING SPACE
- BIKE LOCKER
- BIKE PARKING (STACKED)
- BIKE PARKING (VERTICAL)
- CONVEX MIRROR
- ELECTRIC VEHICLE
- LIGHT STANDARD
- PAINTED LINES
- FIRE-RATED BULKHEAD



Date	No.	Description
REVISION RECORD		

2026-04-06	Issued for ZBA	

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The Well, 8 Spadina Avenue, Suite 2100, Toronto, ON M5V 0S8
t 416 598 1240 www.bdpquadrangle.com

340 Burnhamthorpe Road East and 3437 Trafalgar Road
Oakville, Ontario

for
1816986 Ontario Inc.

24064	As indicated	SR	SK
PROJECT	SCALE	DRAWN	REVIEWED

P1 Parking Plan

A251.S

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PARKING PROVIDED

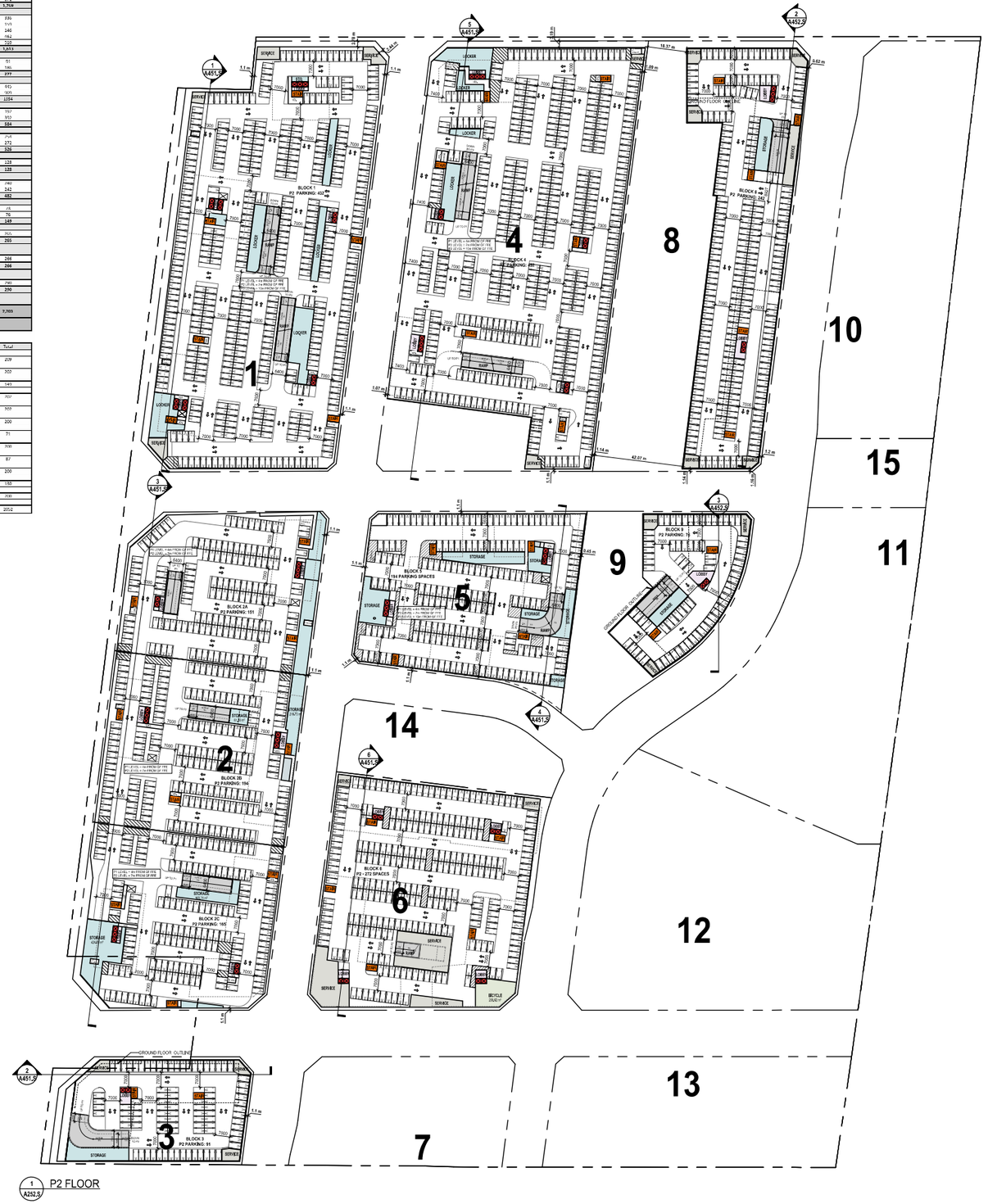
		Residential Spaces		Commercial Spaces		Total
		Resident	Visitor	Retail	Grocery	
BLOCK 1	Level 2+3	419	169			418
	Upper Ground		47			47
	Ground		93			93
	P1	114		41	327.0	580
	P2 P3	872				872
	Total	1,405	162	41	327	1,710
	Ratio	0.82	0.10	1/100 sm	1/100sm	
BLOCK 2	Level 2+3	330				330
	Upper Ground	110	65			175
	Ground		240			240
	P1	496		26		162
	P2	220				220
	Total	1,157	305	26	0	1,653
	Ratio	1.08	0.15	1/100 sm		
BLOCK 3	P1	54	37			91
	P2 P3	186	0			186
	Total	240	37	0	0	277
	Ratio	0.97	0.15			
BLOCK 4	P1	270	121	21		912
	P2 P3	909	0			909
	Total	1179	121	24		1284
	Ratio	1.17	0.12	1/100 sm		
BLOCK 5	P2	197	0	18		197
	P3	192	0			192
	Total	453	73	18		584
	Ratio	1.61	0.15	1/100 sm		
BLOCK 6	P2	197	93	0		294
	P3	272	0			272
	Total	469	93	0		226
	Ratio	1.10	0.11			
BLOCK 7	P2	110	18	0		128
	Total	110	18	0		128
	Ratio	0.93	0.15			
BLOCK 8	P2	190	52	0		242
	P3	242	0			242
	Total	432	52	0		482
	Ratio	0.88	0.11			
BLOCK 9	P2	51	22	0		68
	P3	76	0			76
	Total	127	22	0		149
	Ratio	0.86	0.15			
BLOCK 10	P2	235	65	0		265
	Total	235	65	0		265
	Ratio	0.64	0.18			
BLOCK 11	P2	221	35	0		266
	Total	221	35	0		266
	Ratio	1.09	0.17			
BLOCK 12	P2	233	57	0		290
	Total	233	57	0		290
	Ratio	0.87	0.15			
TOTAL	No. of Parking	6,414	903	99	327	7,705
	Ratio	1.00	0.15	1/30 sm	1/100sm	

BICYCLE

		Residential Spaces		Commercial Spaces	Total
		Short Term	Long Term		
BLOCK 1		39	206		209
	Ratio	N/A	N/A	1/1000 sm	
BLOCK 2		54	188	2	202
	Ratio	N/A	N/A	1/1000 sm	
BLOCK 3		37	112		149
	Ratio	0.1	0.3		
BLOCK 4		31	166	0	197
	Ratio	N/A	N/A	1/1000 sm	
BLOCK 5		54	166	0	220
	Ratio	N/A	N/A	1/1000 sm	
BLOCK 6		34	166		200
	Ratio	N/A	N/A		
BLOCK 7		11	60		71
	Ratio	0.1	0.5		
BLOCK 8		57	166		223
	Ratio	N/A	N/A		
BLOCK 9		73	24		97
	Ratio	0.6	0.2		
BLOCK 10		56	244		300
	Ratio	N/A	N/A		
BLOCK 11		37	106		143
	Ratio	0.1	0.2		
BLOCK 12		31	N/A		200
	Ratio	N/A	N/A		
TOTAL		490	2,187	11	2002

Area Usage Legend

- BICYCLE
- ELEVATOR CORE
- EXITS
- GARBAGE
- LOBBY
- LOCKERS
- PARKING
- SERVICE



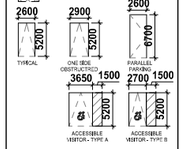
1 A252.S P2 FLOOR

PARKING NOTES:

1. MINIMUM PARKING SPACE SIZES (UNLESS OTHERWISE NOTED):
   - 2600mm WIDE X 5200mm LONG (NO SIDES OBSTRUCTED)
   - 2900mm WIDE X 5200mm LONG (ONE SIDE OBSTRUCTED)
   - 3200mm WIDE X 5200mm LONG (TWO SIDES OBSTRUCTED)
2. MAINTAIN MINIMUM 24'(FIRE AISLE WIDTH OF 7000mm UNLESS OTHERWISE NOTED.
3. MAINTAIN MINIMUM HEADROOM CLEARANCE OF 2100mm THROUGHOUT.

PARKING LEGEND:

- C — COMMERCIAL PARKING SPACE
- R — RESIDENTIAL PARKING SPACE
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- E — EXISTING PARKING SPACE
- BIKE LOCKER
- BIKE PARKING (STACKED)
- BIKE PARKING (VERTICAL)
- CONVEX MIRROR
- ELECTRIC VEHICLE
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Oakville, Ontario

for
1816986 Ontario Inc.

24064	As indicated	SR	SK
PROJECT	SCALE	DRAWN	REVIEWED

P2 Parking Plan

A252.S

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PARKING PROVIDED

		Residential Spaces		Commercial Spaces		Total
		Resident	Visitor	Retail	Grocery	
BLOCK 1	Level 2	414	164			414
	Upper Ground		47			47
	Ground		93			93
	P1	114		41	227.0	582
	P2 P3	872				872
	Total	1,286	140	41	227	1,708
	Ratio	0.82	0.09	1/1000 sm	1/1000 sm	
BLOCK 2	Level 2+3	230				230
	Upper Ground	110		65		175
	Ground			240		240
	P1	416		26		442
	P2	210				210
	Total	1,167	196	331	0	1,653
	Ratio	1.08	0.18	1/1000 sm		
BLOCK 3	P1	54	37			91
	P2 P3	186	0			186
	Total	240	37	0	0	277
	Ratio	0.97	0.15			
BLOCK 4	P1	270	221	21		512
	P2 P3	900	0			900
	Total	1170	221	24		1294
	Ratio	1.17	0.22	1/1000 sm		
BLOCK 5	P2	187	13	58		197
	P3	192	0			192
	Total	453	73	58		584
	Ratio	1.81	0.29	1/1000 sm		
BLOCK 6	P2	197	83	0		264
	P3	272	0			272
	Total	469	83	0		736
	Ratio	1.10	0.19			
BLOCK 7	P2	110	18	0		128
	Total	110	18	0		128
	Ratio	0.93	0.15			
BLOCK 8	P2	190	52	0		242
	P3	242	0			242
	Total	432	52	0		482
	Ratio	0.86	0.11			
BLOCK 9	P2	93	22	0		115
	P3	76	0			76
	Total	127	22	0		149
	Ratio	0.86	0.15			
BLOCK 10	P2	235	65	0		300
	Total	235	65	0		300
	Ratio	0.64	0.15			
BLOCK 11	P2	221	39	0		266
	Total	221	39	0		266
	Ratio	1.09	0.19			
BLOCK 12	P2	233	57	0		290
	Total	233	57	0		290
	Ratio	0.87	0.15			
TOTAL	No. of Parking	6,414	903	99	227	7,705
	Ratio	1.00	0.15	1/30 sm	1/100sm	

BICYCLE

		Residential Spaces		Commercial Spaces	Total
		Short Term	Long Term		
BLOCK 1	Ratio	39	206	1/1000 sm	209
		N/A	N/A		
BLOCK 2	Ratio	34	168	2	202
		N/A	N/A	1/1000 sm	
BLOCK 3	Ratio	37	112		149
		0.1	0.3		
BLOCK 4	Ratio	31	506	0	537
		N/A	N/A	1/1000 sm	
BLOCK 5	Ratio	34	106	0	303
		N/A	N/A	1/1000 sm	
BLOCK 6	Ratio	34	266		300
		N/A	N/A		
BLOCK 7	Ratio	11	60		71
		0.1	0.5		
BLOCK 8	Ratio	57	146		203
		N/A	N/A		
BLOCK 9	Ratio	73	24		97
		0.5	0.5		
BLOCK 10	Ratio	56	244		300
		N/A	N/A		
BLOCK 11		33	104		137
	Ratio	0.1	0.2		
BLOCK 12	Ratio	91	109		200
		N/A	N/A		
TOTAL		490	2187	11	2052

Area Usage Legend

- ELEVATOR CORE
- EXITS
- GARBAGE
- LOBBY
- LOCKERS
- PARKING
- SERVICE



PARKING NOTES:

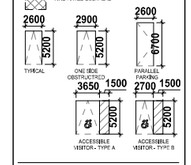
1. MINIMUM PARKING SPACE SIZES (UNLESS OTHERWISE NOTED):
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PARKING LEGEND:

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- BIKE LOCKER
- BIKE PARKING (STACKED)
- BIKE PARKING (VERTICAL)
- CONVEX MIRROR
- ELECTRIC VEHICLE
- LIGHT STANDARD
- PAINTED LINES
- RRB-RATED BULKHEAD



Date	No.	Description

REVISION RECORD

2026-04-06 | Issued for ZBA

ISSUE RECORD

BDP. Quadrangle

Quadrangle Architects Limited
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t 416 598 1240 www.bdpquadrangle.com

340 Burnhamthorpe Road East
and 3437 Trafalgar Road
Oakville, Ontario

for
1816986 Ontario Inc.

PROJECT	SCALE	DRAWN	REVIEWED
24064	As indicated	SR	SK

P3 Parking Plan

A253.S

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Appendix B:
Terms of Reference

MEMORANDUM

TO
Syed Rizvi
Transportation Services
Town of Oakville
syed.rizvi@oakville.ca

Michaela Campbell
Planning and Public Works
Region of Halton
michaela.campbell@halton.ca

FROM
Lauren O'Grady, P.Eng., BA Group
Amy Jiang, P.Eng., BA Group

PROJECT
8279-01
340 Burnhamthorpe Road and
3437 Trafalgar Road

DATE
August 25, 2025

RE: PROPOSED MIXED-USE MASTER PLAN – 340 BURNHAMTHORPE ROAD EAST AND 3437 TRAFALGAR ROAD, OAKVILLE
TRANSPORTATION STUDY TERMS OF REFERENCE

1.0 INTRODUCTION

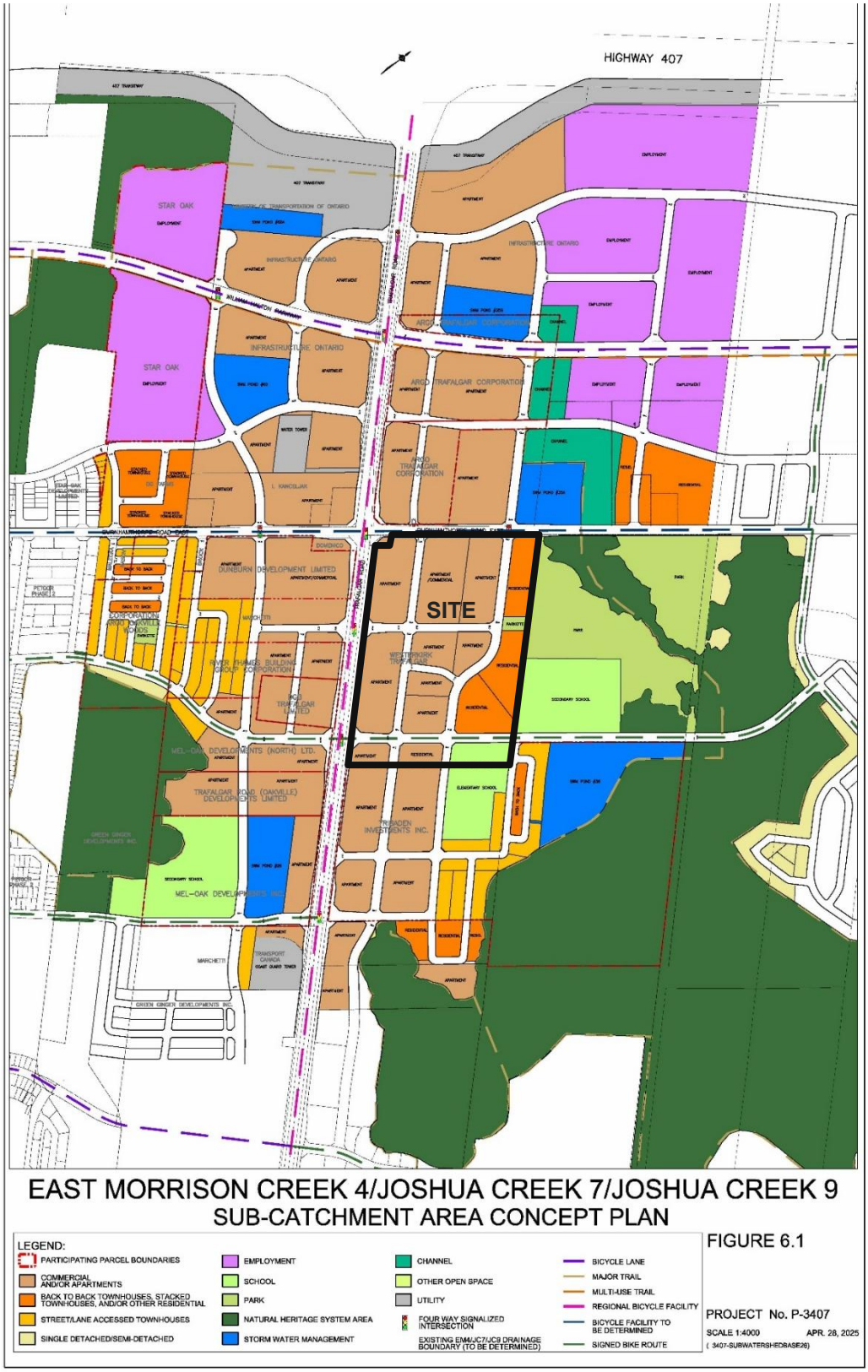
BA Group is retained by Westerkirk Capital Inc. ("**Westerkirk**") to provide transportation consulting services for the proposed redevelopment of a property located at 340 Burnhamthorpe Road East and 3437 Trafalgar Road ("**the site**"), in the southeast quadrant of Trafalgar Road / Burnhamthorpe Road East in the Town of Oakville. The property is an approximately 20 hectare rectangular parcel that currently contains a golf range and open fields. It is located in the North Oakville East Secondary Plan Area.

The proposed development is for a master planned mixed-use community that includes residential, commercial, retail and community uses as well as parks and open spaces. A network of new public streets is proposed, including multi-modal linkages that are contained in the North Oakville East Secondary Plan transportation plan.

The site is part of a larger collection of properties in the North Oakville East Secondary Plan Area that is part a Landowners Group. The Landowners Group is currently advancing an Environmental Implementation Report and Functional Servicing Study (EIR/FSS) for their combined lands, located within subcatchment areas JC7, JC9 and

EM4 as identified in the North Oakville Creeks Subwatershed Study ("**NOCSS**"). The subcatchment areas showing the extent of the Landowners Group holdings, and the site location, are illustrated on **Figure 1**.

Figure 1 Site Location and Subcatchment Areas EM4/JC7/JC9



A Transportation Impact Study for the entire EM4/JC7/JC9 lands was prepared by CGH Transportation in November 2024, on behalf of the Landowners Group, and submitted to the Town of Oakville and Halton Region ("*EM4 JC7 JC9 Transportation Impact Study*", CGH Transportation, November 2024, herein referred to as the "**November 2024 CGH TIS**"). The Terms of Reference for that study was approved by the Town and the Region. The Town and the Region provided comments on the November 2024 CGH TIS. CGH, on behalf of the Landowners Group, is reviewing the comments and will provide a written response.

The current development programme for the subject site is consistent with the programme assumed in the November 2024 CGH TIS – including land use mix, density and public road arrangements. The traffic impacts of the site on the area public road network have, therefore, already been assessed through that study. Consequently, this proposed Terms of Reference is for a supplemental study that focuses on site-specific elements, including a description of the proposed master plan, a functional review of the proposed new multi-modal public road network including its role within the broader North Oakville East Secondary Plan Area, a review of the proposed street cross-section elements and rights-of-ways, a description of the cycling and pedestrian network, a review of block access, circulation, pick-up/drop-off and internal design elements, a review of parking and loading supply and design elements, signal justifications for proposed new signalized intersections – including, in particular, proposed new signals on Trafalgar Road, a review of the multi-modal master plan mobility strategy including a Transportation Demand Management (TDM) strategy, and operational analyses of internal local road intersections.

Please do not hesitate to contact us with any questions or comments.

2.0 PROPOSED TERMS OF REFERENCE

2.1 TRAFFIC IMPACT STUDY GUIDELINES

The TIS will be prepared in accordance with Halton Region's *Transportation Impact Study Guidelines* (January 2015) and the Town of Oakville's *Development Application Guidelines Transportation Impact Analysis*.

2.2 ANALYSIS STUDY AREA

As noted earlier, the traffic impacts of the site on the broader area public road network have already been assessed through the November 2024 CGH TIS. Thus, the analysis area for this study focuses on new public street intersections within the site.

The Study Area is proposed to comprise of:

- All intersections of new public streets within the site at Trafalgar Road
- All intersections of new public streets within the site at Burnhamthorpe Road
- All new internal public street intersections within the site

2.3 TRAFFIC ANALYSIS PERIODS

Traffic analysis will be undertaken for weekday AM and PM peak hours.

2.4 TRAFFIC ANALYSIS SCENARIOS

In accordance with Halton Region's Transportation Impact Study Guidelines, analysis will be undertaken for +5 and +10 year horizons, as follows:

- Existing Conditions
- Future Background Conditions (build-out)
- Future Background Conditions (+5-year)
- Future Background Conditions (+10-year)
- Future Total Conditions (build-out)
- Future Total Conditions (+5-year)
- Future Total Conditions (+10-year)

2.5 EXISTING TRAFFIC COUNTS

To remain consistent with the November 2024 CGH TIS, turning movement counts at the Trafalgar Road / Burnhamthorpe Road intersection dated January 2024 will be used in the subject Transportation Study. Per the November 2024 CGH TIS, a compound annual growth rate (CAGR) of 2% will be applied to Trafalgar Road and a CAGR of 3% will be applied to Burnhamthorpe to bring the volumes to 2025 existing conditions.

2.6 BACKGROUND DEVELOPMENT TRAFFIC

The lands within the overall Landowners Group will be included as background traffic for the subject Transportation Study. In addition, consistent with the November 2024 CGH TIS, the following background developments will also be included in the analyses:

- Sherborne Lodge Development
- Remington Eno Development
- Neighbourhood 9, 10, 11 Development
- Sixth Oak Inc. School and Employment Lands
- Star Oak Development
- Infrastructure Ontario Trafalgar Lands
- Green Ginger – Trafalgar Road
- Vressa and Dunoak
- Coscorp Joshua Creek
- ARGO Joshua Creek
- Mattamy Joshua Creek
- Capoak and Redoak
- SmartCentres Oakville North

2.7 TRAFFIC CORRIDOR GROWTH

Per the November 2024 CGH TIS, a compound annual growth rate of 2% until 2031 and 1% from 2031 to 2041 will be applied to Trafalgar Road while a 3% compound annual growth rate will be applied to Burnhamthorpe Road for all study horizons.

2.8 PLANNED TRANSPORTATION IMPROVEMENTS

Per Halton Region's website, Trafalgar Road is scheduled to be widened between Dundas Street East and William Halton Parkway to include a 6-lane cross-section with new sidewalks, multi-use pathways, bike lanes, and bus bays by 2030. The future cross-section of Trafalgar Road will be considered in the analysis as part of the subject Transportation Study.

2.9 SITE TRIP GENERATION

Per the approved Terms of Reference for the November 2024 CGH TIS, ITE Trip Generation Manual 11th Edition will be used to forecast the vehicle trips associated with the proposed development.

2.10 VEHICLE TRIP DISTRIBUTION

Data from the Transportation Tomorrow Survey (TTS) will be used to determine vehicle trip distribution to / from the proposed development.

2.11 TRAFFIC ANALYSIS

Traffic analysis will be undertaken using Synchro 11 based on Highway Capacity Manual (HCM) methodology.

2.12 SIGNAL JUSTIFICATION

Signal justification analyses will be undertaken for the proposed new signalized public street intersections – including proposed signals on Trafalgar Road.

2.13 TRANSPORTATION DEMAND MANAGEMENT

A Transportation Demand Management (TDM) plan will be prepared that seeks to reduce single occupancy vehicles associated with the proposed development.

2.14 FUNCTIONAL DESIGN ELEMENTS

The Transportation Study will include a review of the functional design elements of the proposed development, including:

- A description of the proposed master plan,
- A functional review of the proposed new multi-modal public road network including its role within the broader North Oakville East Secondary Plan Area,
- A review of the proposed street cross-section elements and rights-of-ways,
- A description of the cycling and pedestrian network,
- A review of block access, circulation, pick-up/drop-off and internal design elements, and
- A review of the proposed parking and loading arrangements.

2.15 Vehicle Parking, Loading and Bicycle Parking

The Transportation Study will review the vehicle parking, loading and bicycle parking requirements and proposed supply.

Jason Skidmore

From: Lauren O'Grady
Sent: September 18, 2025 8:01 AM
To: Khan, Ayesha
Cc: Amy Z. Jiang; Anthony Latorre; Jason Skidmore; syed.rizvi@oakville.ca
Subject: RE: 340 Burnhamthorpe and 3437 Trafalgar - Transportation ToR
Attachments: Study Area Scope - BA Group - 2025-09-16.pdf

Good morning Ayesha,

Thank you for providing your comments on our ToR for the Transportation Study to support the proposed development.

The following is a list of the intersections we intend on analyzing as part of this study:

1. Burnhamthorpe Road East / C Street
2. Burnhamthorpe Road East / A Street
3. Burnhamthorpe Road East / Trafalgar Road
4. Trafalgar Road / Main Street
5. Trafalgar Road / Settlers Road
6. C Street / Main Street
7. C Street / B Street
8. C Street / Settlers Road
9. A Street / Main Street
10. A Street / B Street
11. A Street / Settlers Road

For your convenience, I have attached a graphic that visually depicts the location of each intersection.

Please let me know if you have any further questions or comments.

Thank you,

Lauren O'Grady, P.Eng.
Senior Transportation Engineer

BA Consulting Group Ltd.

135 Laurier Avenue West | Ottawa
416 961 7110 x143 | lauren.ogrady@bagroup.com

BA Group

MOVEMENT IN URBAN ENVIRONMENTS
BAGROUP.COM

From: Khan, Ayesha <Ayesha.Khan@halton.ca>
Sent: September 15, 2025 8:00 AM
To: Lauren O'Grady <lauren.ogrady@bagroup.com>
Subject: RE: 340 Burnhamthorpe and 3437 Trafalgar - Transportation ToR

You don't often get email from ayesha.khan@halton.ca. Learn why this is important

Hi Lauren,

I have now completed my review of the TIS TOR and would like to provide the following comments:

Analysis Study Area
Please list the specific intersections to be analysed, instead of:

- All intersections of new public streets within the site at Trafalgar Road
- All intersections of new public streets within the site at Burnhamthorpe Road
- All new internal public street intersections within the site

All other elements of the TOR are satisfactory.

General Notes

- The TIS report must include:
  - Site Plan and Map,
  - Size & Number of Development Phases,
  - Existing Conditions (Study Area Intersections, Road Network, Pedestrian Routes, Cycling Routes, Transit Services),
  - Existing Traffic Conditions (Site Operating Characteristics, Data Collection/Traffic Counts, Analysis Periods (5 years Ahead),
  - Future Background Conditions (Horizon Years, Horizon Year Volumes)
  - Background Traffic Demand (with TMC's < 2 years old),
  - Background Traffic Demand Forecast (with acceptable growth rates)
  - Site Generated Traffic (Transit Modal Split, Trip Generation/Distribution/Assignment)
  - Future Total Traffic Demand,
  - Capacity Analysis (by Intersection, with LOS, Avg. Delay, V/C ratios),
  - Traffic Impacts (Tables – Total Traffic with/without Mitigation)
  - Access Considerations – Existing, Proposed, Geometrics (turn lanes, sight lines),
  - Recommendations - Identify required/recommended road improvements either as a result of the development impacts, or general non-development improvements.
  - TDM recommendations (Transit, Pedestrian & Cycling Facilities Analysis)
  - Conclusions
  - Appendices with Terms of Reference correspondence from all agencies.

Thanks,
Ayesha

From: Lauren O'Grady <lauren.ogrady@bagroup.com>
Sent: Thursday, September 11, 2025 9:04 AM
To: Khan, Ayesha <Ayesha.Khan@halton.ca>; Campbell, Michaela <Michaela.Campbell@halton.ca>; syed.rizvi@oakville.ca
Cc: Amy Z. Jiang <jiang@bagroup.com>; Krusto, Matt <Matt.Krusto@halton.ca>
Subject: RE: 340 Burnhamthorpe and 3437 Trafalgar - Transportation ToR

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Good morning Ayesha and Syed,

I'm following up on the below Terms of Reference for the proposed 340 Burnhamthorpe and 3437 Trafalgar development.

Thank you,

Lauren O'Grady, P.Eng.
Senior Transportation Engineer

BA Consulting Group Ltd.

135 Laurier Avenue West | Ottawa
416 961 7110 x143 | lauren.ogrady@bagroup.com

From: Khan, Ayesha <Ayesha.Khan@halton.ca>
Sent: August 25, 2025 3:43 PM
To: Campbell, Michaela <Michaela.Campbell@halton.ca>; Lauren O'Grady <lauren.ogrady@bagroup.com>; syed.rizvi@oakville.ca
Cc: Amy Z. Jiang <jiang@bagroup.com>; Krusto, Matt <Matt.Krusto@halton.ca>
Subject: Re: 340 Burnhamthorpe and 3437 Trafalgar - Transportation ToR

You don't often get email from ayesha.khan@halton.ca. Learn why this is important

Hello Lauren,
Thank you for the terms of reference. We will conduct our review and I aim to provide you comments by next week.

Thanks,
Ayesha

Ayesha Khan
Transportation Planning Coordination PM1
Infrastructure Planning & Policy
Public Works
Halton Region
905-825-6000, ext. | 1-866-442-5866

From: Campbell, Michaela <Michaela.Campbell@halton.ca>
Sent: Monday, August 25, 2025 3:19 PM
To: Lauren O'Grady <lauren.ogrady@bagroup.com>; syed.rizvi@oakville.ca <syed.rizvi@oakville.ca>; Khan, Ayesha <Ayesha.Khan@halton.ca>

Cc: Amy Z. Jiang <jiang@bagroup.com>; Krusto, Matt <Matt.Krusto@halton.ca>
Subject: RE: 340 Burnhamthorpe and 3437 Trafalgar - Transportation ToR

Hello Lauren,

Thank you for the email.

I have cc'd Ayesha Khan, Project Manager I – Transportation Development Review, and Matt Krusto, Supervisor, Transportation Development Review, on this email.

Matt and Ayesha – can you please provide a response to the below email? Thanks!

Thank you,
Michaela

Michaela Campbell, BURPI
Intermediate Planner - Oakville
Development Services
Public Works
Halton Region
905-825-6000, ext. 2830 | 1-866-442-5866



From: Lauren O'Grady <lauren.ogrady@bagroup.com>
Sent: Monday, August 25, 2025 3:04 PM
To: syed.rizvi@oakville.ca; Campbell, Michaela <Michaela.Campbell@halton.ca>
Cc: Amy Z. Jiang <jiang@bagroup.com>
Subject: 340 Burnhamthorpe and 3437 Trafalgar - Transportation ToR

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.

Hi Syed and Michaela,

I'm working on behalf of Westerkirk Capital Inc. for the lands located at 340 Burnhamthorpe Road East and 3437 Trafalgar Road. I am reaching out to provide you with our proposed Terms of Reference for the Transportation Study that will support the development application (please see attached).

Please let us know if you have any questions or comments on our proposed ToR.

Thank you,

Lauren O'Grady, P.Eng.

Senior Transportation Engineer

BA Consulting Group Ltd.

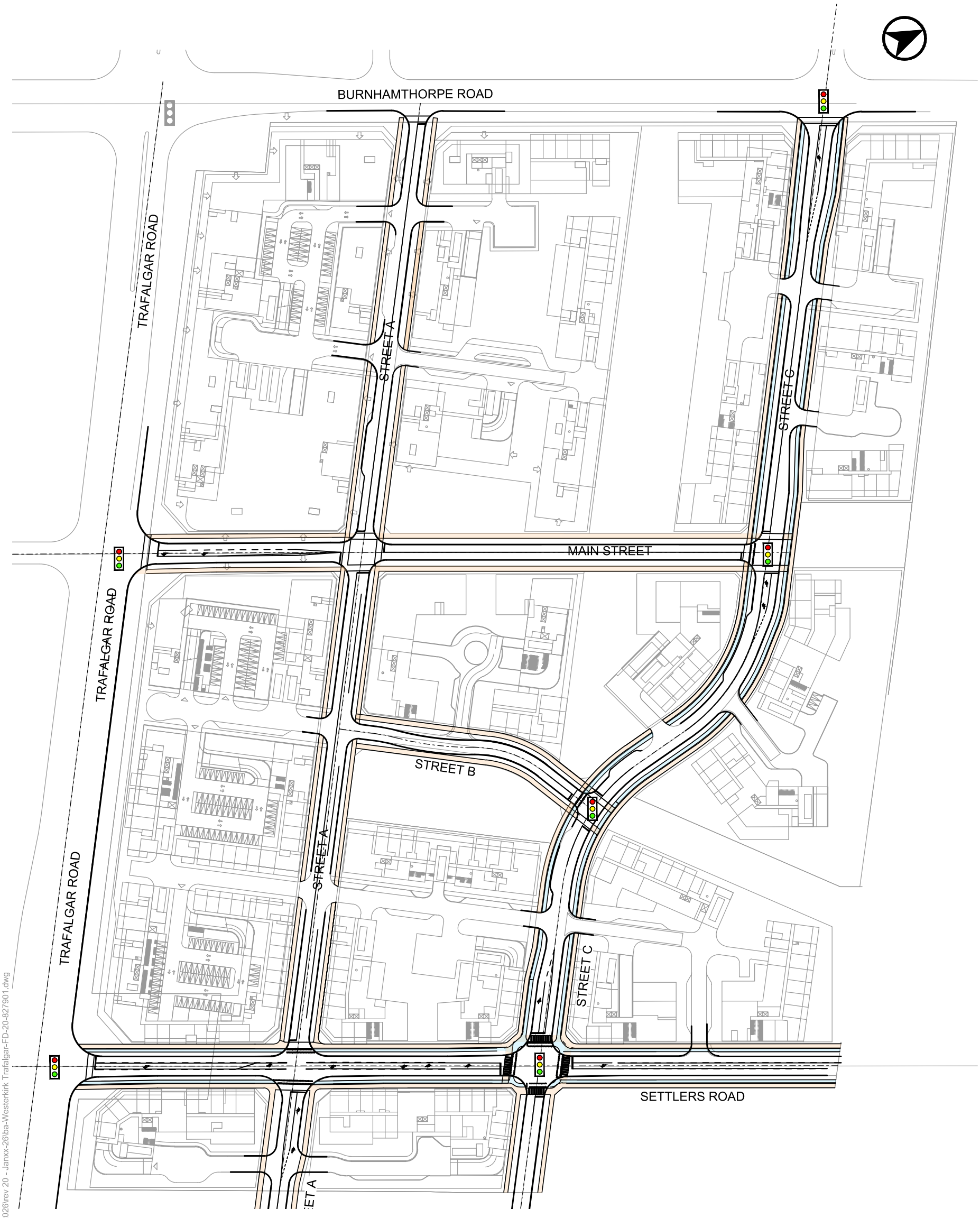
135 Laurier Avenue West | Ottawa
416 961 7110 x143 | lauren.ogrady@bagroup.com

Ayesha Khan
Project Manager I – Transportation Development Review
Development Services
Public Works
Halton Region
905-825-6000, ext. | 1-866-442-5866



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Appendix C:
Functional Road Network



Date Plotted: February 4, 2026 Filename: J:\8279-01\BA\Functional Design\2026\rev 20 - Janxx-26\ba-Westerkirk Trafalgar-FD-20-827901.dwg

BA Group

FUNCTIONAL ROAD PLAN

Project:	Westerkirk Trafalgar
Project No.	8279-01
Date:	December 16, 2025
Revised:	February 4, 2026

Scale 1:2,000 (0 – 50 – 100m)

Drawing No. **FP-01**

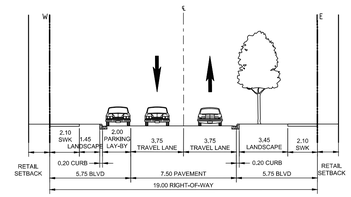
LEGEND

- PROPOSED SIGNALIZED INTERSECTION
- EXISTING SIGNALIZED INTERSECTION
- CONCRETE SIDEWALK
- BICYCLE LANE



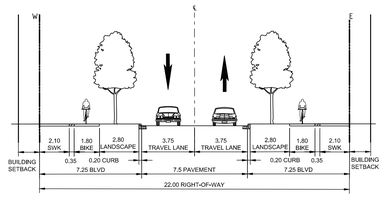
Date Plotted: February 4, 2026 Filename: J:\8279-01\BA\Functional Design\2026\rev 20 - Jan\xx-26\ba-Westerkirk Trafalgar-FD-20-827901.dwg

PROPOSED STREET CROSS-SECTIONS



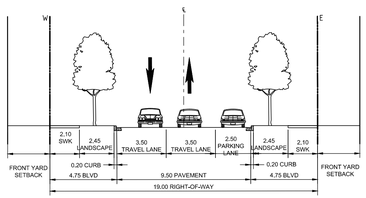
SECTION A-A
STREET A
19m RIGHT-OF-WAY
WITH 3.75m TRAVEL LANES, 2.0m PARKING LAY-BY ON THE WEST SIDE,
AND 2.1m-WIDE SIDEWALK ON BOTH SIDES

N.T.S



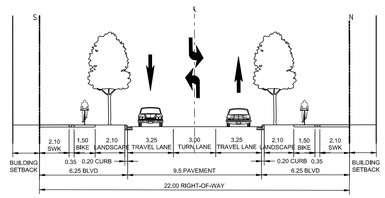
SECTION E-E
STREET C
22.0m RIGHT-OF-WAY
WITH 3.75m TRAVEL LANES, 1.8m-WIDE CYCLE TRACK ON BOTH SIDES,
AND 2.1m-WIDE SIDEWALK ON BOTH SIDES

N.T.S



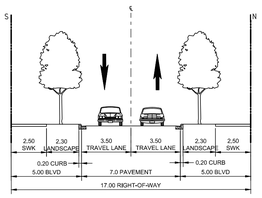
SECTION B-B
STREET A
19m RIGHT-OF-WAY
WITH 3.50m TRAVEL LANES AND 2.1m-WIDE SIDEWALK ON BOTH SIDES

N.T.S



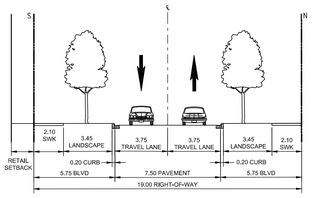
SECTION F-F
SETTLERS ROAD
22.0m RIGHT-OF-WAY
WITH 3.25m TRAVEL LANES, 3.00m OUAL LEFT-TURN LANE, 1.5m-WIDE CYCLE TRACK
ON BOTH SIDES, AND 2.1m-WIDE SIDEWALK ON BOTH SIDES

N.T.S



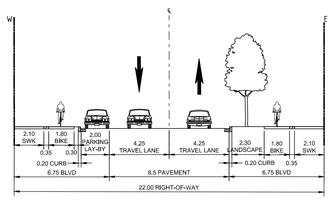
SECTION C-C
STREET B
17.0m RIGHT-OF-WAY
WITH 3.75m TRAVEL LANES AND 2.5m-WIDE SIDEWALK ON BOTH SIDES

N.T.S



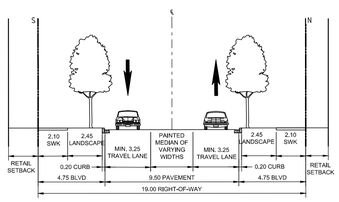
SECTION G-G
MAIN STREET
19m RIGHT-OF-WAY
WITH 3.75m TRAVEL LANES AND 2.1m-WIDE SIDEWALK ON BOTH SIDES

N.T.S



SECTION D-D
STREET C
22.0m RIGHT-OF-WAY
WITH 4.25m TRAVEL LANES, 2.00m PARKING LAY-BY ON THE WEST SIDE,1.8m-WIDE CYCLE TRACK
ON BOTH SIDES, AND 2.1m-WIDE SIDEWALK ON BOTH SIDES

N.T.S



SECTION H-H
MAIN STREET
19m RIGHT-OF-WAY
WITH 3.25m TRAVEL LANES AND 2.1m-WIDE SIDEWALK ON BOTH SIDES

N.T.S

CROSS-SECTIONS

1:200

GENERAL NOTES

BASE PLAN PROVIDED BY BDP QUADRANGLE ARCHITECTS, DATED JANUARY 19, 2026

02	02-04-26	ATC	ISSUED FOR ZBA / OPA SUBMISSION
01	03-14-25	ATC	REVISED WITH NEW ROWs EAST OF LANDS; UPDATED CROSS SECTIONS
00	02-14-25	ATC	ISSUED FOR REVIEW

BA Group

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

MOVEMENT IN URBAN ENVIRONMENTS
BAGROUP.COM

WESTERKIRK TRAFALGAR NORTH OAKVILLE

FUNCTIONAL ROAD PLAN

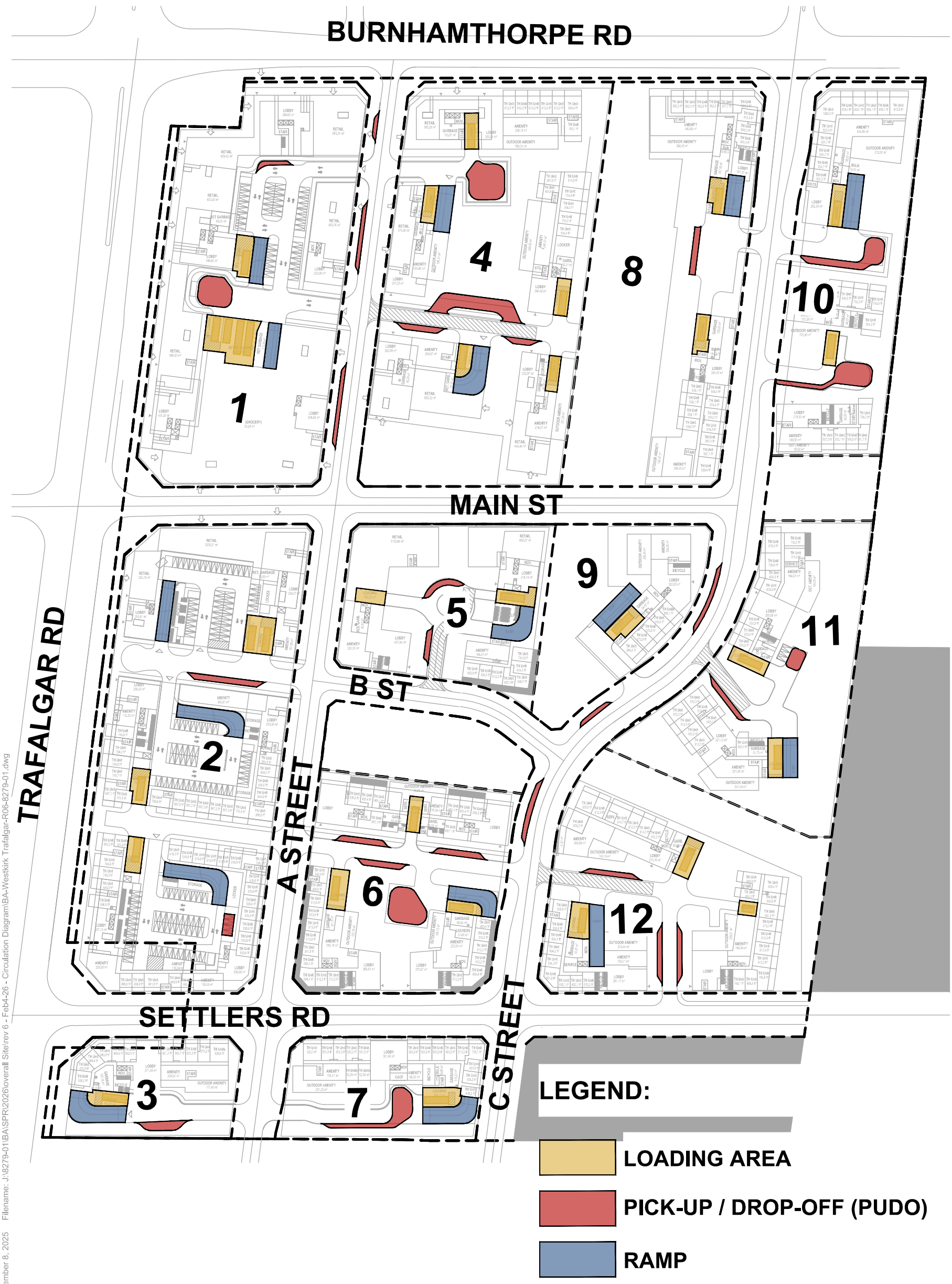
Date: FEBRUARY 14, 2025

Project No.: 8279-01

Scale: 1:1,250 (0 25 50m)

RP-01

Appendix D:
Block Access Diagram



Date Plotted: December 8, 2025 Filename: J:\8279-01\BA\SPR\2026\overall Sitelrev 6 - Feb4-26 - Circulation Diagram\BA-Westkirk Trafalgar-R06-8279-01.dwg

BA Group

BLOCK ACCESS, PARKING, PICK-UP/DROP-OFF & LOADING DIAGRAM

GROUND FLOOR

Project:	Westkirk Trafalgar
Project No.	8279-01
Date:	December 8, 2025
Revised:	February 4, 2026

Scale 1:2,000 (0 – 50 – 100m)

Drawing No. CD-1

Appendix E:
Vehicle Manoeuvring Diagrams (VMDs)

INBOUND

OUTBOUND

RETAIL
683.76 m²

MOV.

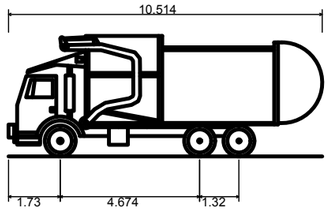
LOBBY
220.96 m²

STAIR

RES. LOADING
181.41 m²

RETAIL LOADING
391.05 m²

RET GARBAGE
113.26 m²



Halton Region Garbage, Yr 2008-2014

Overall Length	10.514m
Overall Width	2.570m
Overall Body Height	4.040m
Wall to Wall Turning Radius	13.715m

VEHICLE MOVEMENT DIAGRAM

BLOCK 1 - GROUND FLOOR

NORTH BUILDING

HALTON REGION GARBAGE VEHICLE

BA Group

Project:	Westkirk Trafalgar
Project No.	8279-01
Date:	September 18, 2025
Revised:	January 30, 2026

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

Drawing No. VMD-01

Date Plotted: January 27, 2026 Filename: J:\8279-01\BA\SPR\2026\Block 1\Rev 04 - JanXX-26\BA-Westkirk Trafalgar-Block 1-R03-827901.dwg

INBOUND

OUTBOUND

RETAIL
683.76 m²

MOV.

LOBBY
220.96 m²

STAIR

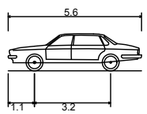
RES. LOADING
181.41 m²

RES. LOADING
152.80 m²

RET GARBAGE
113.26 m²

RETAIL LOADING
391.05 m²

Design Vehicle - TAC P CAR



Overall Length	5.60m
Overall Width	2.00m
Overall Body Height	1.56m
Outside Turning Radius	6.90m
Inside Turning Radius	3.40m

BA Group

VEHICLE MOVEMENT DIAGRAM

BLOCK 1 - GROUND FLOOR

NORTH BUILDING - FLOOR 2 ACCESS

TAC P CAR

Project:	Westkirk Trafalgar
Project No.	8279-01
Date:	September 18, 2025
Revised:	January 30, 2026

Scale 1:500 — 0 5 10 15 20m

Drawing No. VMD-02

Date Plotted: January 27, 2026 Filename: J:\8279-01\BA\SPR2026\Block 1\Rev 04 - JanXX-26\BA-Westkirk Trafalgar-Block 1-R03-827901.dwg

INBOUND

OUTBOUND

RETAIL
683.76 m²

T GARBAGE
66.54 m²

RES. LOADING
181.41 m²

MOV.

LOBBY
220.96 m²

STAIR

RETAIL LOADING
391.05 m²

RET GARBAGE
113.26 m²

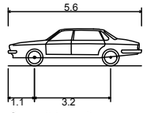
RES. LOADING
152.80 m²

RETAIL
374.00 m

LOBBY
217.25 m

LOBB
262.99

Design Vehicle - TAC P CAR



Overall Length	5.60m
Overall Width	2.00m
Overall Body Height	1.56m
Outside Turning Radius	6.90m
Inside Turning Radius	3.40m

Date Plotted: January 27, 2026 Filename: J:\8279-01\BA\SPR\2026\Block 1\Rev 04 - Jan\XX-26\BA-Westkirk Trafalgar-Block 1-R03-827901.dwg

BA Group

VEHICLE MOVEMENT DIAGRAM

BLOCK 1 - GROUND FLOOR

NORTH BUILDING - P1 FLOOR ACCESS

TAC P CAR

Project:	Westkirk Trafalgar
Project No.	8279-01
Date:	September 18, 2025
Revised:	January 30, 2026

Scale 1:500 0 5 10 15 20m

Drawing No. VMD-03

INBOUND

OUTBOUND

RETAIL
683.76 m²

RET GARBAGE
66.54 m²

MOV.

LOBBY
346.62 m²

RES. LOADING
181.41 m²

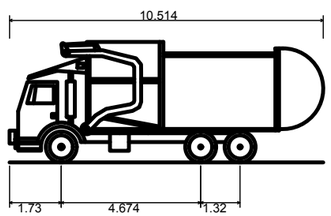
LOBBY
220.96 m²

STAIR

RES. LOADING
152.80 m²

RETAIL LOADING
391.05 m²

RET GARBAGE
113.26 m²



Halton Region Garbage, Yr 2008-2014	
Overall Length	10.514m
Overall Width	2.570m
Overall Body Height	4.040m
Wall to Wall Turning Radius	13.715m

Date Plotted: January 27, 2026 Filename: J:\8279-01\BA\SPR\2026\Block 1\Rev 04 - JanXX-26\BA-Westkirk Trafalgar-Block 1-R03-827901.dwg

BA Group

VEHICLE MOVEMENT DIAGRAM

BLOCK 1 - GROUND FLOOR

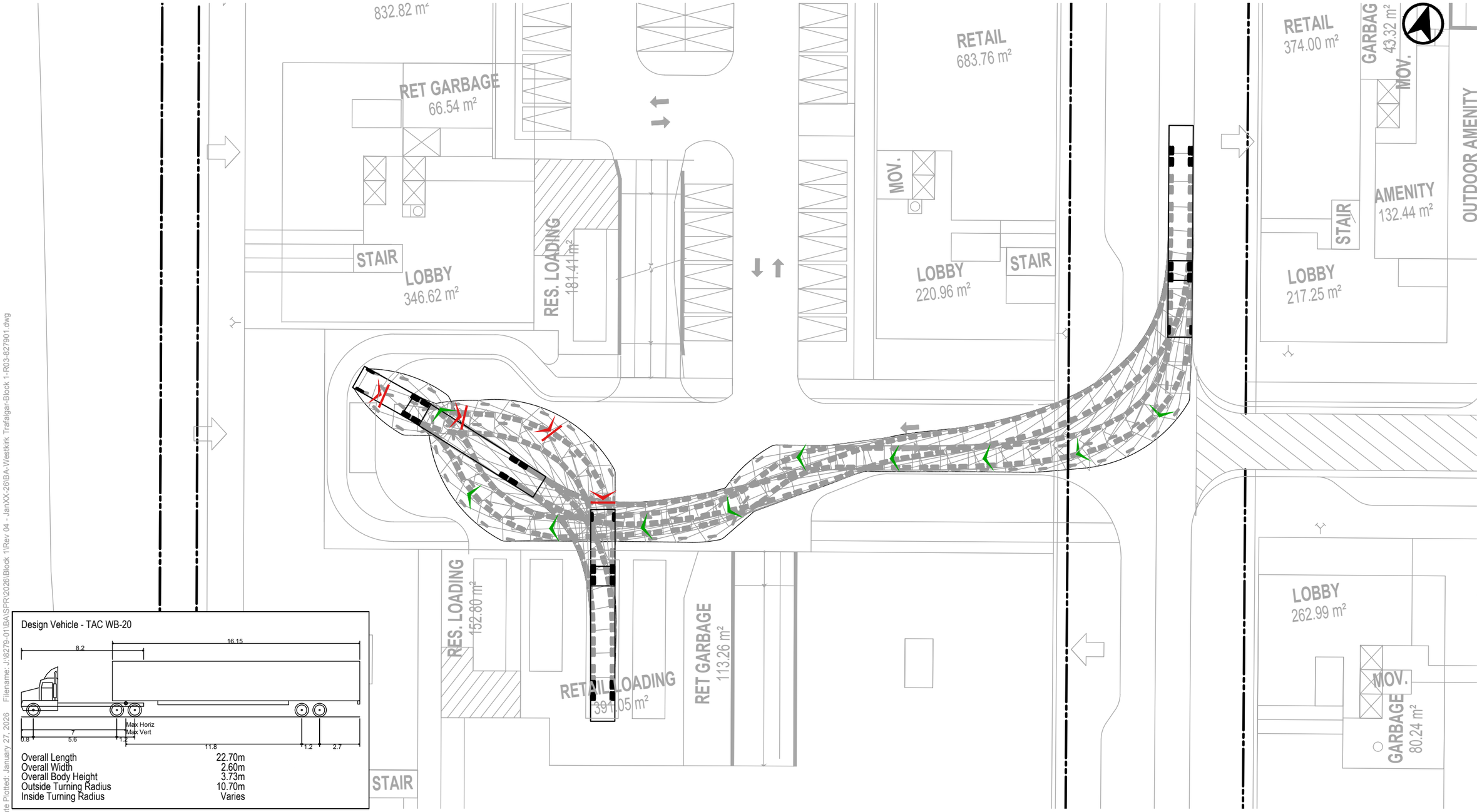
SOUTH BUILDING

HALTON REGION GARBAGE VEHICLE

Project:	Westkirk Trafalgar
Project No.	8279-01
Date:	September 18, 2025
Revised:	January 30, 2026

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

Drawing No. VMD-04



Design Vehicle - TAC WB-20

Overall Length	22.70m
Overall Width	2.60m
Overall Body Height	3.73m
Outside Turning Radius	10.70m
Inside Turning Radius	Varies

VEHICLE MOVEMENT DIAGRAM

BLOCK 1

SOUTH BUILDING - WEST 'TYPE A' LOADING SPACE

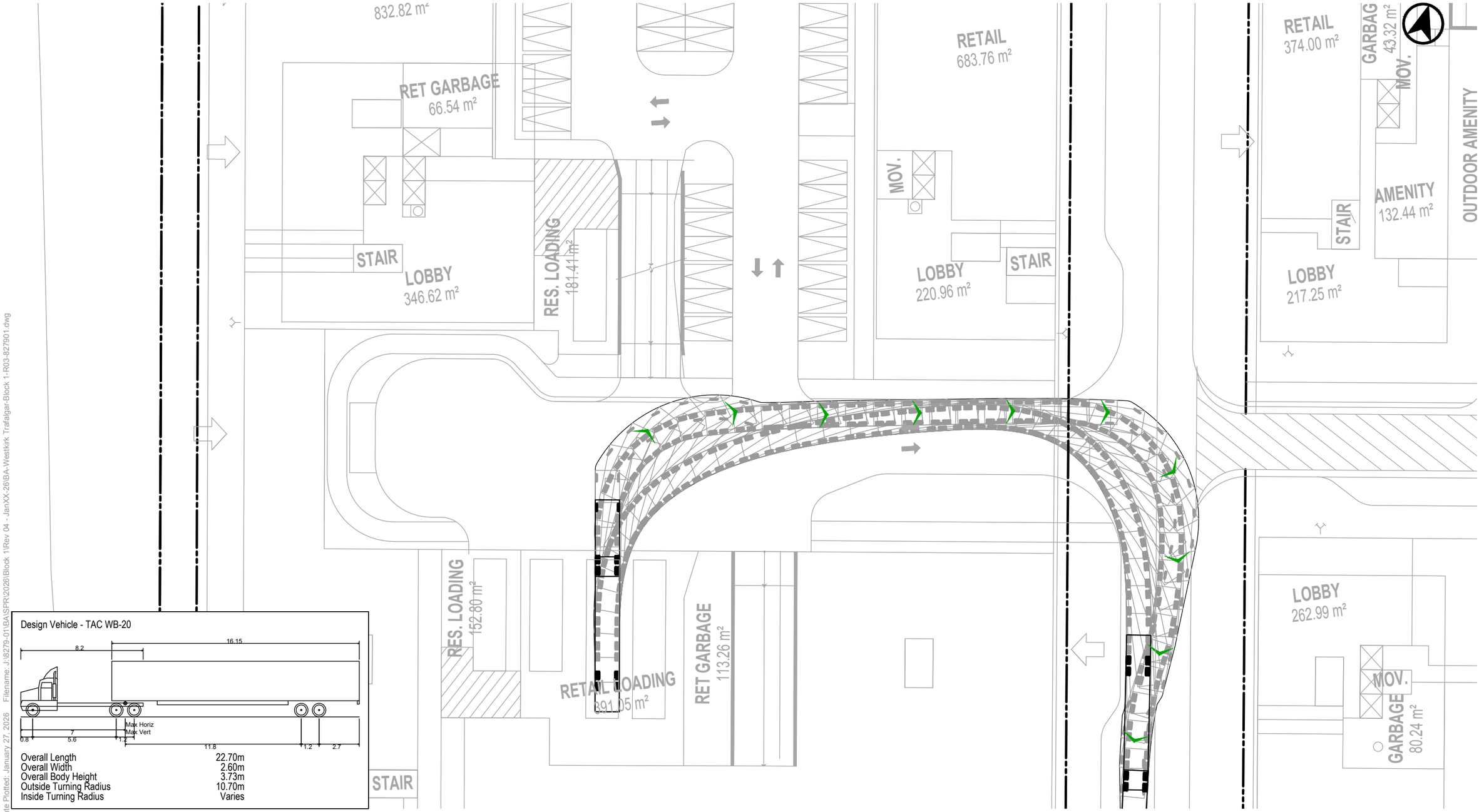
TAC WB-20 VEHICLE - INBOUND

Project:	Westkirk Trafalgar
Project No.	8279-01
Date:	September 18, 2025
Revised:	January 30, 2026

Scale 1:400 (0 2 4 6 8 10 20m)

Drawing No. VMD-05

Date Plotted: January 27, 2026 Filename: J:\8279-01\BA\SPR\2026\Block 1\Rev 04 - JanXX-26\BA-Westkirk Trafalgar-Block 1-R03-827901.dwg



Design Vehicle - TAC WB-20

Overall Length	22.70m
Overall Width	2.60m
Overall Body Height	3.73m
Outside Turning Radius	10.70m
Inside Turning Radius	Varies

BA Group

VEHICLE MOVEMENT DIAGRAM

BLOCK 1

SOUTH BUILDING - WEST 'TYPE A' LOADING SPACE

TAC WB-20 VEHICLE - OUTBOUND

Project:	Westkirk Trafalgar
Project No.	8279-01
Date:	September 18, 2025
Revised:	January 30, 2026

Scale 1:400 — 0 2 4 6 8 10 20m

Drawing No. VMD-06

Date Plotted: January 27, 2026 Filename: J:\8279-01\BA\SPR\2026\Block 1\Rev 04 - JanXX-26\BA-Westkirk Trafalgar-Block 1-R03-827901.dwg

RET GARBAGE
66.54 m²

STAIR

LOBBY
346.62 m²

RES. LOADING
181.41 m²

RETAIL
683.76 m²

MOV.

LOBBY
220.96 m²

STAIR

RETAIL
374.00 m²

GARBAGE
80.24 m²

MOV.

STAIR

AMENITY
132.44 m²

LOBBY
217.25 m²

RES. LOADING
152.80 m²

RETAIL LOADING
391.05 m²

RET GARBAGE
113.26 m²

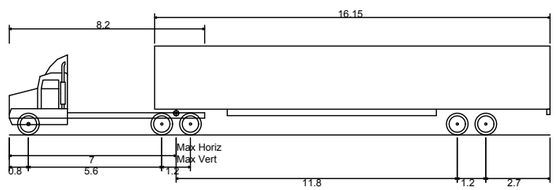
STAIR

LOBBY
262.99 m²

MOV.

GARBAGE
80.24 m²

Design Vehicle - TAC WB-20



Overall Length	22.70m
Overall Width	2.60m
Overall Body Height	3.73m
Outside Turning Radius	10.70m
Inside Turning Radius	Varies

BA Group

VEHICLE MOVEMENT DIAGRAM

BLOCK 1

SOUTH BUILDING - EAST 'TYPE A' LOADING SPACE

TAC WB-20 VEHICLE - INBOUND

Project:	Westkirk Trafalgar
Project No.	8279-01
Date:	September 18, 2025
Revised:	December 9, 2025

Scale 1:400 0 2 4 6 8 10 20m

Drawing No. VMD-07

Date Plotted: January 27, 2026 Filename: J:\8279-01\BA\SPR\2026\Block 1\Rev 04 - JanXX-26\BA-Westkirk Trafalgar-Block 1-R03-827901.dwg

RET GARBAGE
66.54 m²

STAIR

LOBBY
346.62 m²

RES. LOADING
181.41 m²

RETAIL
683.76 m²

MOV.

LOBBY
220.96 m²

STAIR

RETAIL
374.00 m²

MOV.

STAIR

AMENITY
132.44 m²

LOBBY
217.25 m²

RES. LOADING
152.80 m²

RETAIL LOADING
391.05 m²

RET GARBAGE
113.26 m²

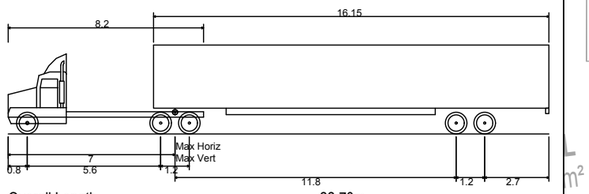
STAIR

LOBBY
262.99 m²

MOV.

GARBAGE
80.24 m²

Design Vehicle - TAC WB-20



Overall Length	22.70m
Overall Width	2.60m
Overall Body Height	3.73m
Outside Turning Radius	10.70m
Inside Turning Radius	Varies

Date Plotted: January 27, 2026 Filename: J:\8279-01\BA\SPR\2026\Block 1\Rev 04 - JanXX-26\BA-Westkirk Trafalgar-Block 1-R03-827901.dwg

BA Group

VEHICLE MOVEMENT DIAGRAM

BLOCK 1

SOUTH BUILDING - EAST 'TYPE A' LOADING SPACE

TAC WB-20 VEHICLE - OUTBOUND

Project:	Westkirk Trafalgar
Project No.	8279-01
Date:	September 18, 2025
Revised:	December 9, 2025

Scale 1:400 0 2 4 6 8 10 20m

Drawing No. VMD-08

INBOUND

OUTBOUND

RETAIL
683.76 m²

MOV.

LOBBY
220.96 m²

STAIR

RES. LOADING
181.41 m²

RETAIL
374.00 m

LOBBY
217.25 r

T GARBAGE
66.54 m²

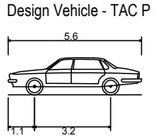
RES. LOADING
152.80 m²

RET GARBAGE
113.26 m²

RETAIL LOADING
391.05 m²

LOBB
262.99

Design Vehicle - TAC P CAR



Overall Length	5.60m
Overall Width	2.00m
Overall Body Height	1.56m
Outside Turning Radius	6.90m
Inside Turning Radius	3.40m

Date Plotted: January 27, 2026 Filename: J:\8279-01\BA\SPR\2026\Block 1\Rev 04 - JanXX-26\BA-Westkirk Trafalgar-Block 1-R03-827901.dwg

BA Group

VEHICLE MOVEMENT DIAGRAM

BLOCK 1 - GROUND FLOOR

SOUTH BUILDING - P1 FLOOR ACCESS

TAC P CAR

Project:	Westkirk Trafalgar
Project No.	8279-01
Date:	September 18, 2025
Revised:	January 30, 2026

Scale 1:500 — 0 5 10 15 20m

Drawing No. VMD-09

RET GARBAGE
66.54 m²

STAIR

LOBBY
346.62 m²

RES. LOADING
181.41 m²

RETAIL
683.76 m²

MOV.

LOBBY
220.96 m²

STAIR

RETAIL
374.00 m²

GARBAGE
80.24 m²

MOV.

STAIR

AMENITY
132.44 m²

LOBBY
217.25 m²

RES. LOADING
152.80 m²

RETAIL LOADING
391.05 m²

RET GARBAGE
113.26 m²

RETAIL
886.83 m²

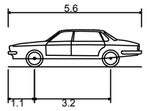
STAIR

LOBBY
262.99 m²

MOV.

GARBAGE
80.24 m²

Design Vehicle - TAC P CAR



Overall Length	5.60m
Overall Width	2.00m
Overall Body Height	1.56m
Outside Turning Radius	6.90m
Inside Turning Radius	3.40m

Date Plotted: January 27, 2026 Filename: J:\8279-01\BA\SPR\2026\Block 1\Rev 04 - JanXX-26\BA-Westkirk Trafalgar-Block 1-R03-827901.dwg

BA Group

VEHICLE MOVEMENT DIAGRAM

BLOCK 1

ON-SITE VEHICLE TURNAROUND

TAC P CAR VEHICLE

Project:	Westkirk Trafalgar
Project No.	8279-01
Date:	September 18, 2025
Revised:	January 30, 2026

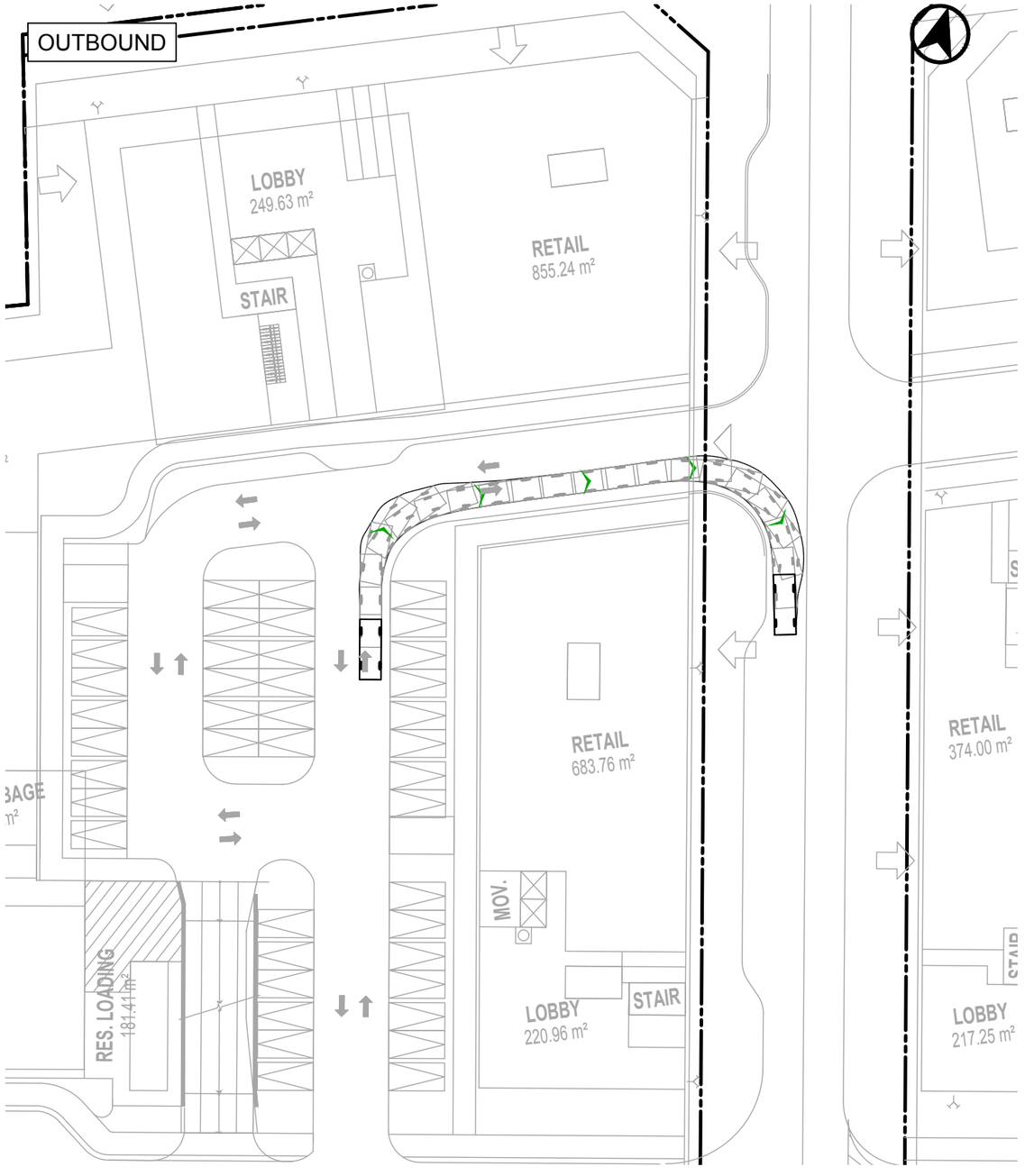
Scale 1:400

0 2 4 6 8 10 20m

Drawing No.

VMD-08





Date Plotted: January 27, 2026 Filename: J:\8279-01\BA\SPR\2026\Block 1\Rev 04 - JanXX-26\BA-Westkirk Trafalgar-Block 1-R03-827901.dwg

BA Group

VEHICLE MOVEMENT DIAGRAM

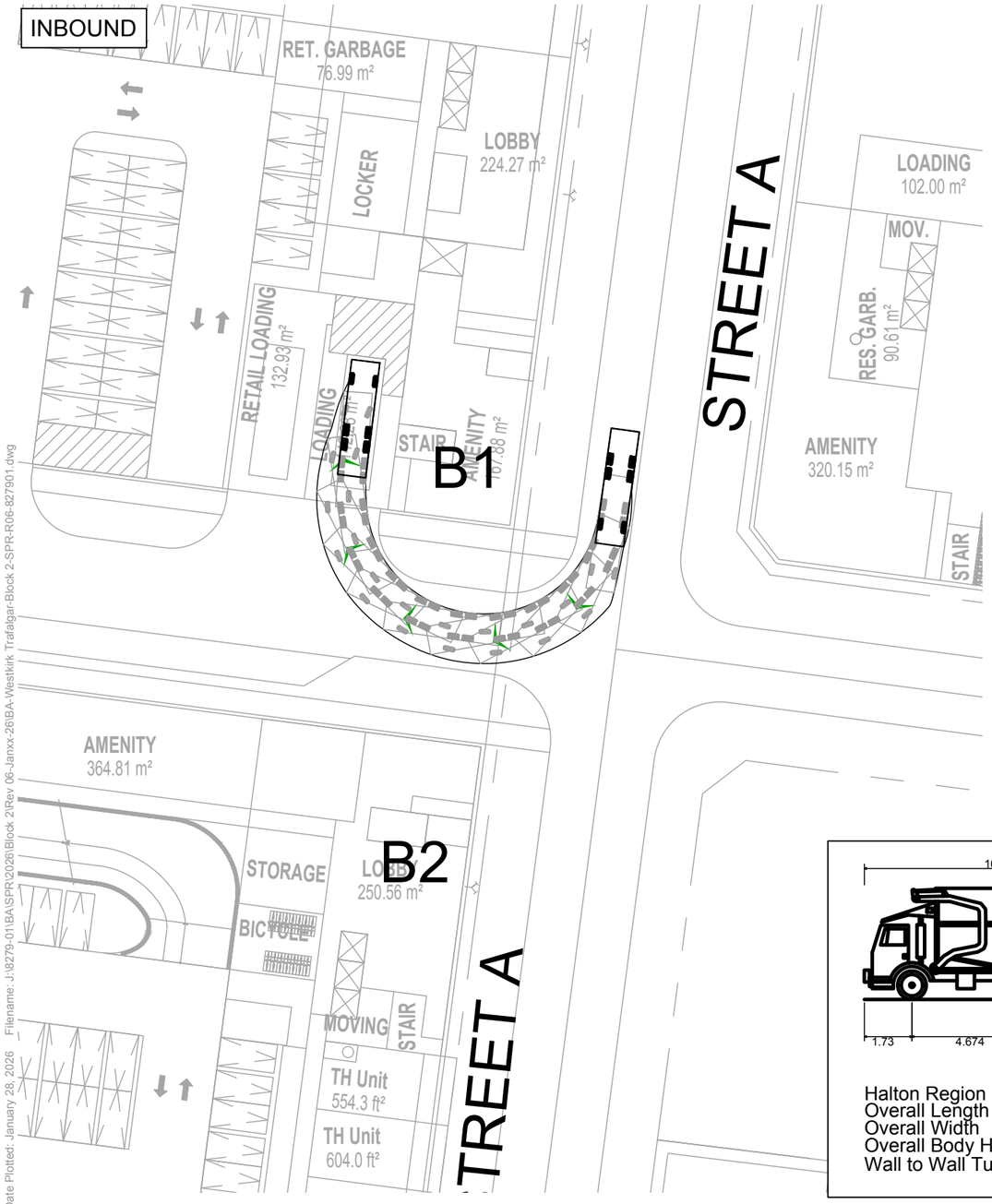
BLOCK 1 - GROUND FLOOR
NORTH DRIVEWAY
TAC P CAR

Project:	WESTKIRK TRAFALGAR
Project No.	8279-01
Date:	September 18, 2025
Revised:	January 30, 2026

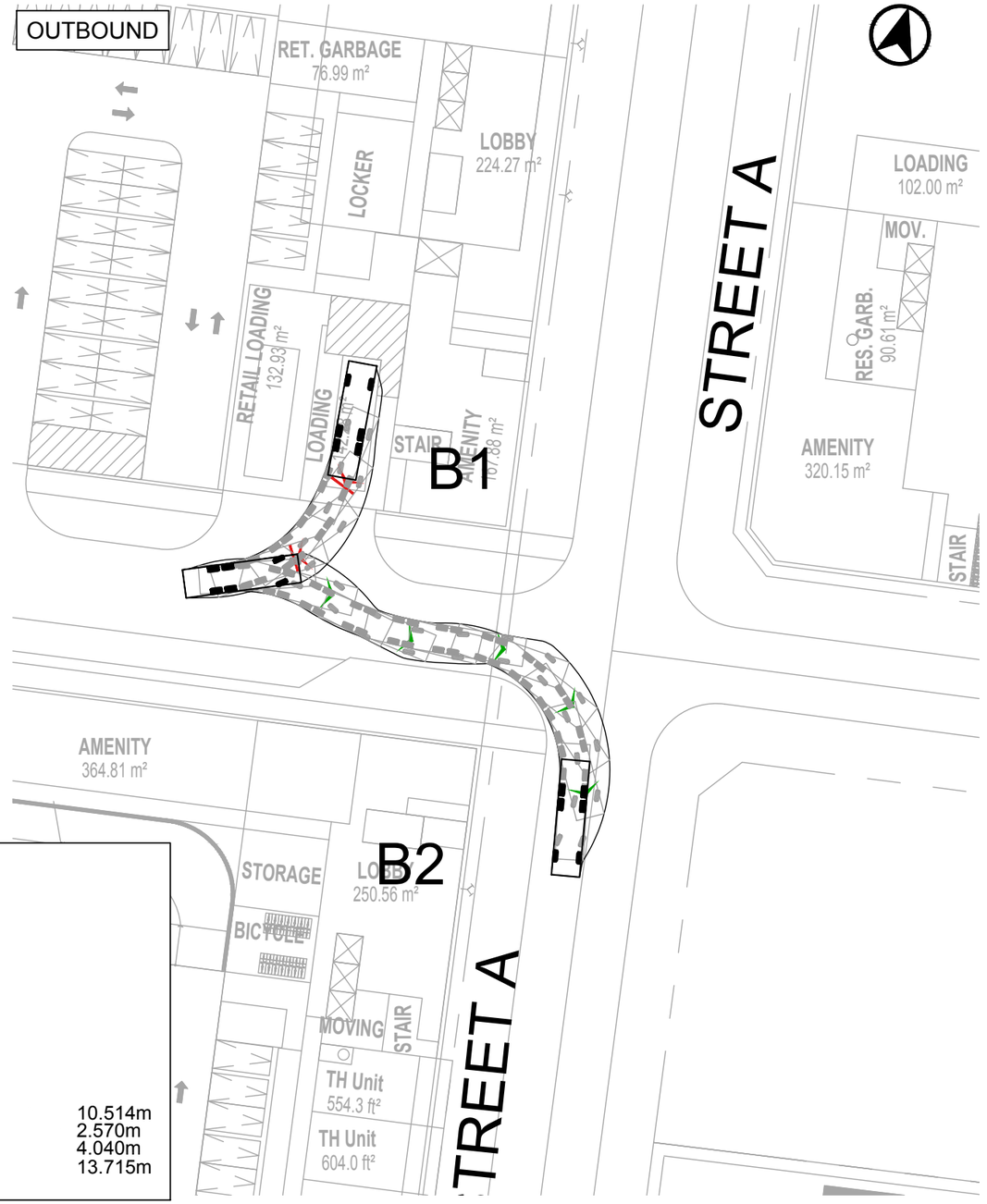
Scale 1:500 (0 5 10 15 20m)

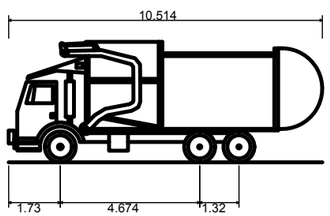
Drawing No. VMD-09

INBOUND



OUTBOUND





Halton Region Garbage, Yr 2008-2014	
Overall Length	10.514m
Overall Width	2.570m
Overall Body Height	4.040m
Wall to Wall Turning Radius	13.715m

Date Plotted: January 28, 2026 Filename: J:\8279-01\BA\SPR\2026\Block 2\Rev 06-Janxx-26\BA-Westkirk Trafalgar-Block 2-SPR-R06-827901.dwg

BA Group

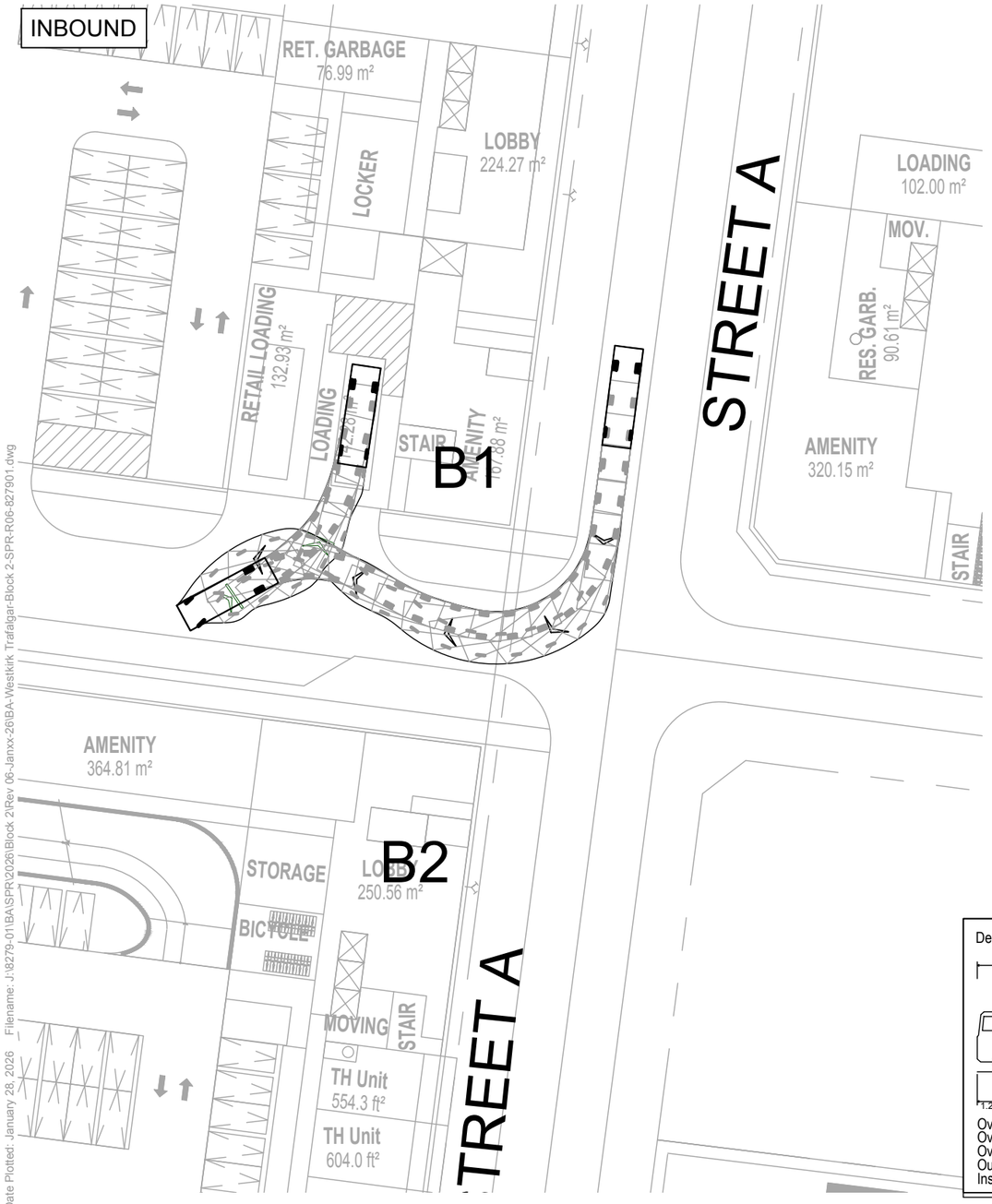
WESTKIRK TRAFALGAR

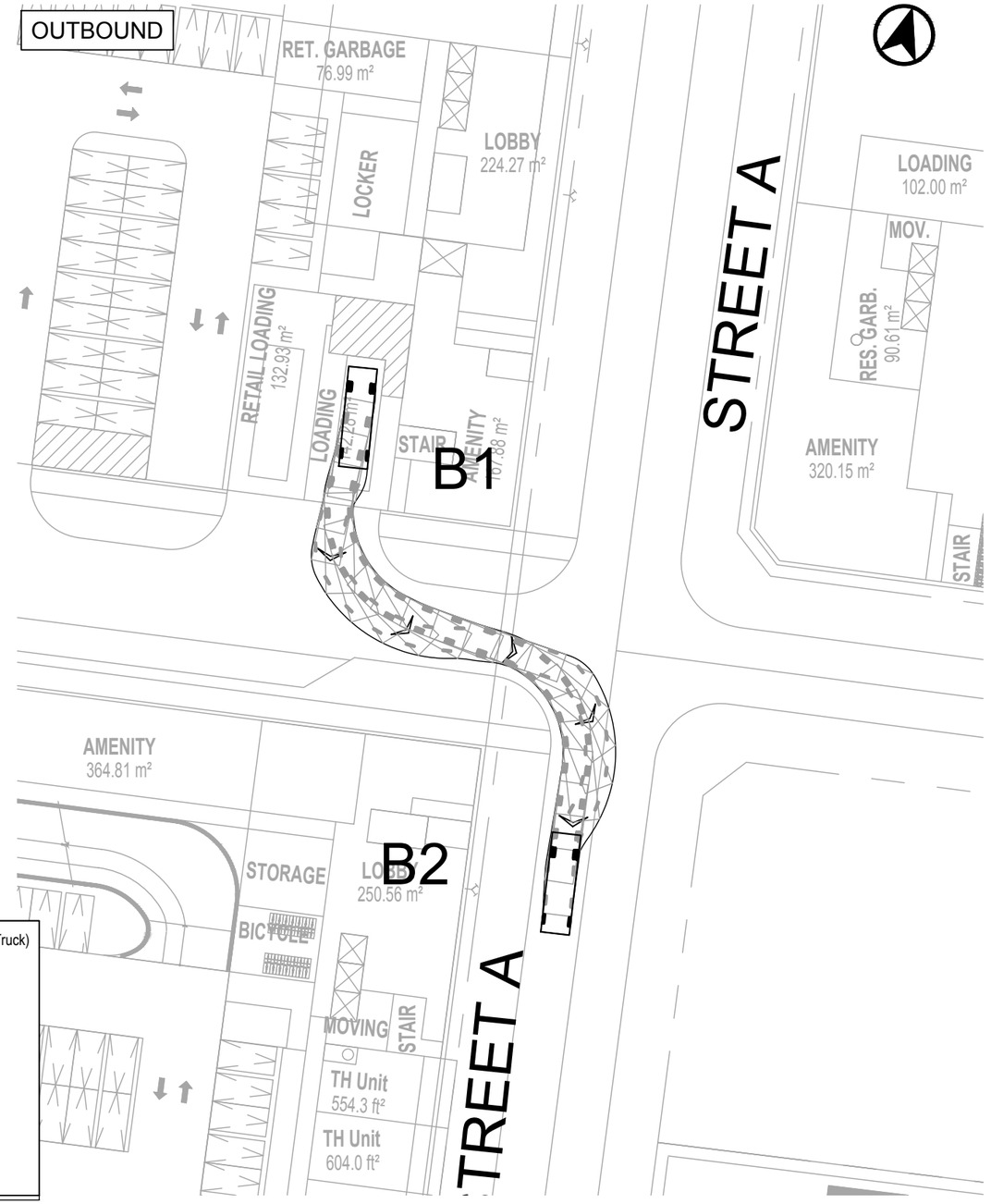
VEHICLE MANOEUVRING DIAGRAM
BLOCK 2 - B1 LOADING
HALTON REGION GARBAGE VEHICLE

Project:	WESTKIRK TRAFALGAR
Project No.	8279-01
Date:	DECEMBER 09, 2025
Revised:	January 30, 2026

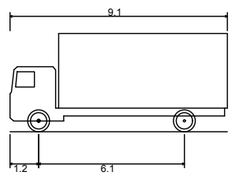
Scale 1:500 (0 5 10 15 20m)

Drawing No. VMD-01





Design Vehicle - TAC SU (Single Unit Truck)



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

BA Group

WESTKIRK TRAFALGAR

VEHICLE MANOEUVRING DIAGRAM
BLOCK 2 - B1 LOADING
TAC SU (SINGLE UNIT) TRUCK

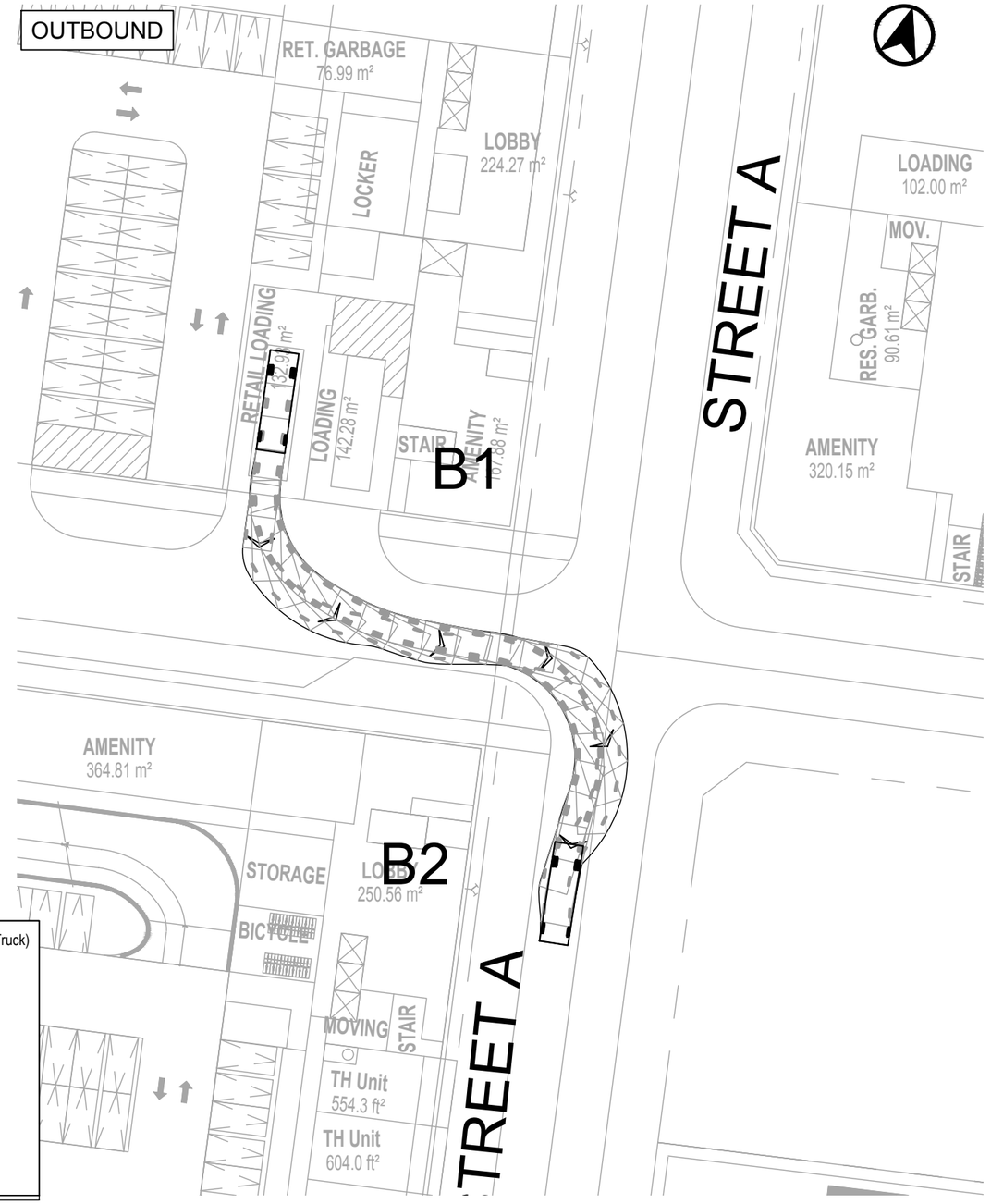
Project:	WESTKIRK TRAFALGAR
Project No.	8279-01
Date:	DECEMBER 09, 2025
Revised:	January 30, 2026

Scale 1:500 — 0 5 10 15 20m

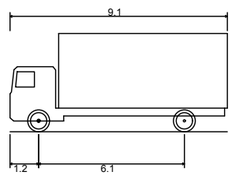
Drawing No. VMD-02

Date Plotted: January 28, 2026 Filename: J:\8279-01\BA\SPR\2026\Block 2\Rev 06-Janxx-26\BA-Westkirk Trafalgar-Block 2-SPR-R06-827901.dwg





Design Vehicle - TAC SU (Single Unit Truck)



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

Date Plotted: January 28, 2026 Filename: J:\8279-01\BA\SPR\2026\Block 2\Rev 06-Jamxx-26\BA-Westkirk Trafalgar-Block 2-SPR-R06-827901.dwg

BA Group

WESTKIRK TRAFALGAR

VEHICLE MANOEUVRING DIAGRAM
BLOCK 2 - B1 LOADING
TAC SU (SINGLE UNIT) TRUCK

Project:	WESTKIRK TRAFALGAR
Project No.	8279-01
Date:	DECEMBER 09, 2025
Revised:	January 30, 2026

Scale 1:500 — 0 5 10 15 20m

Drawing No. VMD-03

INBOUND

OUTBOUND

STREET A

B2

B3

STORAGE

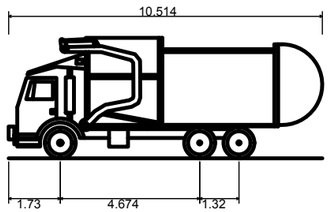
LOCKER

LOADING

STAIR

MOVING

BICYCLE



Halton Region Garbage, Yr 2008-2014	
Overall Length	10.514m
Overall Width	2.570m
Overall Body Height	4.040m
Wall to Wall Turning Radius	13.715m

Date Plotted: January 28, 2026 Filename: J:\8279-01\BA\SPR\2026\Block 2\Rev 06-Janxx-26\BA-Westkirk Trafalgar-Block 2-SPR-R06-827901.dwg

BA Group

WESTKIRK TRAFALGAR

VEHICLE MANOEUVRING DIAGRAM

BLOCK2 - B2 LOADING

HALTON REGION GARBAGE VEHICLE

Project:	WESTKIRK TRAFALGAR
Project No.	8279-01
Date:	DECEMBER 09, 2025
Revised:	January 30, 2026

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

Drawing No. VMD-04

INBOUND

OUTBOUND

B2

B3

STREET A

STORAGE

LOBBY 250.56 m²

BICYCLE

MOVING

STAIR

LOADING 144.00 m²

LOCKER

TH Unit 745.8 ft²

TH Unit 794.0 ft²

TH Unit 745.8 ft²

TH Unit 745.7 ft²

TH Unit 687.1 ft²

TH Unit 572.5 ft²

TH Unit 780.6 ft²

TH Unit 567.6 ft²

TH Unit 567.2 ft²

TH Unit 567.2 ft²

TH Unit 567.2 ft²

TH Unit 567.3 ft²

TH Unit 713.5 ft²

TH Unit 554.3 ft²

TH Unit 604.0 ft²

TH Unit 604.0 ft²

TH Unit 604.0 ft²

TH Unit 683.2 ft²

TH Unit 451.6 ft²

TH Unit 745.8 ft²

TH Unit 746.0 ft²

TH Unit 649.9 ft²

TH Unit 518.2 ft²

TH Unit 518.9 ft²

TH Unit 798.2 ft²

TH Unit 439.8 ft²

TH Unit 535.6 ft²

Design Vehicle - TAC SU (Single Unit Truck)

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

Filename: J:\8279-01\BA\SPR\2026\Block 2\Rev 06-Janxx-26\BA-Westkirk Trafalgar-Block 2-SPR-R06-827901.dwg

Date Plotted: January 28, 2026

BA Group

WESTKIRK TRAFALGAR

VEHICLE MANOEUVRING DIAGRAM

BLOCK 2 - B2 LOADING

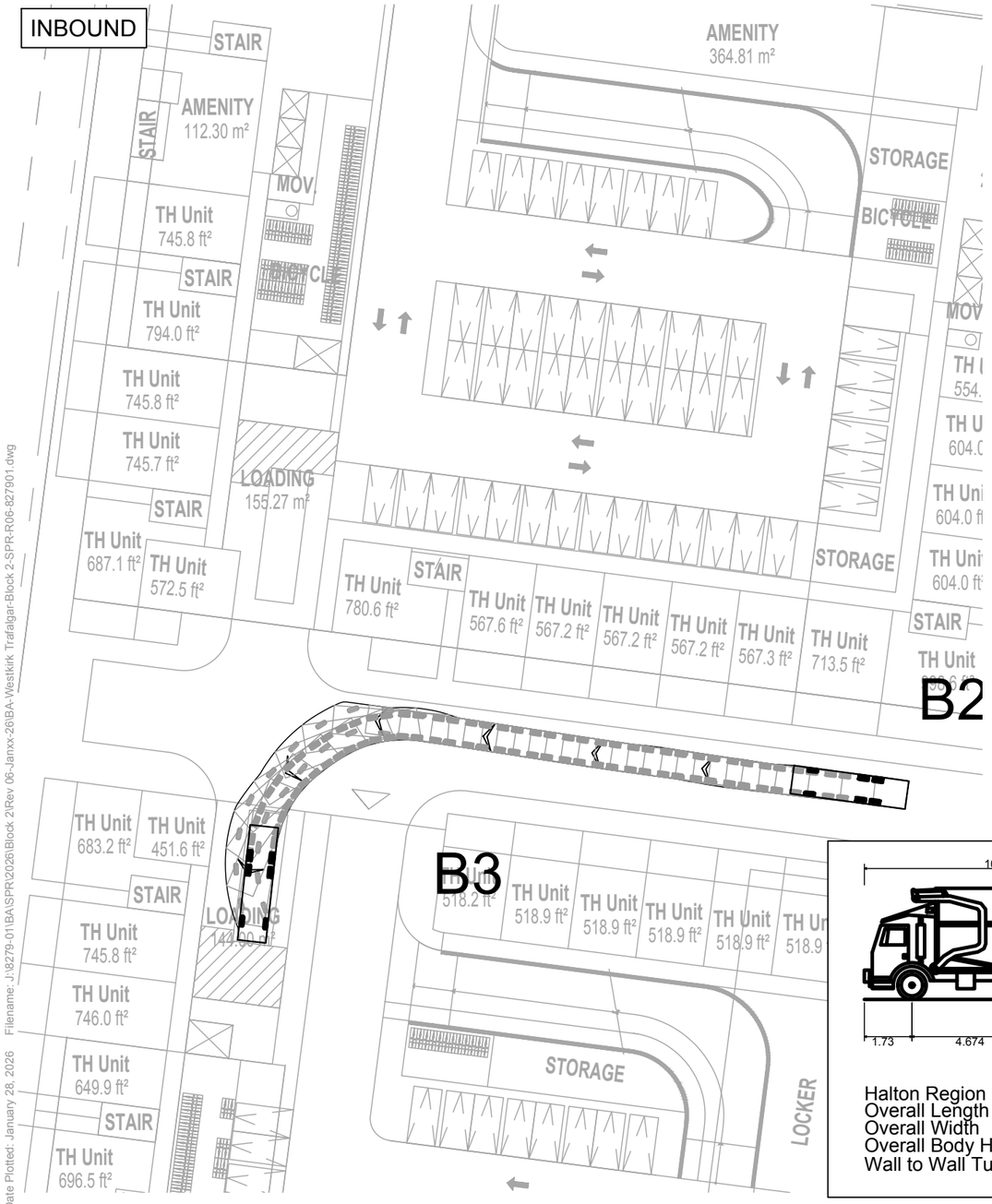
TAC SU (SINGLE UNIT) TRUCK

Project:	WESTKIRK TRAFALGAR
Project No.	8279-01
Date:	DECEMBER 09, 2025
Revised:	January 30, 2026

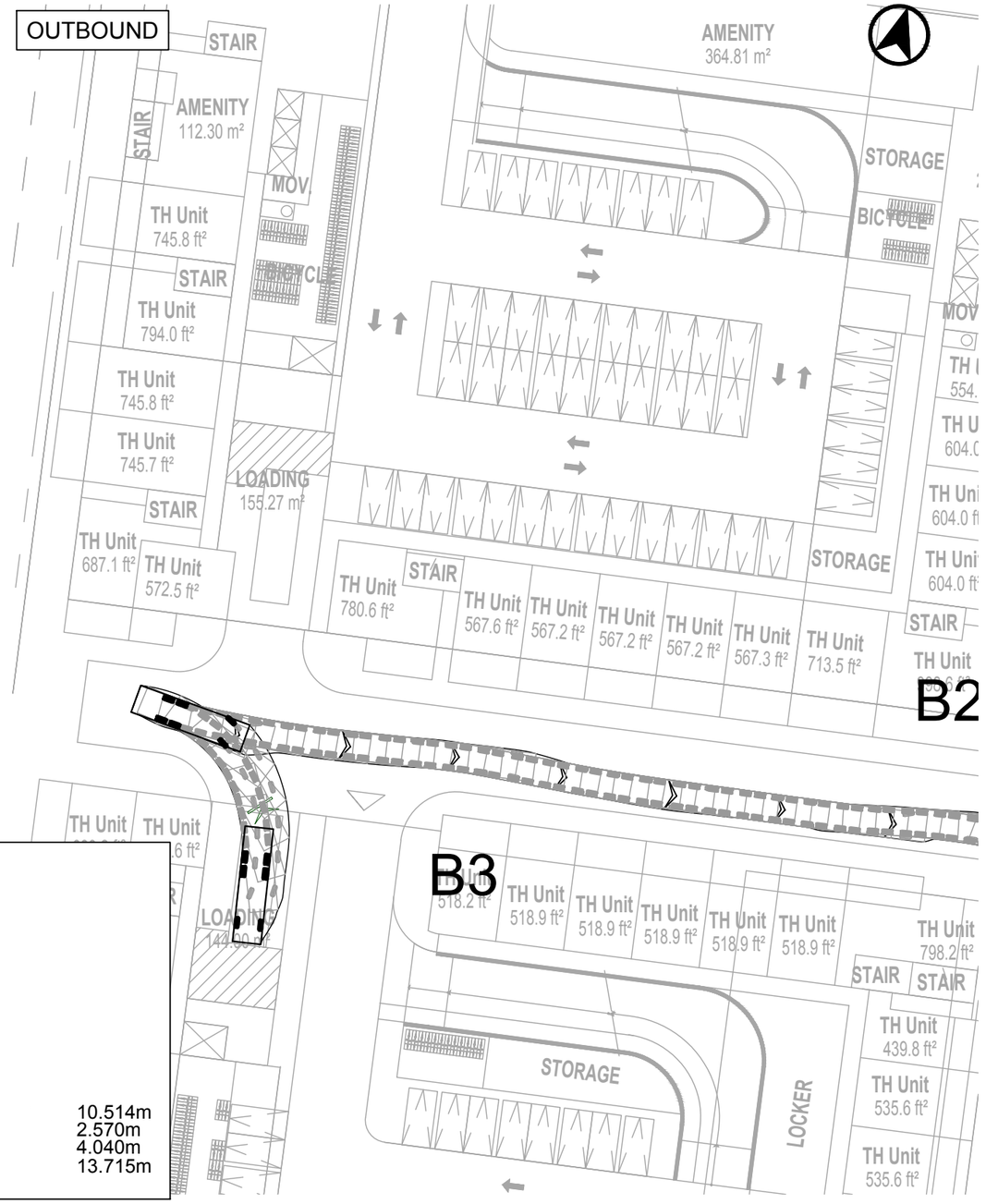
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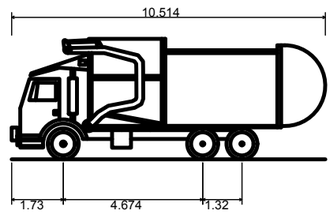
Drawing No. VMD-05

INBOUND



OUTBOUND





Halton Region Garbage, Yr 2008-2014	
Overall Length	10.514m
Overall Width	2.570m
Overall Body Height	4.040m
Wall to Wall Turning Radius	13.715m

BA Group

WESTKIRK TRAFALGAR

VEHICLE MANOEUVRING DIAGRAM

BLOCK 2 - B3 LOADING

HALTON REGION GARBAGE VEHICLE

Project:	WESTKIRK TRAFALGAR
Project No.	8279-01
Date:	DECEMBER 09, 2025
Revised:	January 30, 2026

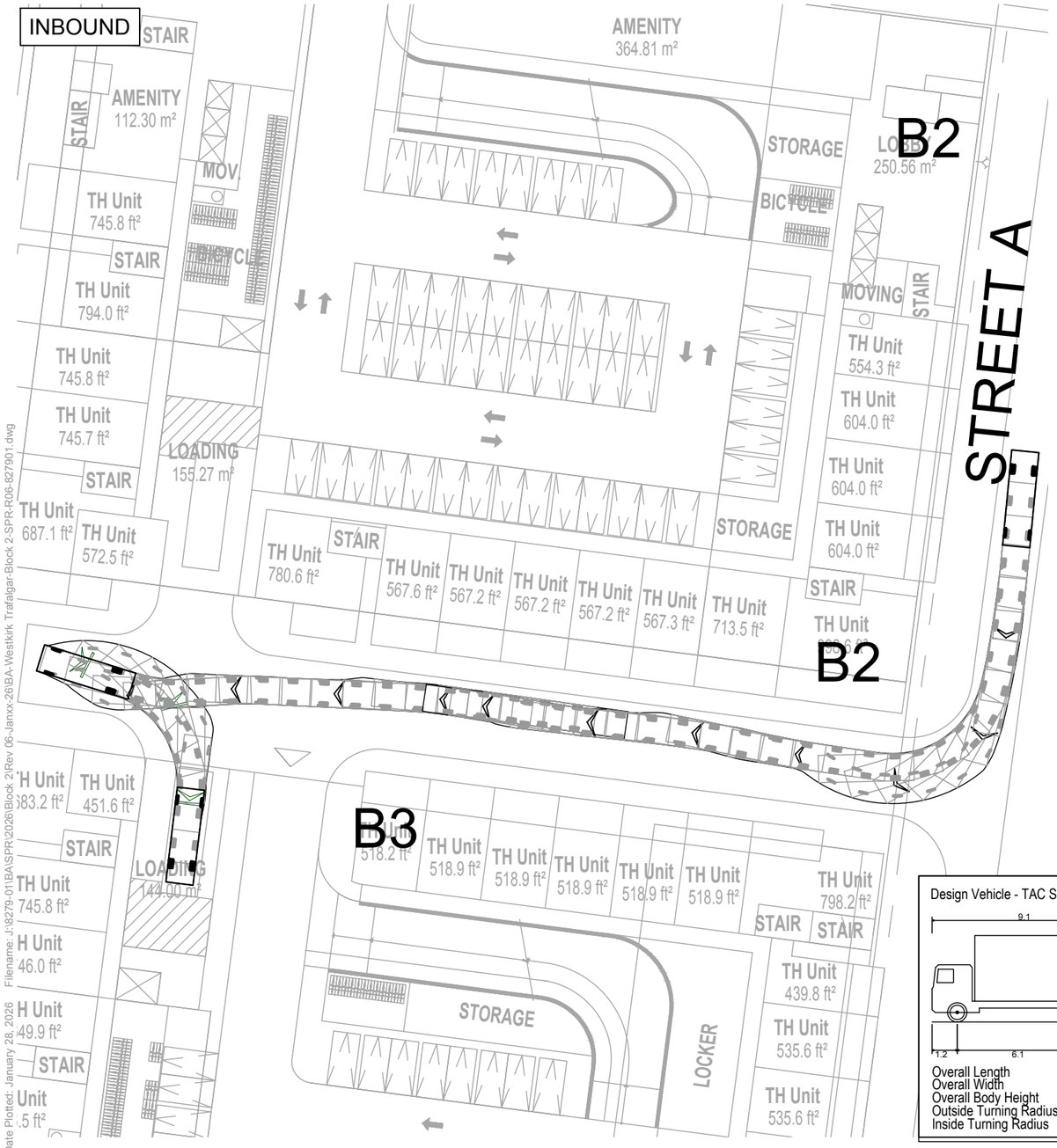
Scale 1:500 — 0 5 10 15 20m

Drawing No. VMD-06

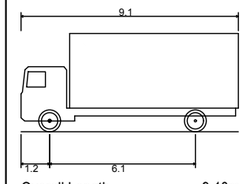
Date Plotted: January 28, 2026 Filename: J:\8279-01\BA\SPR\2026\Block 2\Rev 06-Janxx-26\BA-Westkirk Trafalgar-Block 2-SPR-R06-827901.dwg

INBOUND

OUTBOUND



Design Vehicle - TAC SU (Single Unit Truck)



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

BA Group

WESTKIRK TRAFALGAR

VEHICLE MANOEUVRING DIAGRAM
BLOCK 2 - B3 LOADING
TAC SU (SINGLE UNIT) TRUCK

Project:	WESTKIRK TRAFALGAR
Project No.	8279-01
Date:	DECEMBER 09, 2025
Revised:	January 30, 2026

Scale 1:500 — 0 5 10 15 20m

Drawing No. VMD-07

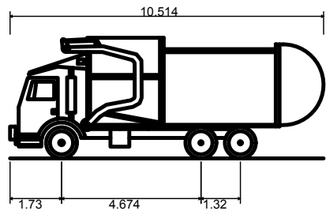
Filename: J:\8279-01\BA\SPR\2026\Block 2\Rev 06-Janxx-26\BA-Westkirk Trafalgar-Block 2-SPR-R06-827901.dwg
Date Plotted: January 28, 2026

INBOUND

SETTLERS RD.

STREET A

TH Unit 680.8 ft²
TH Unit 608.4 ft²
TH Unit 582.5 ft²
TH Unit 564.6 ft²
TH Unit 621.3 ft²
TH Unit 600.7 ft²
TH Unit 621.3 ft²
TH Unit 573.2 ft²
TH Units 926.6 ft²
LOBBY 271.48 m²
AMENITY 238.91 m²
STAIR
MOV.
STAIR
GARBAGE 105.18 m²
Bulk 10.26 m²
BICYCLE
OUTDOOR AMENITY 177.40 m²
3
LOADING 143.87 m²



Halton Region Garbage, Yr 2008-2014	
Overall Length	10.514m
Overall Width	2.570m
Overall Body Height	4.040m
Wall to Wall Turning Radius	13.715m

OUTBOUND

SETTLERS RD.

STREET A

TH Unit 680.8 ft²
TH Unit 608.4 ft²
TH Unit 582.5 ft²
TH Unit 564.6 ft²
TH Unit 621.3 ft²
TH Unit 600.7 ft²
TH Unit 621.3 ft²
TH Unit 573.2 ft²
TH Units 926.6 ft²
LOBBY 271.48 m²
AMENITY 238.91 m²
STAIR
MOV.
STAIR
GARBAGE 105.18 m²
Bulk 10.26 m²
BICYCLE
OUTDOOR AMENITY 177.40 m²
3
LOADING 143.87 m²

Date Plotted: January 28, 2026 Filename: J:\8279-01\BA\SPR\2026\Block 3 And 7\rev 3 - Janxx-26\BA-Westkirk Trafalgar-Block 3 And 7-SPR-R03-827901.dwg

BA Group

WESTKIRK TRAFALGAR

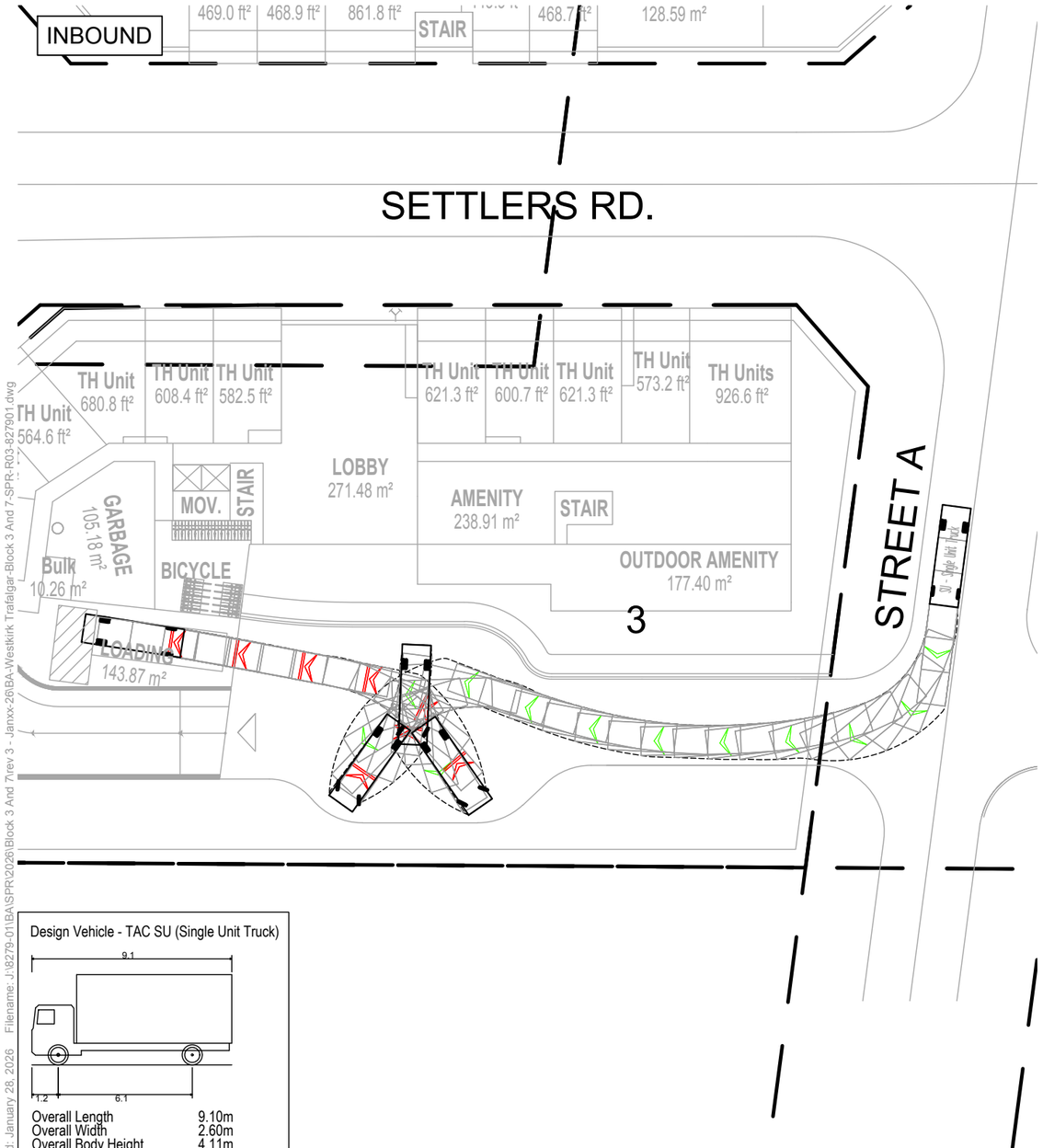
VEHICLE MANOEUVRING DIAGRAM
BLOCK 3
HALTON REGION GARBAGE VEHICLE

Project:	Westkirk Trafalgar
Project No.	8279-01
Date:	September 24, 2025
Revised:	January 30, 2026

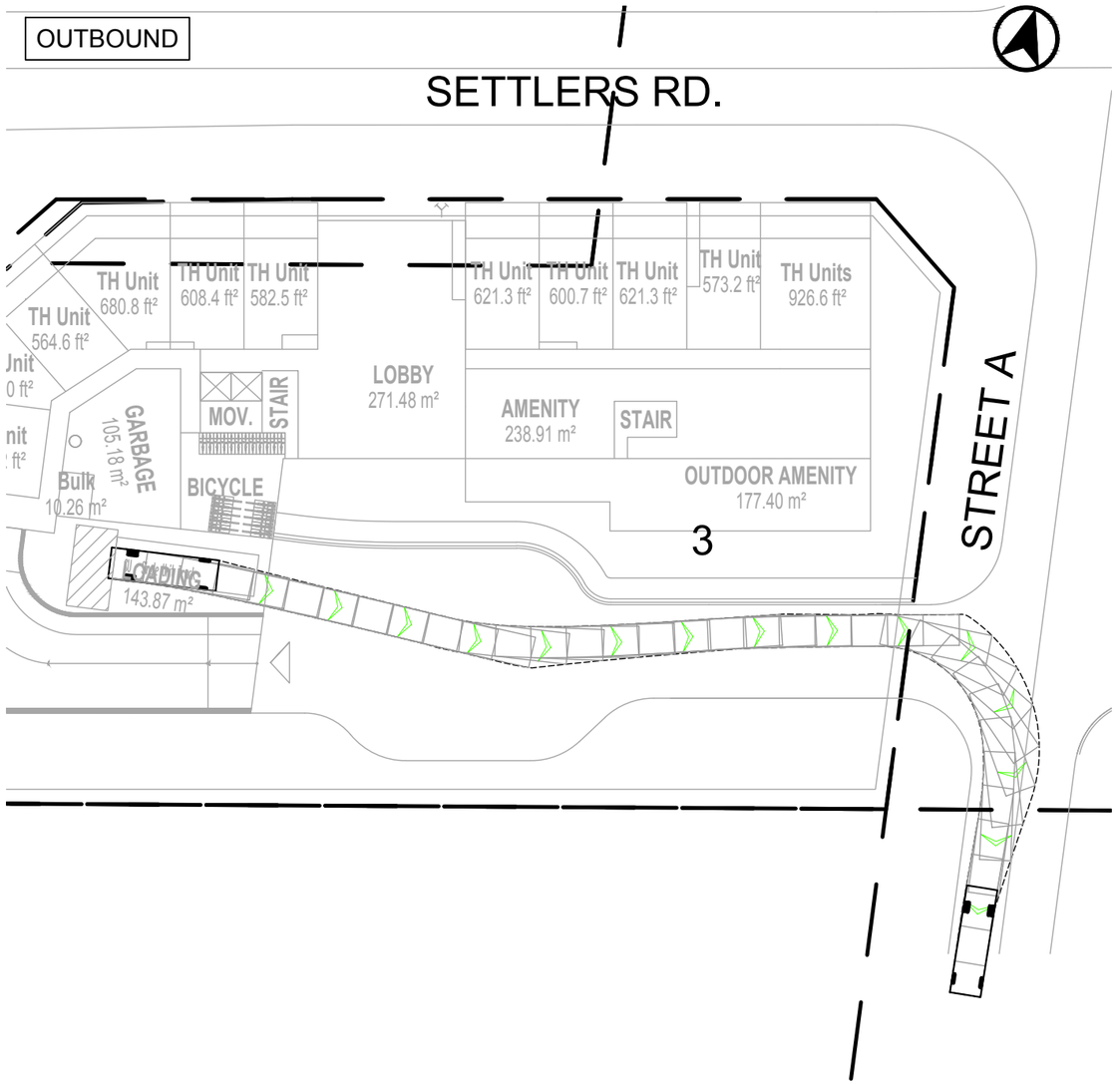
Scale 1:500 0 5 10 15 20m

Drawing No. VMD-01

INBOUND



OUTBOUND



Design Vehicle - TAC SU (Single Unit Truck)

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

Date Plotted: January 28, 2026 Filename: J:\8279-01\BA\SPR\2026\Block 3 And 7\rev 3 - Janxx-26\BA-Westkirk Trafalgar-Block 3 And 7-SPR-R03-827901.dwg

BA Group

WESTKIRK TRAFALGAR

VEHICLE MANOEUVRING DIAGRAM

BLOCK 3

TAC SU VEHICLE

Project:	Westkirk Trafalgar
Project No.	8279-01
Date:	September 24, 2025
Revised:	January 30, 2026

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

Drawing No. VMD-02

PARKING RAMP ACCESS

469.0 ft² | 468.9 ft² | 861.8 ft² | STAIR | 468.7 ft² | 128.59 m²

SETTLERS RD.

TH Unit 680.8 ft² | TH Unit 608.4 ft² | TH Unit 582.5 ft² | TH Unit 621.3 ft² | TH Unit 600.7 ft² | TH Unit 621.3 ft² | TH Unit 573.2 ft² | TH Units 926.6 ft²

TH Unit 564.6 ft² | TH Unit 433.0 ft² | TH Unit 626.2 ft²

GARBAGE 105.18 m² | Bulk 10.26 m² | MOV. | STAIR | BICYCLE | LOBBY 271.48 m² | AMENITY 238.91 m² | STAIR | OUTDOOR AMENITY 177.40 m²

3

LOADING 143.87 m²

TAC P Car

STREET A

PICK-UP/DROP-OFF

SETTLERS RD.

TH Unit 08.4 ft² | TH Unit 582.5 ft² | TH Unit 621.3 ft² | TH Unit 600.7 ft² | TH Unit 621.3 ft² | TH Unit 573.2 ft² | TH Units 926.6 ft²

MOV. | STAIR | LOBBY 271.48 m² | AMENITY 238.91 m² | STAIR | OUTDOOR AMENITY 177.40 m²

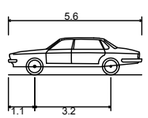
BICYCLE

3

TAC P Car | TAC P Car | TAC P Car | TAC P Car | TAC P Car

STREET A

Design Vehicle - TAC P CAR



Overall Length	5.60m
Overall Width	2.00m
Overall Body Height	1.56m
Outside Turning Radius	6.90m
Inside Turning Radius	3.40m

Date Plotted: January 28, 2026 Filename: J:\8279-01\BA\SPR\2026\Block 3 And 7\rev 3 - Janxx-26\BA-Westkirk Trafalgar-Block 3 And 7-SPR-R03-827901.dwg

BA Group

WESTKIRK TRAFALGAR

VEHICLE MANOEUVRING DIAGRAM

BLOCK 3

TAC P CAR

Project:	Westkirk Trafalgar
Project No.	8279-01
Date:	September 24, 2025
Revised:	January 30, 2026

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

Drawing No. VMD-03

INBOUND

OUTBOUND

STREET A

RETAIL
595.28 m²

MOV.

GARBAGE
105.01 m²

STAIR

LOADING
127.05 m²

LOBBY
350.04 m²

4A

TH Unit
612.3 ft²

AMENITY
238.19 m²

OUTDOOR AMENITY
188.34 m²

RETAIL
374.00 m²

GARBAGE
43.32 m²

STAIR

LOADING
132.80 m²

RETAIL
42.88 m²

AMENITY
132.44 m²

OUTDOOR AMENITY
199.31 m²

LOBBY
217.25 m²

Design Vehicle - TAC HSU (Heavy Single Unit)

Overall Length	11.50m
Overall Width	2.60m
Overall Body Height	4.11m
Outside Turning Radius	14.56m
Inside Turning Radius	8.69m

Date Plotted: January 28, 2026 Filename: J:\8279-01\BA\SPR\2026\Block 4\Rev3 - Janxx-26\BA-Westkirk Trafalgar-Block 4-SPR-R03-827901.dwg

BA Group

VEHICLE MANOEUVRING DIAGRAM

BLOCK 4 - LOADING AREA "A"

HEAVY SINGLE UNIT (HSU) TRUCK

Project:	Westkirk Trafalgar
Project No.	8279-01
Date:	December 3, 2025
Revised:	January 30, 2026

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

Drawing No. VMD-01

INBOUND

OUTBOUND

STREET A

RETAIL
595.28 m²

MOV.

GARBAGE
105.01 m²

STAIR

LOADING
127.05 m²

LOBBY
350.04 m²

4A

AMENITY
238.19 m²

OUTDOOR AMENITY
188.34 m²

RETAIL
374.00 m²

STAIR

RETAIL
42.88 m²

LOADING
132.80 m²

GARBAGE
43.32 m²

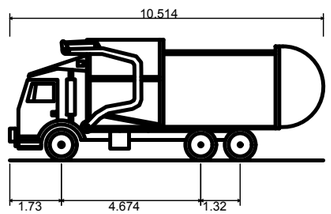
MOV.

OUTDOOR AMENITY
249.90 m²

AMENITY
132.44 m²

OUTDOOR AMENITY
199.31 m²

LOBBY
217.25 m²



Halton Region Garbage, Yr 2008-2014	
Overall Length	10.514m
Overall Width	2.570m
Overall Body Height	4.040m
Wall to Wall Turning Radius	13.715m

VEHICLE MANOEUVRING DIAGRAM

BLOCK 4 - LOADING AREA "A"

HALTON REGION GARBAGE TRUCK

BA Group

Project:	Westkirk Trafalgar
Project No.	8279-01
Date:	December 3, 2025
Revised:	January 30, 2026

Scale 1:500 — 0 5 10 15 20m

Drawing No. VMD-02

Date Plotted: January 28, 2026 Filename: J:\8279-01\BA\SPR\2026\Block 4\Rev3 - Janxx-26\BA-Westkirk Trafalgar-Block 4-SPR-R03-827901.dwg

INBOUND

OUTBOUND

STREET A

4A

RETAIL
595.28 m²

MOV.

GARBAGE
105.01 m²

STAIR

LOADING
127.05 m²

LOBBY
350.04 m²

AMENITY
238.19 m²

OUTDOOR AMENITY
188.34 m²

TH Unit
612.3 ft²

TH Unit
612.3 ft²

RETAIL
42.88 m²

RETAIL
374.00 m²

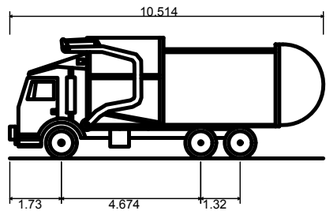
GARBAGE
43.32 m²

OUTDOOR AMENITY
249.90 m²

OUTDOOR AMENITY
199.31 m²

AMENITY
132.44 m²

LOBBY
217.25 m²



Halton Region Garbage, Yr 2008-2014	
Overall Length	10.514m
Overall Width	2.570m
Overall Body Height	4.040m
Wall to Wall Turning Radius	13.715m

VEHICLE MANOEUVRING DIAGRAM

BLOCK 4 - LOADING AREA "E"

HALTON REGION GARBAGE TRUCK

BA Group

Project:	Westkirk Trafalgar
Project No.	8279-01
Date:	December 3, 2025
Revised:	January 30, 2026

Scale 1:250 — 0 5 10m

Drawing No. VMD-03

Date Plotted: January 28, 2026 Filename: J:\8279-01\BA\SPR\2026\Block 4\Rev3 - Jamx-26\BA-Westkirk Trafalgar-Block 4-SPR-R03-827901.dwg

INBOUND

OUTBOUND

4B

4C

4D

LOBBY
244.52 m²

LOBBY
232.97 m²

AMENITY
132.44 m²

OUTDOOR AMENITY
199.31 m²

OUTDOOR AMENITY
249.90 m²

AMENITY
249.17 m²

LOCKER

704.0 ft²

GARB.
62.31 m²

STO.

STAIR

MOV.

LOADING
130.42 m²

AMENITY
269.97 m²

STAIR

LOADING
119.03 m²

RAMP

RET. GARB.
43.23 m²

RETAIL
936.32 m²

GARBAGE STORAGE
48.59 m²

LOADING
108.01 m²

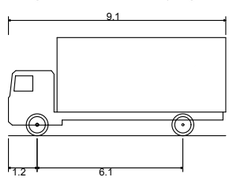
MOVING

AMENITY
214.27 m²

OUTDOOR AMENITY
331.39 m²

RETAIL
444.44 m²

Design Vehicle - TAC SU (Single Unit Truck)



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

Date Plotted: January 28, 2026 Filename: J:\8279-01\BA\SPR\2026\Block 4\Rev3 - Janxx-26\BA-Westkirk Trafalgar-Block 4-SPR-R03-827901.dwg

BA Group

VEHICLE MANOEUVRING DIAGRAM

BLOCK 4 - LOADING AREA "B"

TAC SINGLE UNIT TRUCK

Project:	Westkirk Trafalgar
Project No.	8279-01
Date:	December 3, 2025
Revised:	January 30, 2026

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

Drawing No. VMD-04

INBOUND

OUTBOUND

4D

AMENITY
269.97 m²

STAIR

LOADING
119.03 m²

RAMP

RET. GARB.
43.23 m²

RETAIL
936.32 m²

4C

LOBBY
232.97 m²

GARBAGE STORAGE
48.59 m²

LOADING
108.01 m²

MOVING

AMENITY
214.27 m²

OUTDOOR AMENITY
331.39 m²

RETAIL
444.44 m²

4B

LOBBY
244.52 m²

LOADING
131.42 m²

STO.

STAIR

MOV.

GARB.
62.31 m²

LOCKER

704.0 ft²

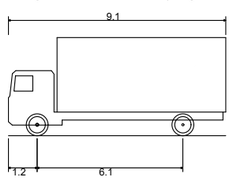
AMENITY
249.17 m²

OUTDOOR AMENITY
249.90 m²

AMENITY
132.44 m²

OUTDOOR AMENITY
199.31 m²

Design Vehicle - TAC SU (Single Unit Truck)



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

Date Plotted: January 28, 2026 Filename: J:\8279-01\BA\SPR\2026\Block 4\Rev3 - Janxx-26\BA-Westkirk Trafalgar-Block 4-SPR-R03-827901.dwg

BA Group

VEHICLE MANOEUVRING DIAGRAM

BLOCK 4 - LOADING AREA "C"

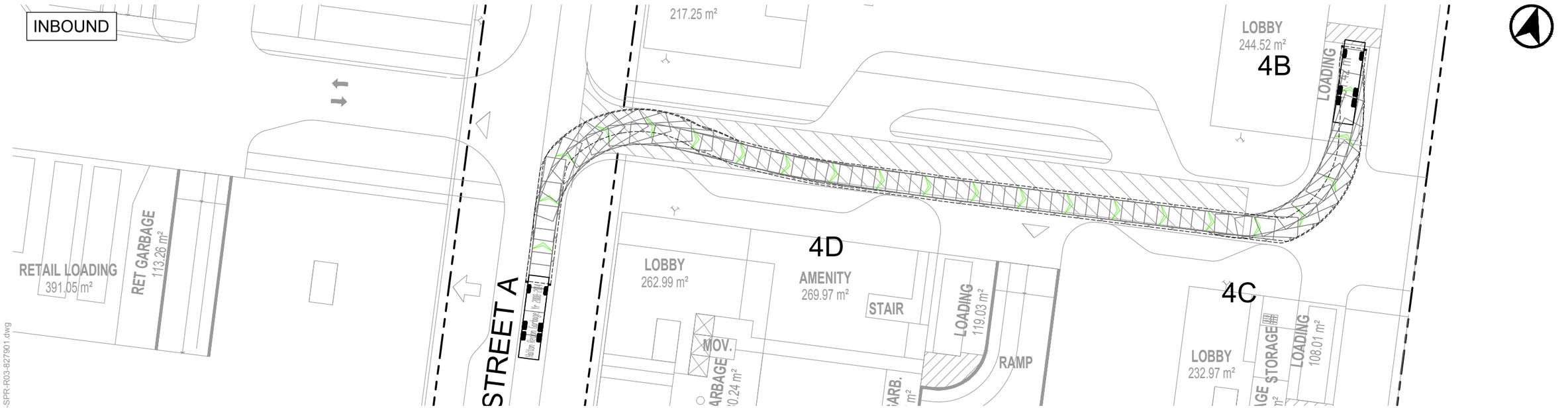
TAC SINGLE UNIT TRUCK

Project:	Westkirk Trafalgar
Project No.	8279-01
Date:	December 3, 2025
Revised:	January 30, 2026

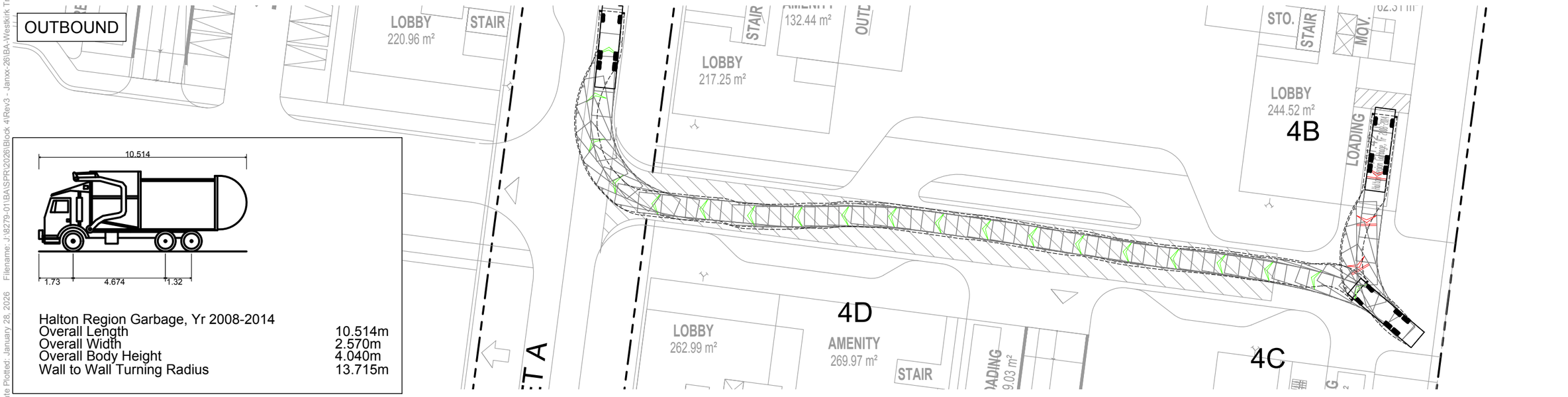
Scale 1:500 — 0 5 10 15 20m

Drawing No. VMD-05

INBOUND



OUTBOUND



Halton Region Garbage, Yr 2008-2014

Overall Length	10.514m
Overall Width	2.570m
Overall Body Height	4.040m
Wall to Wall Turning Radius	13.715m

VEHICLE MANOEUVRING DIAGRAM

BLOCK 4 - LOADING AREA "B"

HALTON REGION GARBAGE TRUCK

BA Group

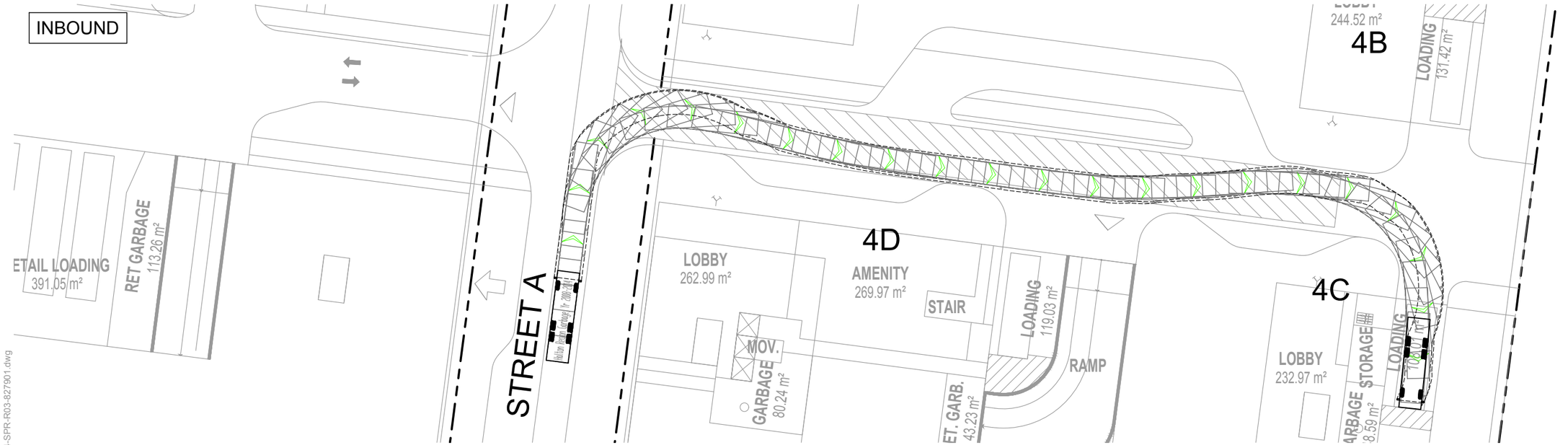
Project:	Westkirk Trafalgar
Project No.	8279-01
Date:	December 3, 2025
Revised:	January 30, 2026

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

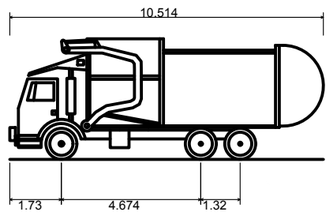
Drawing No. VMD-06

Date Plotted: January 28, 2026 Filename: J:\8279-01\BA\SPR\2026\Block 4\Rev3 - Janxx-26\BA-Westkirk Trafalgar-Block 4-SPR-R03-827901.dwg

INBOUND



OUTBOUND



Halton Region Garbage, Yr 2008-2014	
Overall Length	10.514m
Overall Width	2.570m
Overall Body Height	4.040m
Wall to Wall Turning Radius	13.715m

Date Plotted: January 28, 2026 Filename: J:\8279-01\BA\SPR\2026\Block 4\Rev3 - Janxx-26\BA-Westkirk Trafalgar-Block 4-SPR-R03-827901.dwg

BA Group

VEHICLE MANOEUVRING DIAGRAM

BLOCK 4 - LOADING AREA "C"

HALTON REGION GARBAGE TRUCK

Project:	Westkirk Trafalgar
Project No.	8279-01
Date:	December 3, 2025
Revised:	January 30, 2026

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

Drawing No. VMD-07

INBOUND

OUTBOUND

STREET A

4D

LOBBY
217.25 m²

AMENITY
132.44 m²

STAIR

OUTDOOR AMENITY
199.31 m²

LOBBY
262.99 m²

AMENITY
269.97 m²

STAIR

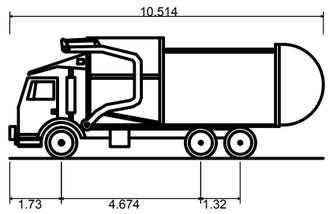
MOV.

GARBAGE
80.24 m²

RET. GARB.
43.23 m²

RAMP

RETAIL
936.32 m²



Halton Region Garbage, Yr 2008-2014

Overall Length	10.514m
Overall Width	2.570m
Overall Body Height	4.040m
Wall to Wall Turning Radius	13.715m

VEHICLE MANOEUVRING DIAGRAM

BLOCK 4 - LOADING AREA "D"

HALTON REGION GARBAGE TRUCK

BA Group

Project:	Westkirk Trafalgar
Project No.	8279-01
Date:	December 3, 2025
Revised:	January 30, 2026

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

Drawing No. VMD-08

Date Plotted: January 28, 2026 Filename: J:\8279-01\BA\SPR\2026\Block 4\Rev3 - Janxx-26\BA-Westkirk Trafalgar-Block 4-SPR-R03-827901.dwg

INBOUND

RETAIL
1102.66 m²

RETAIL
686.27 m²

STAIR
STAIR

STAIR

MOV.

LOBBY
214.19 m²

5B

LOADING
102.00 m²

LOADING
150.15 m²

MOV.

RES. GARB.
90.61 m²

5A

RAMP

LOBBY
437.94 m²

STAIR SERV.

AMENITY
320.15 m²

AMENITY
168.47 m²

TH Unit
744.8 ft²

STAIR

STAIR

TH Unit
652.8 ft²

TH Unit
506.5 ft²

TH Unit
612.3 ft²

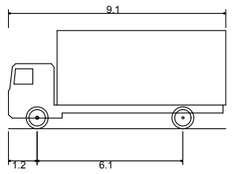
TH Unit
614.1 ft²

TH Unit
487.3 ft²

TH Unit
658.7 ft²

STREET B

Design Vehicle - TAC SU (Single Unit Truck)



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

OUTBOUND

RETAIL
1102.66 m²

RETAIL
686.27 m²

STAIR
STAIR

STAIR

MOV.

LOBBY
214.19 m²

5B

LOADING
102.00 m²

LOADING

MOV.

RES. GARB.
90.61 m²

5A

RAMP

LOBBY
437.94 m²

STAIR SERV.

ENITY
.15 m²

AMENITY
168.47 m²

TH Unit
744.8 ft²

STAIR

STAIR

TH Unit
652.8 ft²

TH Unit
506.5 ft²

TH Unit
612.3 ft²

TH Unit
614.1 ft²

TH Unit
487.3 ft²

TH Unit
658.7 ft²

TREET B

BA Group

VEHICLE MANOEUVRING DIAGRAM

BLOCK 5 - LOADING AREA 5A

TAC SU VEHICLE

Project:	Westkirk Trafalgar
Project No.	8279-01
Date:	December 3, 2025
Revised:	January 30, 2026

Scale 1:500 — 0 5 10 15 20m

Drawing No. VMD-01

Date Plotted: January 29, 2026 Filename: J:\8279-01\BA\SPR\2026\Block 5 And 6\rev 3 - Janxx-26\BA-Westkirk Trafalgar-Block 5-SPR-R03-827901.dwg

INBOUND (A)

RETAIL
1102.66 m²

STAIR
STAIR

5B

LOADING
102.00 m²

MOV.

RES. GARB.
90.61 m²

LOBBY
437.94 m²

AMENITY
320.15 m²

STAIR

TH Unit
652.8 ft²

TREET B

INBOUND (B)

RETAIL
1102.66 m²

STAIR
STAIR

5B

LOADING
102.00 m²

MOV.

RES. GARB.
90.61 m²

LOBBY
437.94 m²

AMENITY
320.15 m²

STAIR

TH Uni
652.8 ft

TREET B

OUTBOUND

RETAIL
1102.66 m²

STAIR
STAIR

5B

LOADING
102.00 m²

MOV.

RES. GARB.
90.61 m²

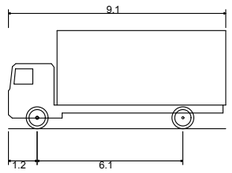
LOBBY
437.94 m²

AMENITY
320.15 m²

STAIR

TREET B

Design Vehicle - TAC SU (Single Unit Truck)



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

Date Plotted: January 29, 2026 Filename: J:\8279-01\BA\SPR\2026\Block 5 And 6\rev 3 - Janxx-26\BA-Westkirk Trafalgar-Block 5-SPR-R03-827901.dwg

BA Group

VEHICLE MANOEUVRING DIAGRAM

BLOCK 5 - LOADING AREA 5B

TAC SU VEHICLE

Project:	Westkirk Trafalgar
Project No.	8279-01
Date:	December 3, 2025
Revised:	January 30, 2026

Scale 1:500 0 5 10 15 20m

Drawing No. VMD-02

INBOUND

OUTBOUND

5B

5A

STREET B

LOADING
150.15 m²

MOV.

RES. GARB.
90.61 m²

LOBBY
437.94 m²

LOBBY
214.19 m²

RAMP

STAIR

SERV.

AMENITY
168.47 m²

TH Unit
744.8 ft²

TH Unit
614.1 ft²

TH Unit
652.8 ft²

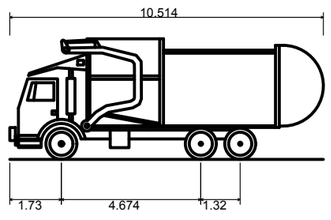
TH Unit
506.5 ft²

TH Unit
612.3 ft²

TH Unit
487.3 ft²

TH Unit
658.7 ft²

RETAIL
1102.66 m²



Halton Region Garbage, Yr 2008-2014

Overall Length	10.514m
Overall Width	2.570m
Overall Body Height	4.040m
Wall to Wall Turning Radius	13.715m

Date Plotted: January 29, 2026 Filename: J:\8279-01\BA\SPR\2026\Block 5 And 6\rev 3 - Janxx-26\BA-Westkirk Trafalgar-Block 5-SPR-R03-827901.dwg

BA Group

VEHICLE MANOEUVRING DIAGRAM

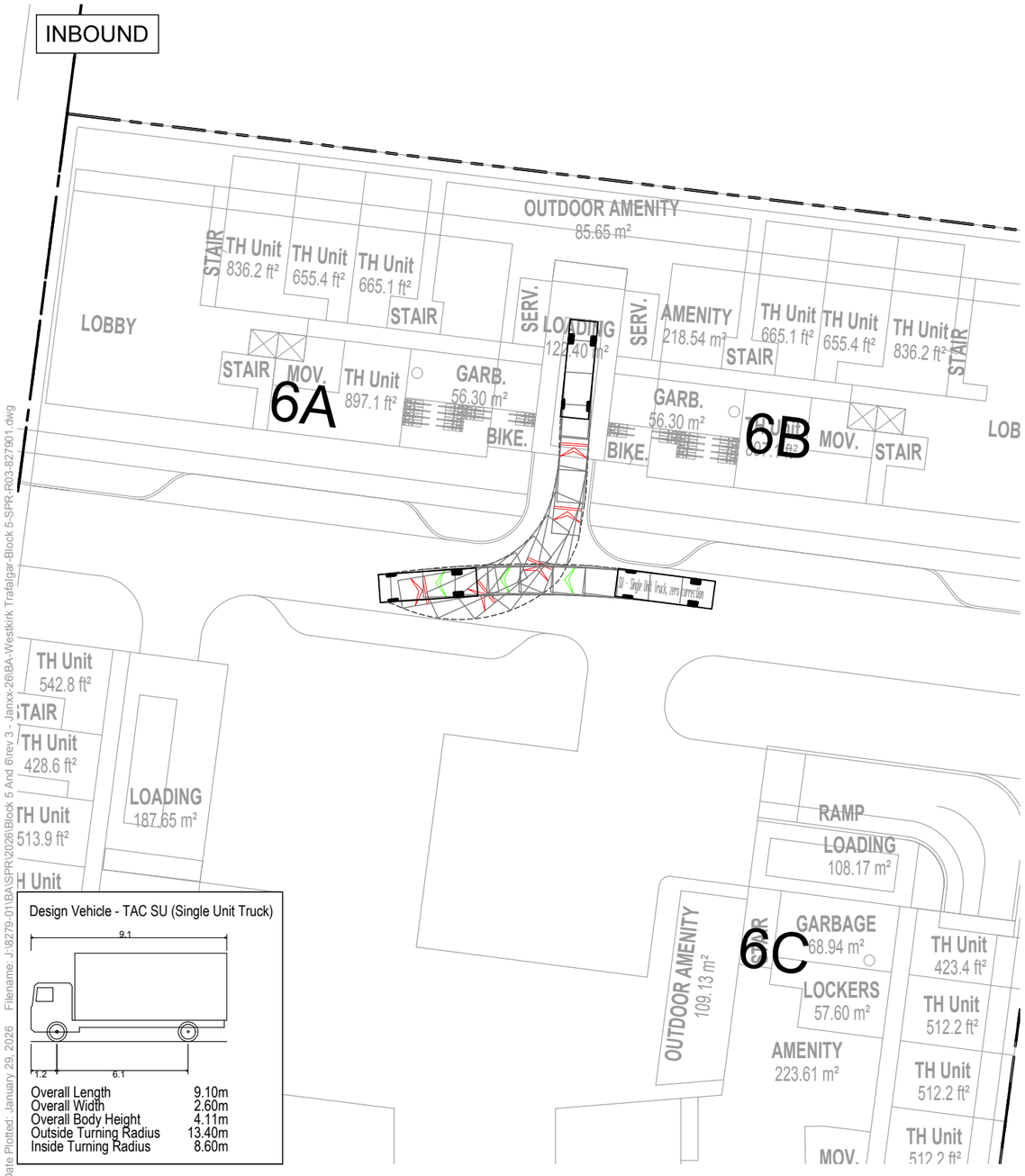
BLOCK 5 - LOADING AREA 5B

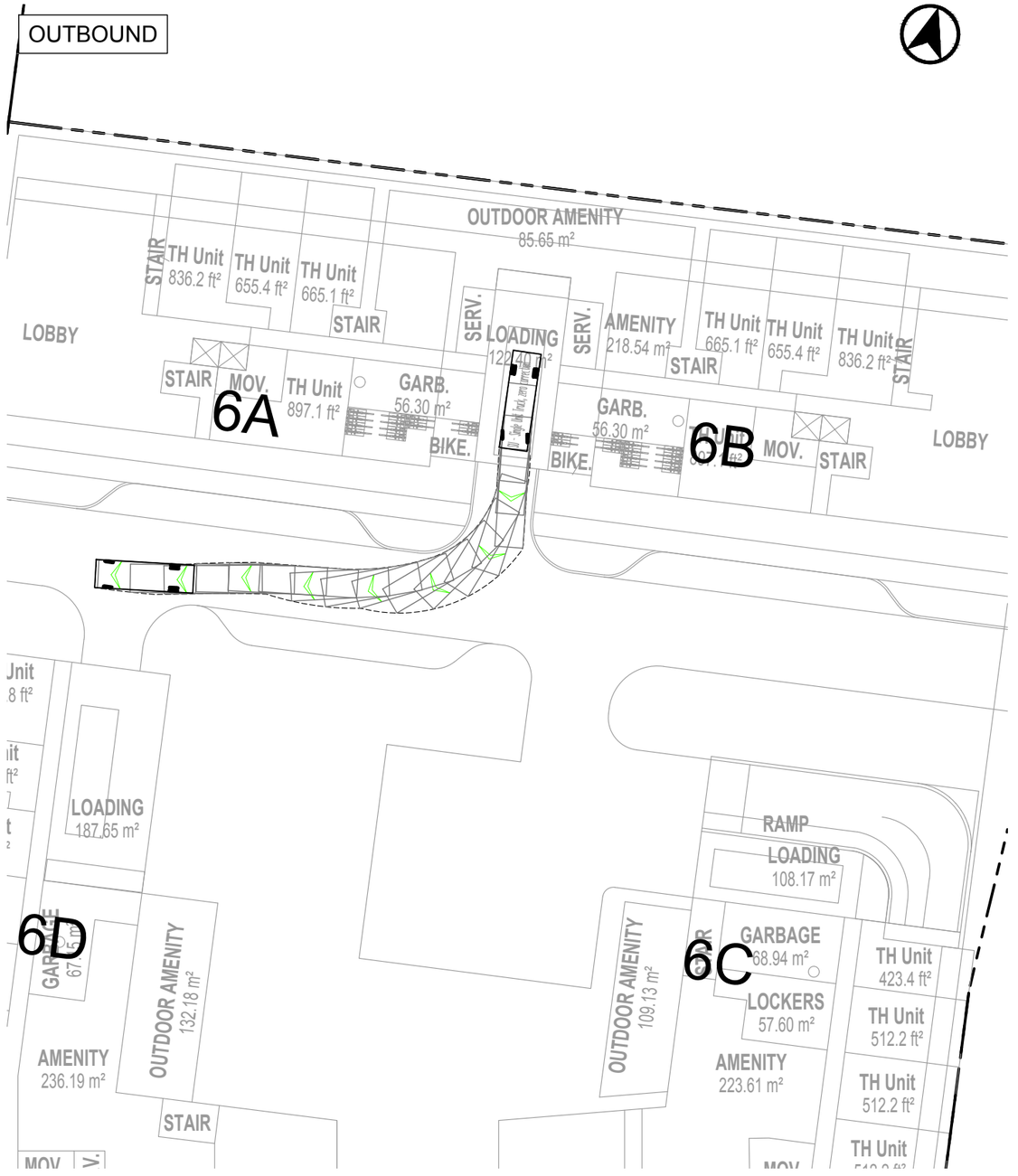
HALTON REGION GARBAGE VEHICLE

Project:	Westkirk Trafalgar
Project No.	8279-01
Date:	December 3, 2025
Revised:	January 30, 2026

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

Drawing No. VMD-03





Date Plotted: January 29, 2026 Filename: J:\8279-01\BA\SPR\2026\Block 5 And 6\rev 3 - Janxx-26\BA-Westkirk Trafalgar-Block 5-SPR-R03-827901.dwg

BA Group

VEHICLE MANOEUVRING DIAGRAM

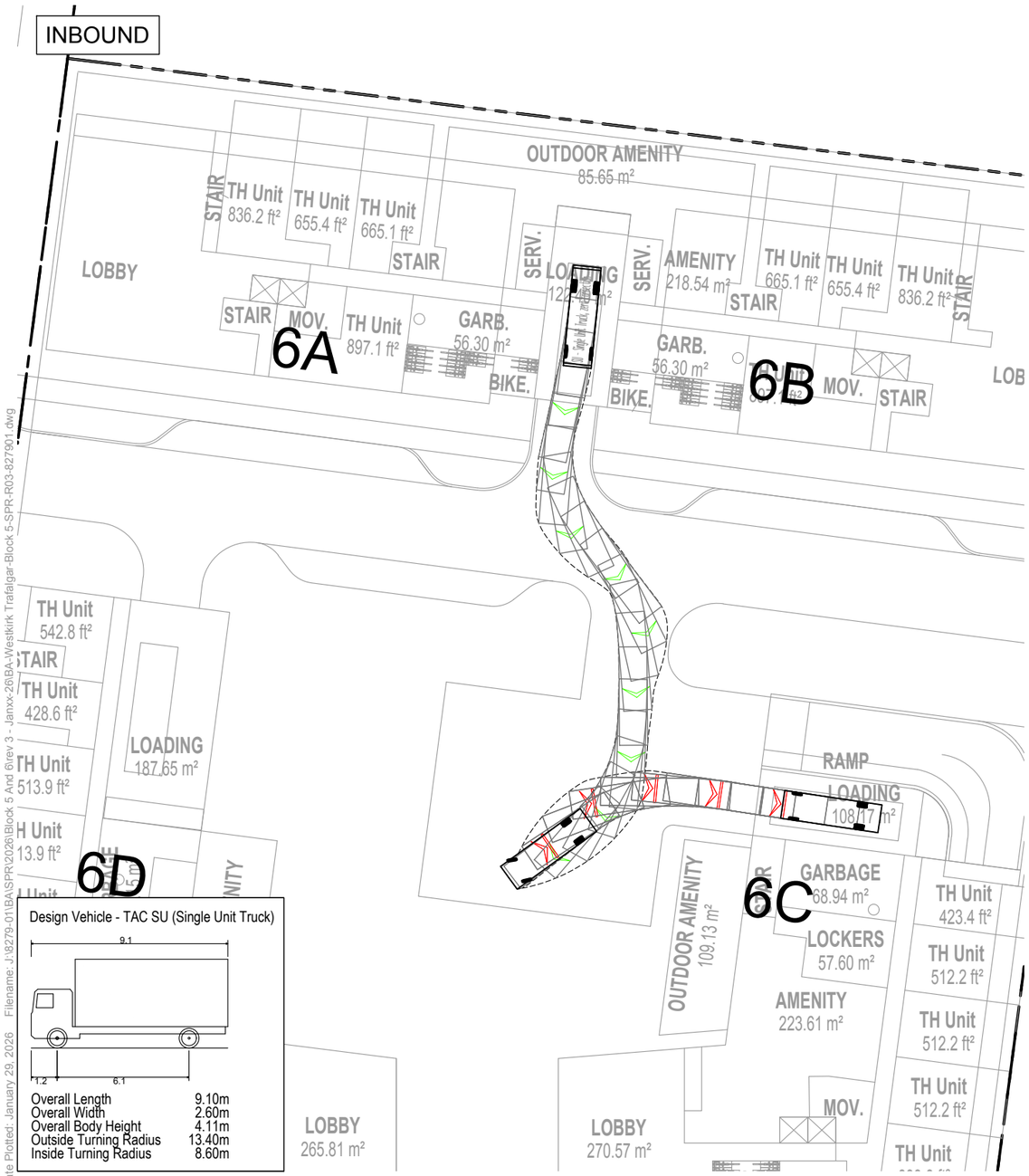
BLOCK 6 - LOADING AREA 6A

TAC SU VEHICLE

Project:	Westkirk Trafalgar
Project No.	8279-01
Date:	December 3, 2025
Revised:	January 30, 2026

Scale 1:500 0 5 10 15 20m

Drawing No. VMD-04



Design Vehicle - TAC SU (Single Unit Truck)

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

BA Group

VEHICLE MANOEUVRING DIAGRAM

BLOCK 6 - LOADING AREA 6A

TAC SU VEHICLE

Project:	Westkirk Trafalgar
Project No.	8279-01
Date:	December 3, 2025
Revised:	January 30, 2026

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

Drawing No. VMD-05

Date Plotted: January 29, 2026 Filename: J:\8279-01\BA\SPR\2026\Block 5 And 6\rev 3 - Janxx-26\BA-Westkirk Trafalgar-Block 5-SPR-R03-827901.dwg

INBOUND

OUTDOOR AMENITY
85.65 m²

TH Unit
655.4 ft²

TH Unit
665.1 ft²

STAIR

SERV.

LOADING
122.20 m²

SERV.

AMENITY
218.54 m²

STAIR

TH Unit
665.1 ft²

TH Unit
655.4 ft²

TH Unit
836.2 ft²

STAIR

MOV.

TH Unit
897.1 ft²

GARB.
56.30 m²

BIKE.

GARB.
56.30 m²

BIKE.

6B

MOV.

STAIR

LOBBY

RAMP

LOADING
108.17 m²

GARBAGE
68.94 m²

LOCKERS
57.60 m²

TH Unit
423.4 ft²

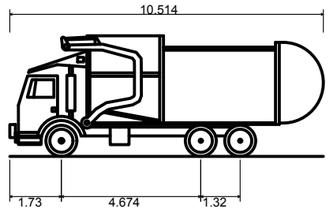
TH Unit
512.2 ft²

TH Unit
512.2 ft²

TH Unit
512.2 ft²

TH Unit
893.8 ft²

6C



Halton Region Garbage, Yr 2008-2014	
Overall Length	10.514m
Overall Width	2.570m
Overall Body Height	4.040m
Wall to Wall Turning Radius	13.715m

OUTBOUND

OUTDOOR AMENITY
85.65 m²

TH Unit
665.1 ft²

STAIR

SERV.

AMENITY
218.54 m²

STAIR

TH Unit
665.1 ft²

TH Unit
655.4 ft²

TH Unit
836.2 ft²

STAIR

TH Unit
897.1 ft²

GARB.
56.30 m²

BIKE.

6B

MOV.

STAIR

LOBBY

RAMP

LOADING
108.17 m²

OUTDOOR AMENITY
109.13 m²

GARBAGE
68.94 m²

LOCKERS
57.60 m²

AMENITY
223.61 m²

LOBBY
270.57 m²

MOV.

BICYCLE

TH Unit
512.2 ft²

TH Unit
423.4 ft²

TH Unit
512.2 ft²

TH Unit
512.2 ft²

TH Unit
512.2 ft²

TH Unit
893.8 ft²

6C

Date Plotted: January 29, 2026 Filename: J:\8279-01\BA\SPR\2026\Block 5 And 6\rev 3 - Janxx-26\BA-Westkirk Trafalgar-Block 5-SPR-R03-827901.dwg

BA Group

VEHICLE MANOEUVRING DIAGRAM

BLOCK 6 - LOADING AREA 6A

HALTON REGION GARBAGE VEHICLE

Project:	Westkirk Trafalgar
Project No.	8279-01
Date:	December 3, 2025
Revised:	January 30, 2026

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

Drawing No. VMD-06

INBOUND

OUTDOOR AMENITY
85.65 m²

TH Unit
655.4 ft²

TH Unit
665.1 ft²

STAIR

SERV.

LOADING
122.40 m²

SERV.

AMENITY
218.54 m²

STAIR

TH Unit
665.1 ft²

TH Unit
655.4 ft²

TH Unit
836.2 ft²

STAIR

MOV.

TH Unit
897.1 ft²

GARB.
56.30 m²

BIKE.

GARB.
56.30 m²

BIKE.

MOV.

STAIR

LOBBY

6A

6B

RAMP

LOADING

6C

GARBAGE
68.94 m²

LOCKERS
57.60 m²

TH Unit
423.4 ft²

TH Unit
512.2 ft²

TH Unit
512.2 ft²

TH Unit
512.2 ft²

TH Unit
893.8 ft²

OUTBOUND

OUTDOOR AMENITY
85.65 m²

TH Unit
665.1 ft²

STAIR

SERV.

LOADING
122.40 m²

SERV.

AMENITY
218.54 m²

STAIR

TH Unit
665.1 ft²

TH Unit
655.4 ft²

TH Unit
836.2 ft²

STAIR

TH Unit
897.1 ft²

GARB.
56.30 m²

BIKE.

GARB.
56.30 m²

MOV.

STAIR

LOBBY

6B

RAMP

LOADING

OUTDOOR AMENITY
109.13 m²

6C

GARBAGE
68.94 m²

LOCKERS
57.60 m²

AMENITY
223.61 m²

LOBBY
270.57 m²

MOV.

BICYCLE

TH Unit
423.4 ft²

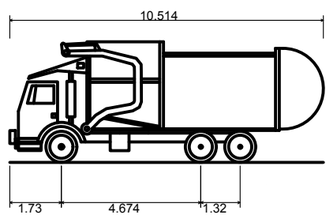
TH Unit
512.2 ft²

TH Unit
512.2 ft²

TH Unit
512.2 ft²

TH Unit
893.8 ft²

TH Unit
512.2 ft²



Halton Region Garbage, Yr 2008-2014	
Overall Length	10.514m
Overall Width	2.570m
Overall Body Height	4.040m
Wall to Wall Turning Radius	13.715m

Date Plotted: January 29, 2026 Filename: J:\8279-01\BA\SPR\2026\Block 5 And 6\rev 3 - Janxx-26\BA-Westkirk Trafalgar-Block 5-SPR-R03-827901.dwg

BA Group

VEHICLE MANOEUVRING DIAGRAM

BLOCK 6 - LOADING AREA 6C

HALTON REGION GARBAGE VEHICLE

Project:	Westkirk Trafalgar
Project No.	8279-01
Date:	December 3, 2025
Revised:	January 30, 2026

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

Drawing No. VMD-07

INBOUND

OUTBOUND

OUTDOOR AMENITY
85.65 m²

LOBBY

STAIR

TH Unit
836.2 ft²

TH Unit
655.4 ft²

TH Unit
665.1 ft²

STAIR

SERV.

LOADING
122.40 m²

SERV.

AMENITY
218.54 m²

STAIR

TH Unit
665.1 ft²

TH Unit
655.4 ft²

TH Unit
836.2 ft²

STAIR

LOBBY

STAIR

MOV.

TH Unit
897.1 ft²

GARB.
56.30 m²

BIKE.

6A

GARB.
56.30 m²

BIKE.

6B

MOV.

STAIR

TH Unit
542.8 ft²

STAIR

TH Unit
428.6 ft²

TH Unit
513.9 ft²

TH Unit
513.9 ft²

LOADING
187.65 m²

6D

OUTDOOR AMENITY
132.18 m²

STAIR

LOBBY
265.81 m²

RAMP

LOADING
108.17 m²

OUTDOOR AMENITY
109.13 m²

6C

GARBAGE
68.94 m²

LOCKERS
57.60 m²

AMENITY
223.61 m²

MOV.

LOBBY
270.57 m²

TH Unit
423.4 ft²

TH Unit
512.2 ft²

TH Unit
512.2 ft²

TH Unit
512.2 ft²

TH Unit
893.8 ft²

AMENITY
236.19 m²

MOV.

SERV.

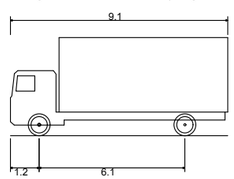
STAIR

LOBBY
265.81 m²

TH Unit

TH Unit

Design Vehicle - TAC SU (Single Unit Truck)



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

BA Group

VEHICLE MANOEUVRING DIAGRAM

BLOCK 6 - LOADING AREA 6D

TAC SU VEHICLE

Project:	Westkirk Trafalgar
Project No.	8279-01
Date:	December 3, 2025
Revised:	January 30, 2026

Scale 1:500

0 5 10 15 20m

Drawing No. VMD-08

Date Plotted: January 29, 2026 Filename: J:\8279-01\BA\SPR\2026\Block 5 And 6\rev 3 - Janxx-26\BA-Westkirk Trafalgar-Block 5-SPR-R03-827901.dwg

INBOUND

OUTBOUND

STREET A

3

7

STAIR

AMENITY
155.11 m²

TH Units
52.08 m²

TH Units
52.08 m²

OUTDOOR AMENITY
201.32 m²

MOV.

CACF

AMENITY
65.20 m²

BICYCLE

BULK
10.66 m²

STAIR

GARBAGE
116.02 m²

LOADING
184.10 m²

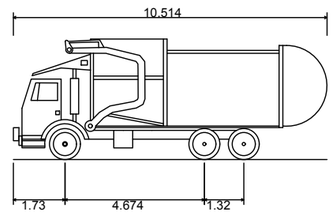
TH Unit
457.6 ft²

TH Unit
506.2 ft²

TH Unit
418.2 ft²

OUTDOOR AMENITY
177.40 m²

301.96 m²



Halton Region Garbage, Yr 2008-2014	
Overall Length	10.514m
Overall Width	2.570m
Overall Body Height	4.040m
Wall to Wall Turning Radius	13.715m

Date Plotted: January 28, 2026 Filename: J:\8279-01\BA\SPR\2026\Block 3 And 7\rev 3 - Janxx-26\BA-Westkirk Trafalgar-Block 3 And 7-SPR-R03-827901.dwg

BA Group

WESTKIRK TRAFALGAR

VEHICLE MANOEUVRING DIAGRAM
BLOCK 7
HALTON REGION GARBAGE VEHICLE

Project:	Westkirk Trafalgar
Project No.	8279-01
Date:	September 24, 2025
Revised:	January 30, 2026

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

Drawing No. VMD-04

INBOUND

OUTDOOR AMENITY
177.40 m²

3

STREET

AMENITY
155.11 m²

TH Units
52.08 m²

TH Units
52.08 m²

OUTDOOR AMENITY
201.32 m²

7

CACF

AMENITY
65.20 m²

BICYCLE

BULK
10.66 m²

STAIR

GARBAGE
116.02 m²

LOADING
184.10 m²

TH Unit
506.2 ft²

TH Unit
418.2 ft²

OUTBOUND

TH Units
926.6 ft²

STAIR

OUTDOOR AMENITY
177.40 m²

3

STREET A

TH Unit
823.1 ft²

TH Unit
551.0 ft²

TH Unit
551.0 ft²

TH Unit
525.2 ft²

TH Unit
551.0 ft²

LOBBY
301.96 m²

TH Unit
563.9 ft²

TH Unit
563.9 ft²

TH Unit
563.9 ft²

TH Unit
563.9 ft²

TH Unit
513.5 ft²

TH Unit
735.7 ft²

STAIR

AMENITY
155.11 m²

TH Units
52.08 m²

TH Units
52.08 m²

OUTDOOR AMENITY
201.32 m²

7

CACF

AMENITY
65.20 m²

BICYCLE

BULK
10.66 m²

STAIR

GARBAGE
116.02 m²

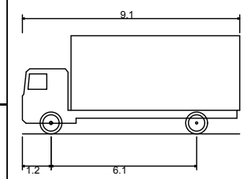
LOADING
184.10 m²

TH Unit
457.6 ft²

TH Unit
506.2 ft²

TH Unit
418.2 ft²

Design Vehicle - TAC SU (Single Unit Truck)



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

Date Plotted: January 28, 2026 Filename: J:\8279-01\BA\SPR\2026\Block 3 And 7\rev 3 - Janxx-26\BA-Westkirk Trafalgar-Block 3 And 7-SPR-R03-827901.dwg

BA Group

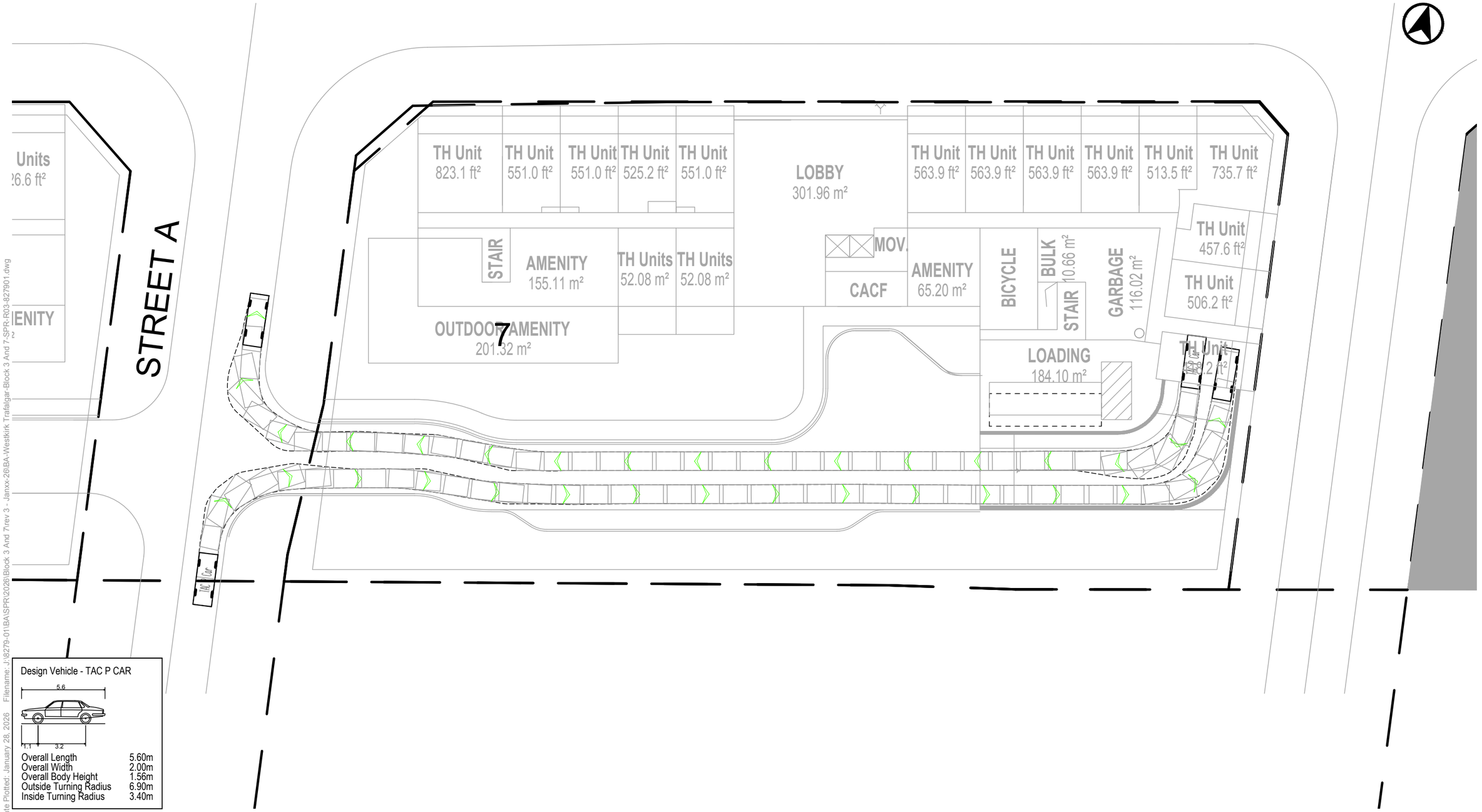
WESTKIRK TRAFALGAR

VEHICLE MANOEUVRING DIAGRAM
BLOCK 7
TAC SU VEHICLE

Project:	Westkirk Trafalgar
Project No.	8279-01
Date:	September 24, 2025
Revised:	January 30, 2026

Scale 1:500 — 0 5 10 15 20m

Drawing No. VMD-05



Design Vehicle - TAC P CAR

Overall Length	5.60m
Overall Width	2.00m
Overall Body Height	1.56m
Outside Turning Radius	6.90m
Inside Turning Radius	3.40m

BA Group

WESTKIRK TRAFALGAR

VEHICLE MANOEUVRING DIAGRAM
BLOCK 7
TAC P CAR INBOUND / OUTBOUND

Project:	Westkirk Trafalgar
Project No.	8279-01
Date:	September 24, 2025
Revised:	January 30, 2026

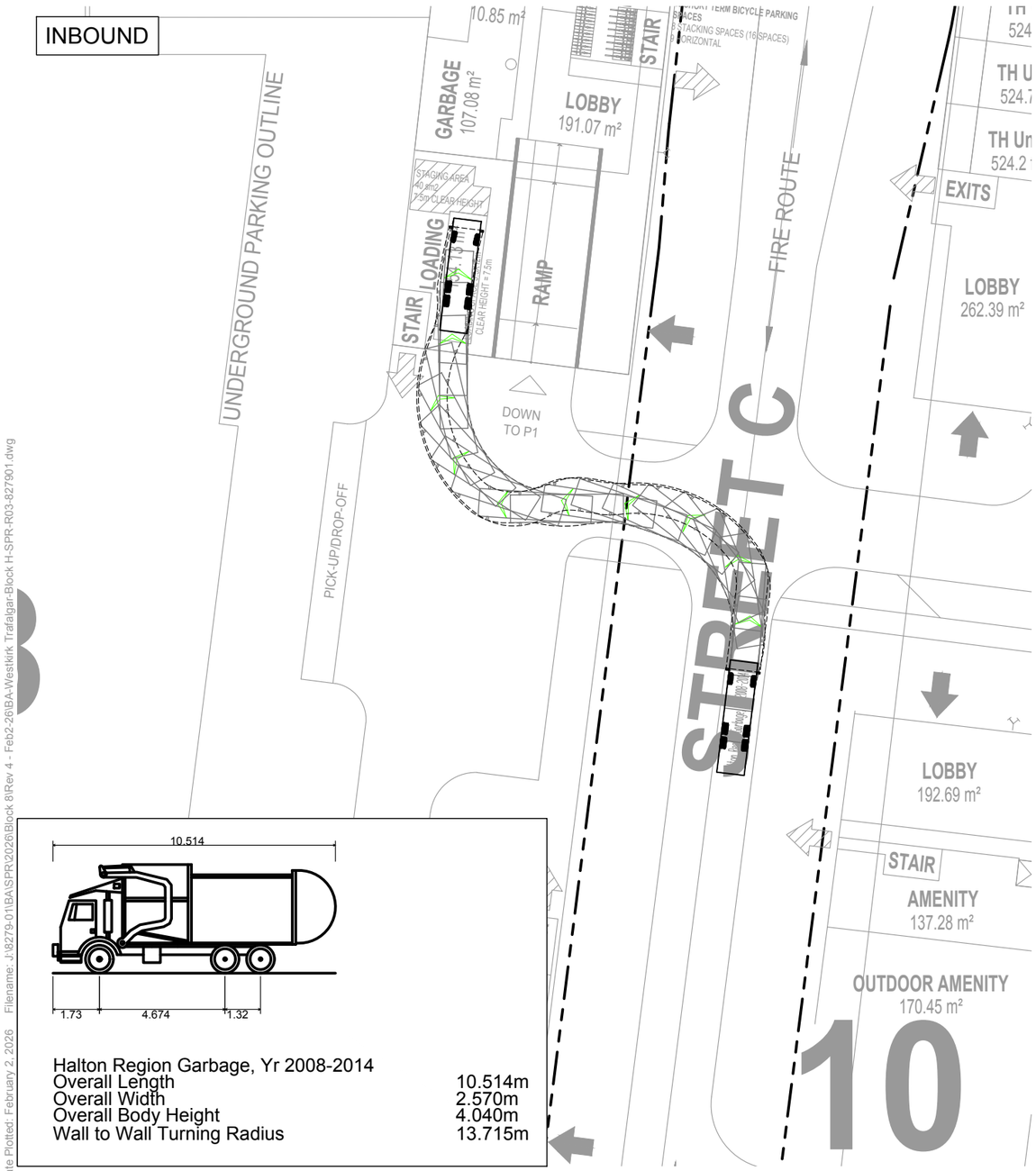
Scale 1:400 — 0 2 4 6 8 10 20m

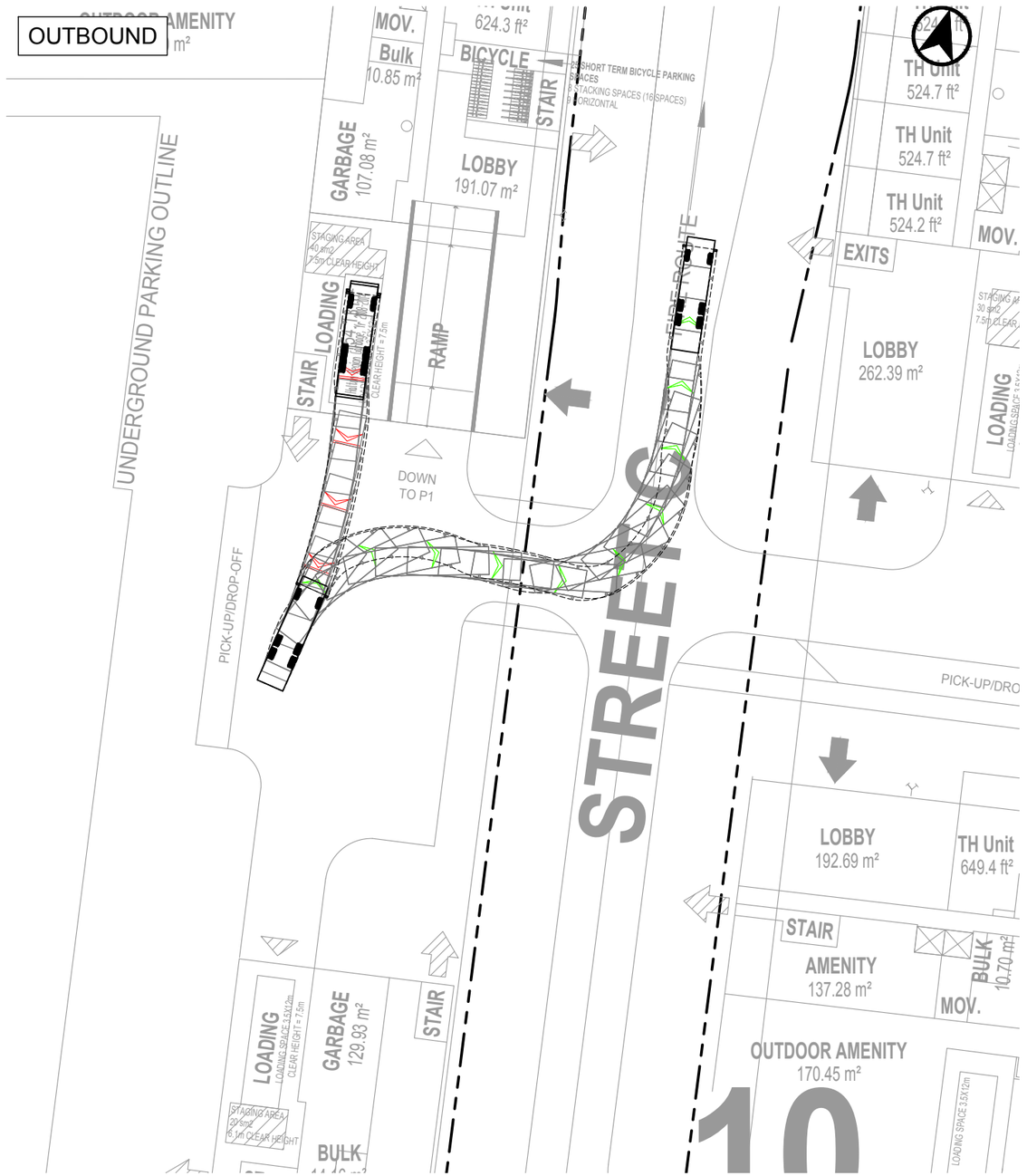
Drawing No. VMD-06

Date Plotted: January 28, 2026 Filename: J:\8279-01\BA\SPR\2026\Block 3 And 7\rev 3 - Jamxx-26\BA-Westkirk Trafalgar-Block 3 And 7-SPR-R03-827901.dwg

INBOUND

OUTBOUND





Halton Region Garbage, Yr 2008-2014	
Overall Length	10.514m
Overall Width	2.570m
Overall Body Height	4.040m
Wall to Wall Turning Radius	13.715m

BA Group

VEHICLE MANOEUVRING DIAGRAM

BLOCK 8 - NORTH BUILDING

HALTON REGION GARBAGE VEHICLE

Project:	Westkirk Trafalgar
Project No.	8279-01
Date:	December 4, 2025
Revised:	February 2, 2026

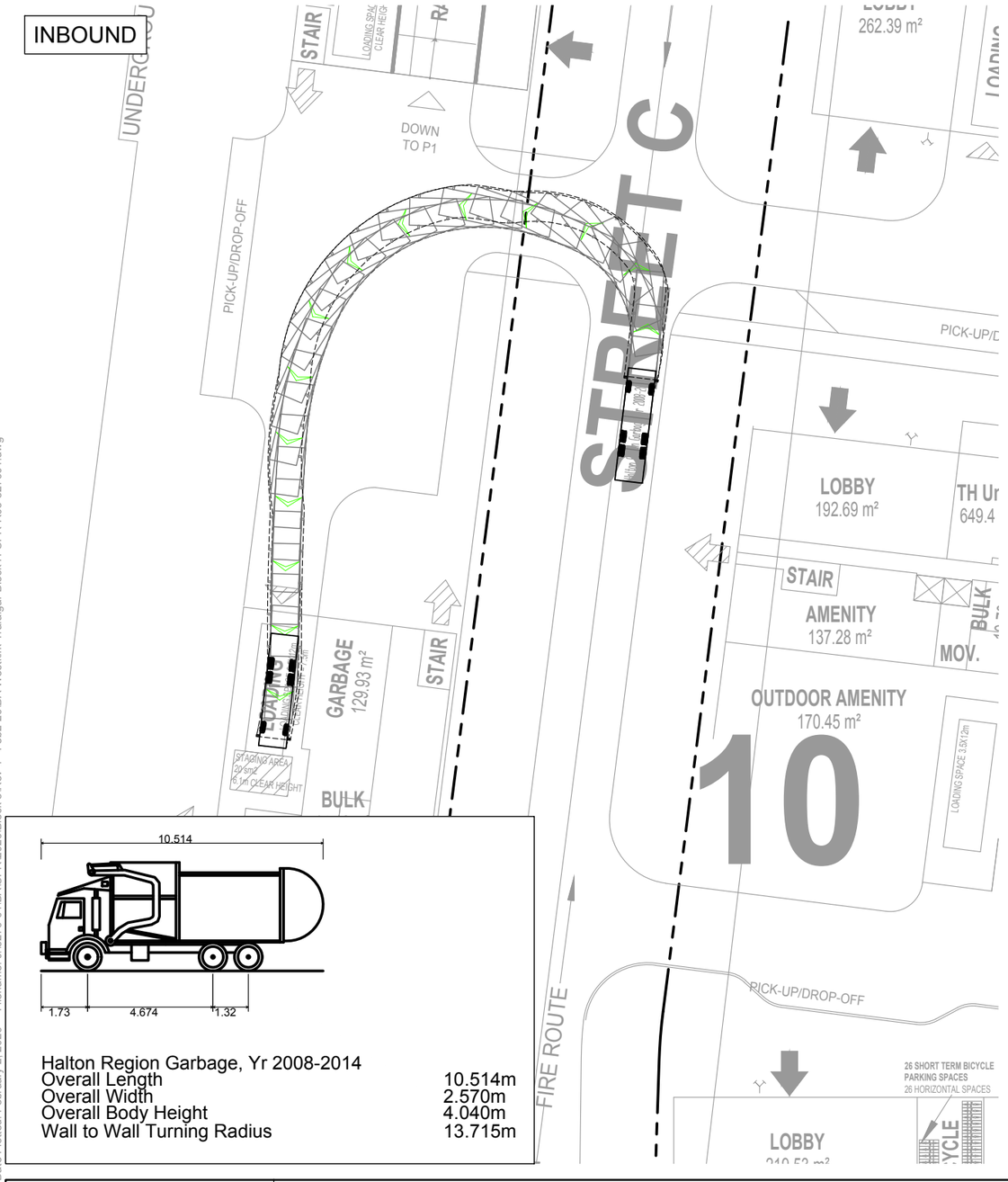
Scale 1:500 (0 5 10 15 20m)

Drawing No. VMD-01

Date Plotted: February 2, 2026 Filename: J:\8279-01\BA\SPR\2026\Block 8\Rev 4 - Feb2-26\BA-Westkirk Trafalgar-Block H-SPR-R03-827901.dwg

INBOUND

OUTBOUND



Halton Region Garbage, Yr 2008-2014

Overall Length	10.514m
Overall Width	2.570m
Overall Body Height	4.040m
Wall to Wall Turning Radius	13.715m

Date Plotted: February 2, 2026 Filename: J:\8279-01\BA\SPR\2026\Block 8\Rev 4 - Feb2-26\BA-Westkirk Trafalgar-Block H-SPR-R03-827901.dwg

BA Group

VEHICLE MANOEUVRING DIAGRAM

BLOCK 8 - SOUTH BUILDING

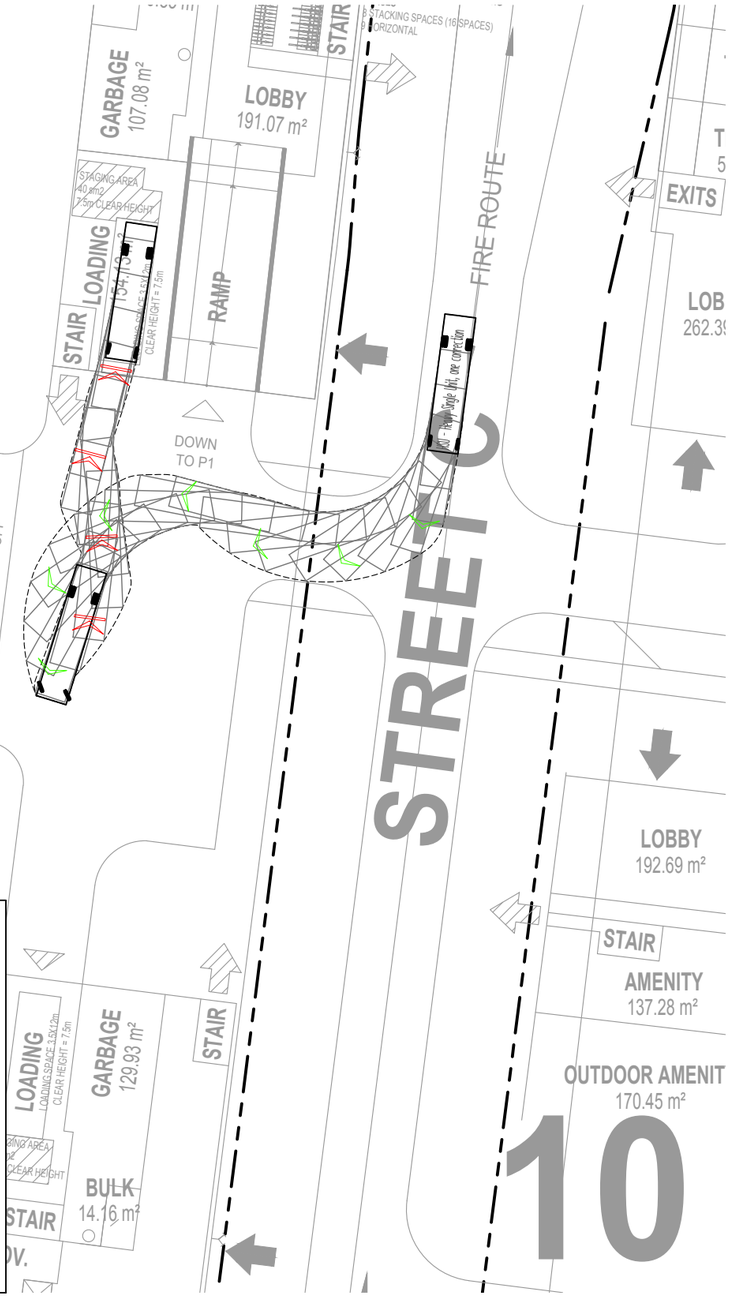
HALTON REGION GARBAGE VEHICLE

Project:	Westkirk Trafalgar
Project No.	8279-01
Date:	December 4, 2025
Revised:	February 2, 2026

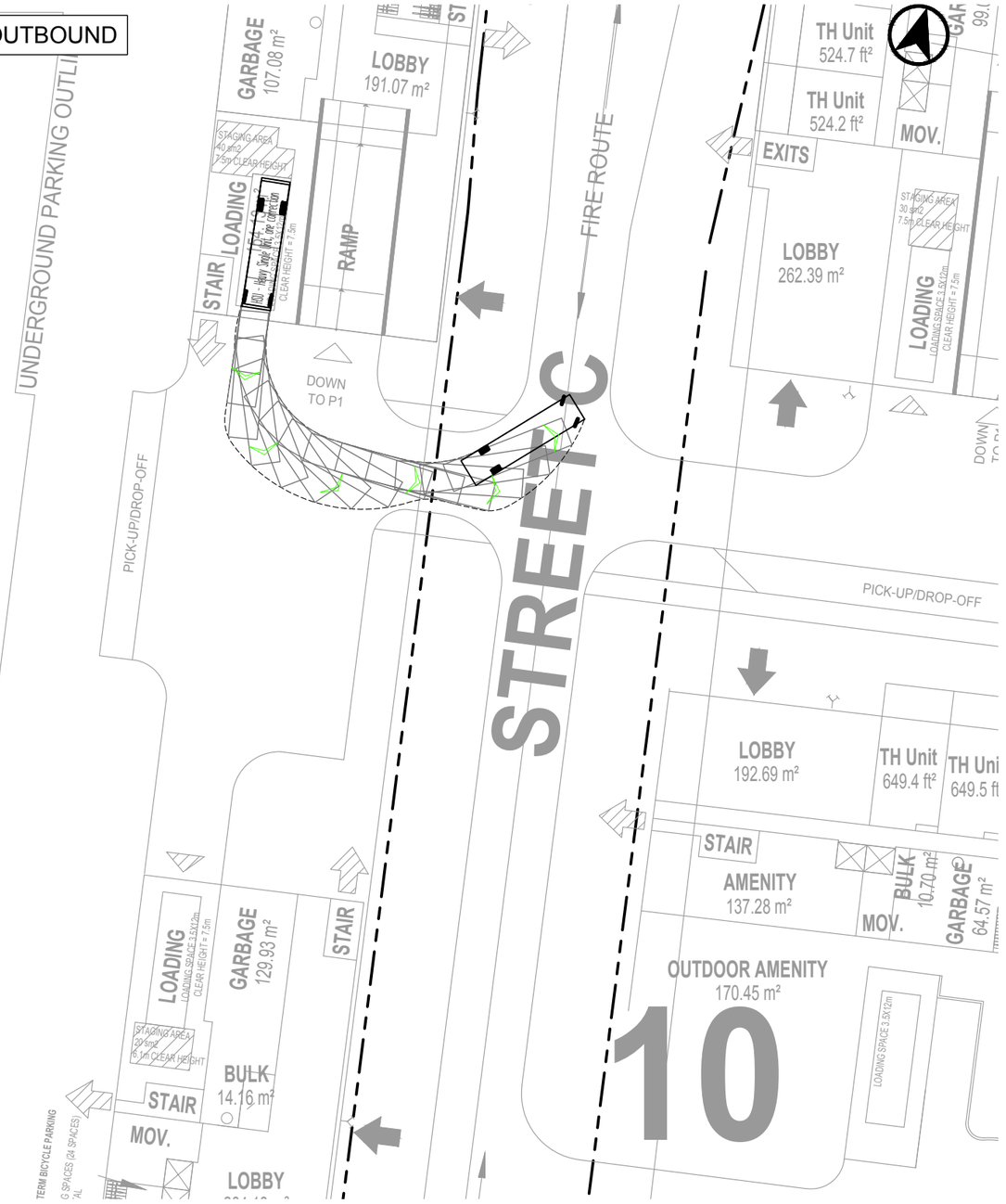
Scale 1:500 (0 5 10 15 20m)

Drawing No. VMD-02

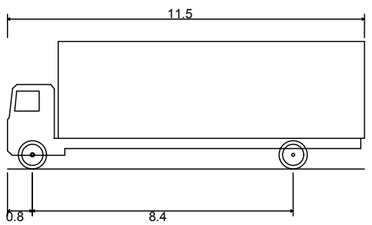
INBOUND



OUTBOUND



Design Vehicle - TAC HSU (Heavy Single Unit)



Overall Length	11.50m
Overall Width	2.60m
Overall Body Height	4.11m
Outside Turning Radius	14.56m
Inside Turning Radius	8.69m

8

Date Plotted: February 2, 2026 Filename: J:\8279-01\BA\SPR\2026\Block 8\Rev 4 - Feb2-26\BA-Westkirk Trafalgar-Block H-SPR-R03-827901.dwg

BA Group

VEHICLE MANOEUVRING DIAGRAM

BLOCK 8 - NORTH BUILDING

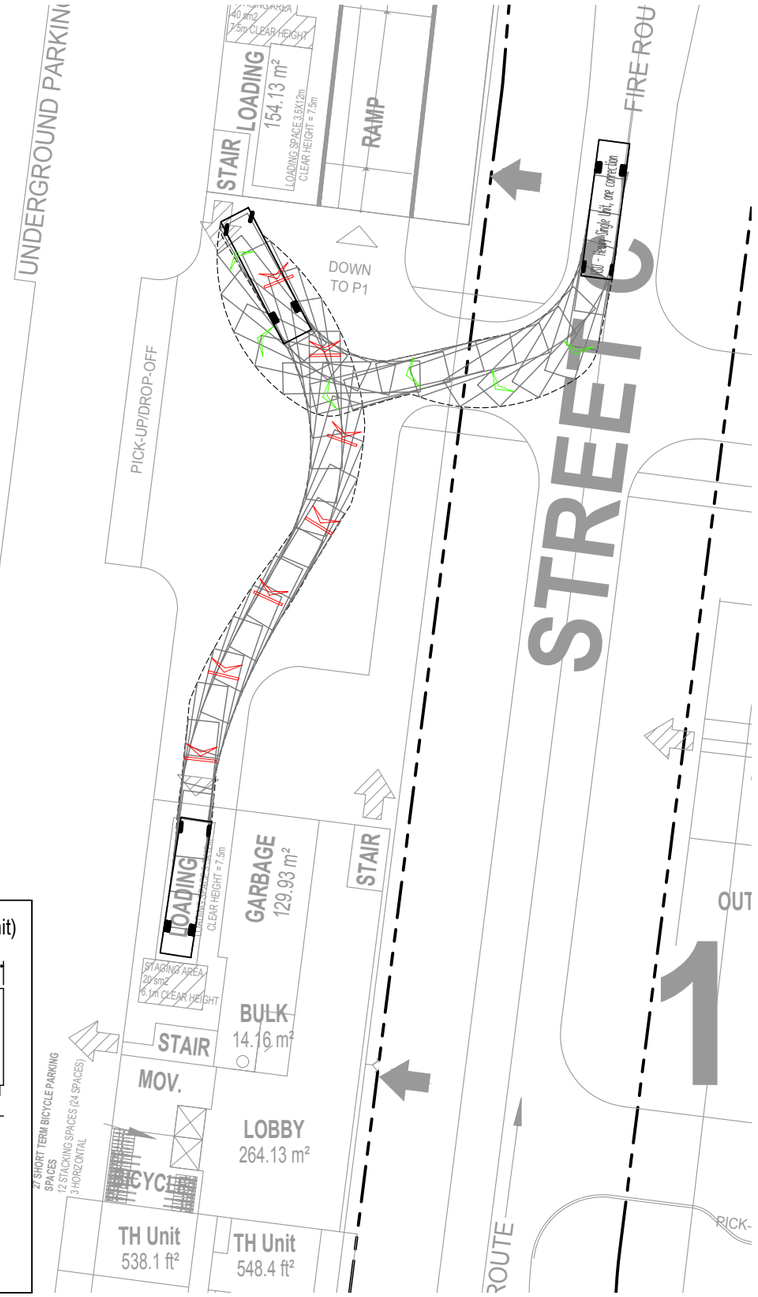
HEAVY SINGLE UNIT TRUCK

Project:	Westkirk Trafalgar
Project No.	8279-01
Date:	December 4, 2025
Revised:	February 2, 2026

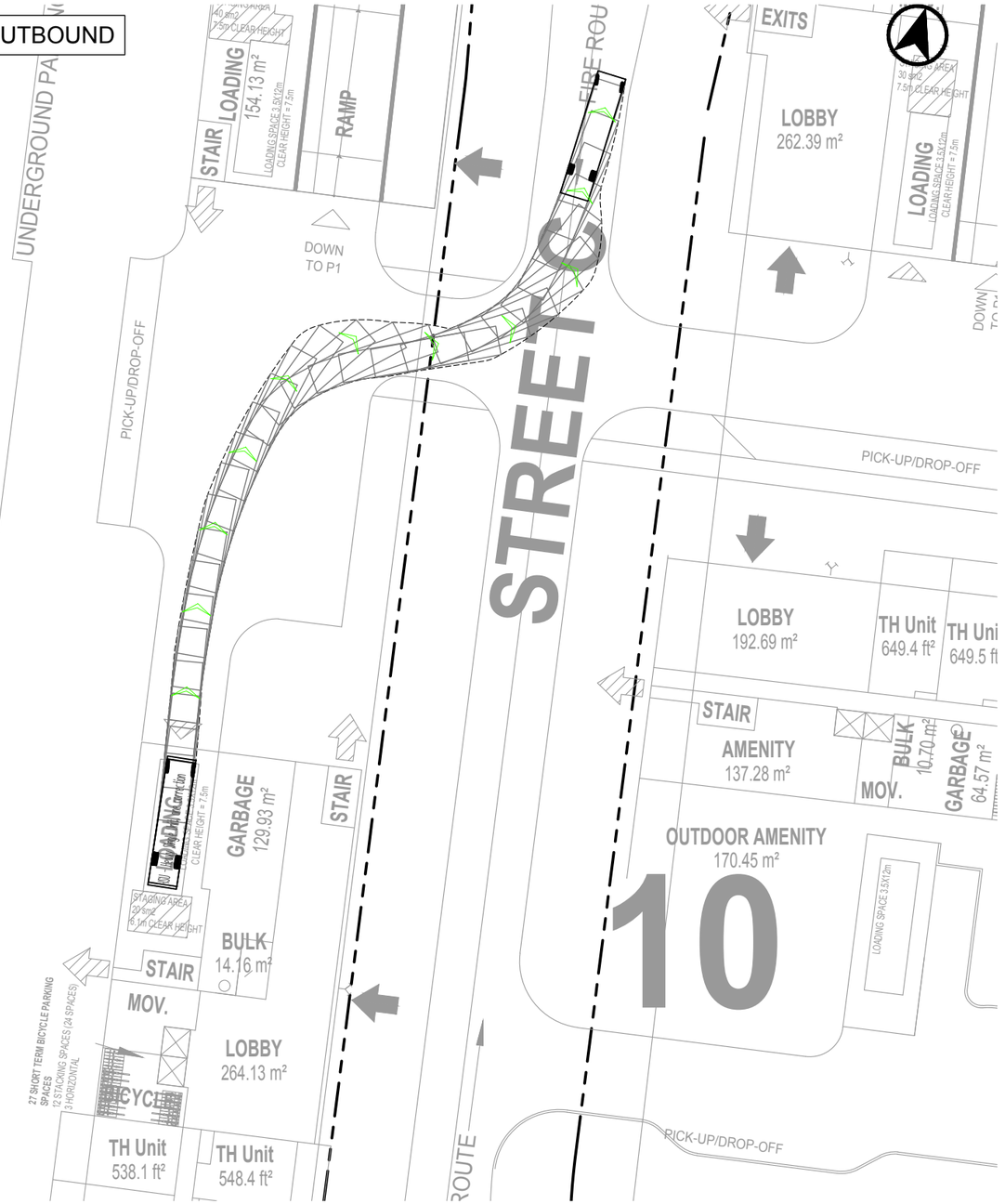
Scale 1:500 (0 5 10 15 20m)

Drawing No. VMD-03

INBOUND

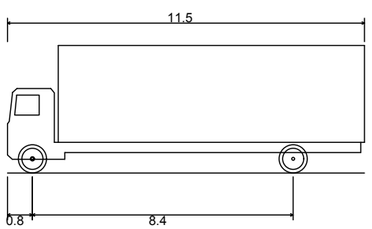


OUTBOUND



8

Design Vehicle - TAC HSU (Heavy Single Unit)



Overall Length	11.50m
Overall Width	2.60m
Overall Body Height	4.11m
Outside Turning Radius	14.56m
Inside Turning Radius	8.69m

BA Group

WESTKIRK TRAFALGAR

VEHICLE MANOEUVRING DIAGRAM
BLOCK 8 - SOUTH BUILDING
HEAVY SINGLE UNIT TRUCK

Project:	Westkirk Trafalgar
Project No.	8279-01
Date:	December 4, 2025
Revised:	February 2, 2026

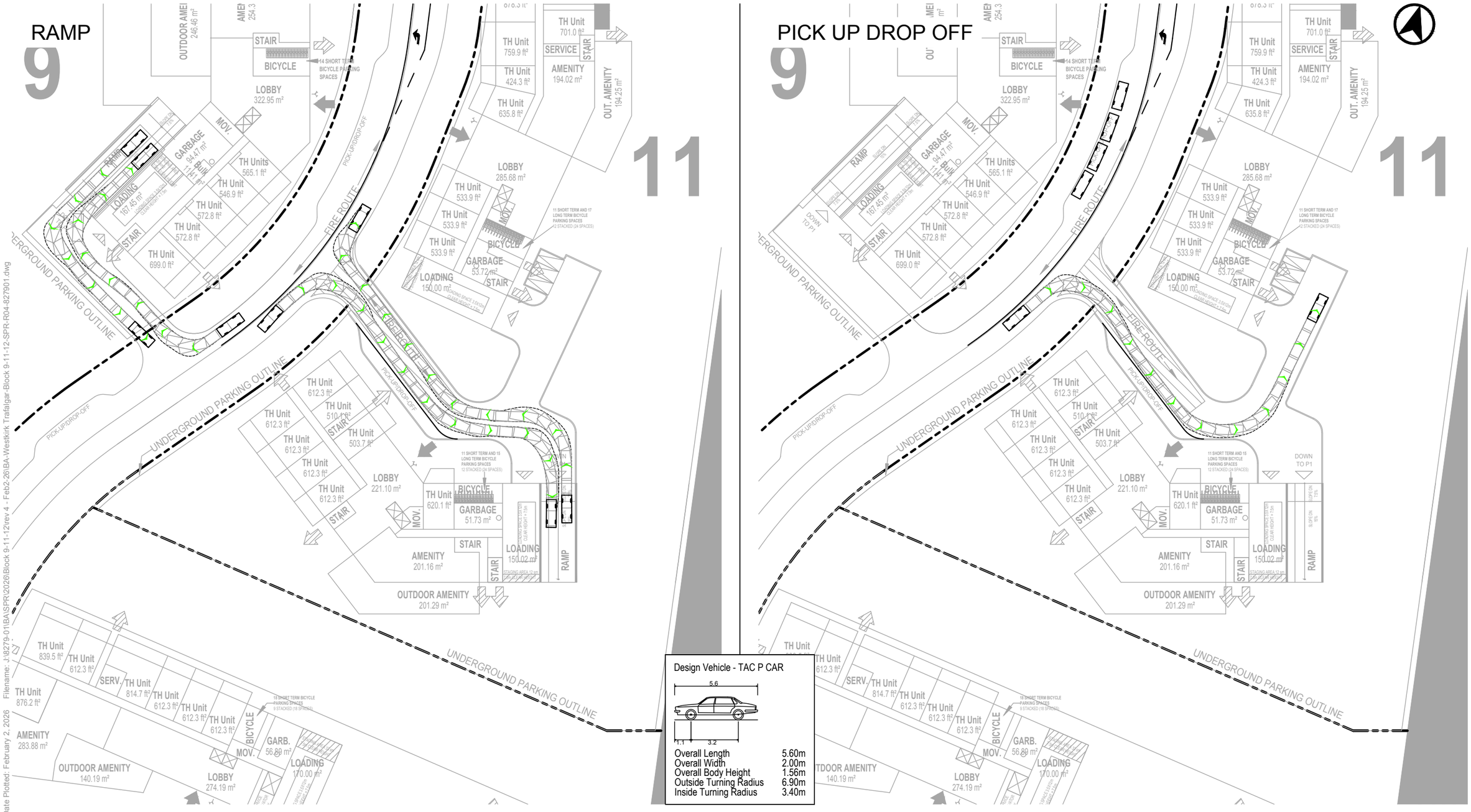
Scale 1:500 (0, 5, 10, 15, 20m)

Drawing No. VMD-04

Date Plotted: February 2, 2026 Filename: J:\8279-01\BA\SPR\2026\Block 8\Rev 4 - Feb2.26\BA-Westkirk Trafalgar-Block H-SPR-R03-827901.dwg

RAMP

PICK UP DROP OFF



Design Vehicle - TAC P CAR

Overall Length	5.60m
Overall Width	2.00m
Overall Body Height	1.56m
Outside Turning Radius	6.90m
Inside Turning Radius	3.40m

BA Group

Vehicle Manoeuvring Diagram

Block 11 & Block 9

TAC P Car Typical Movements

Project:	Westerkirk Trafalgar
Project No.	8279-01
Date:	February 2, 2026
Revised:	February 2, 2026

Scale 1:750 (0, 15, 30m)

Drawing No. VMD-05

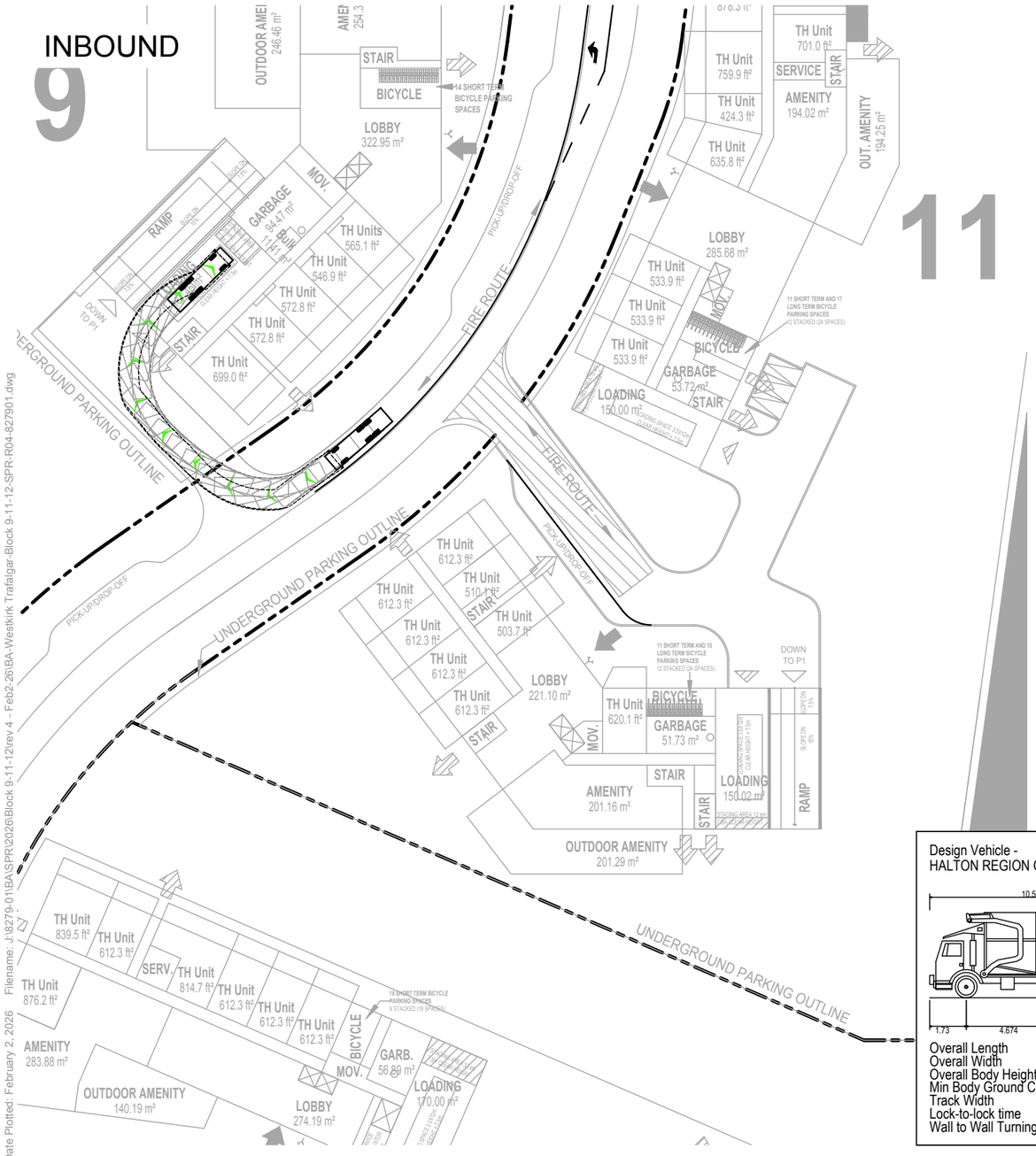
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Date Plotted: February 2, 2026

INBOUND

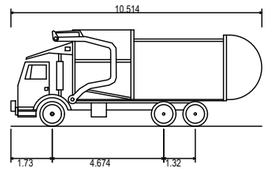
OUTBOUND

9

11



Design Vehicle -
HALTON REGION GARBAGE, YR 2008-2014



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

BA Group

Vehicle Manoeuvring Diagram

Block 9

Halton Region Garbage Truck

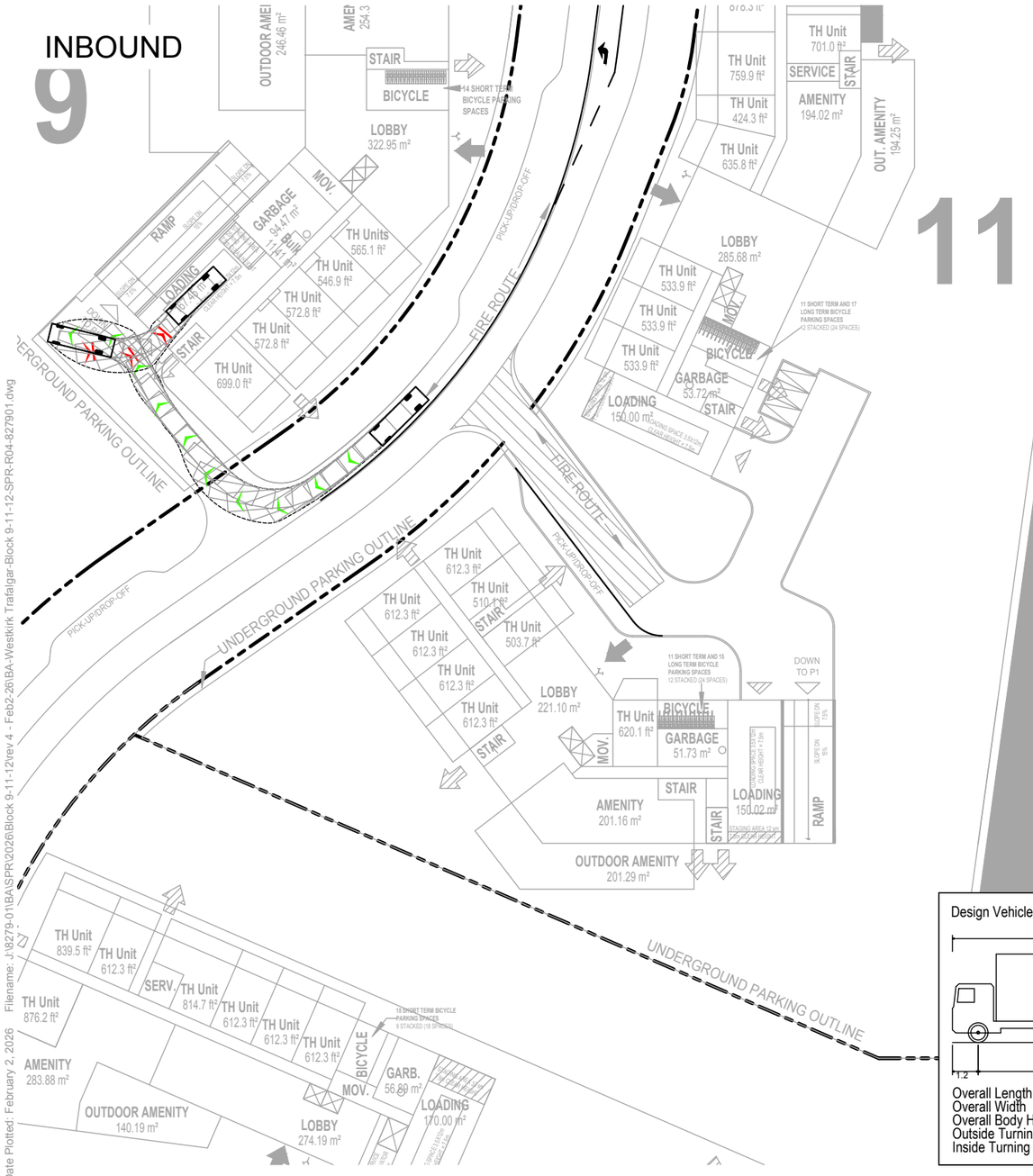
Project:	Westerkirk Trafalgar
Project No.	8279-01
Date:	February 2, 2026
Revised:	February 2, 2026

Scale 1:750 (0, 15, 30m)

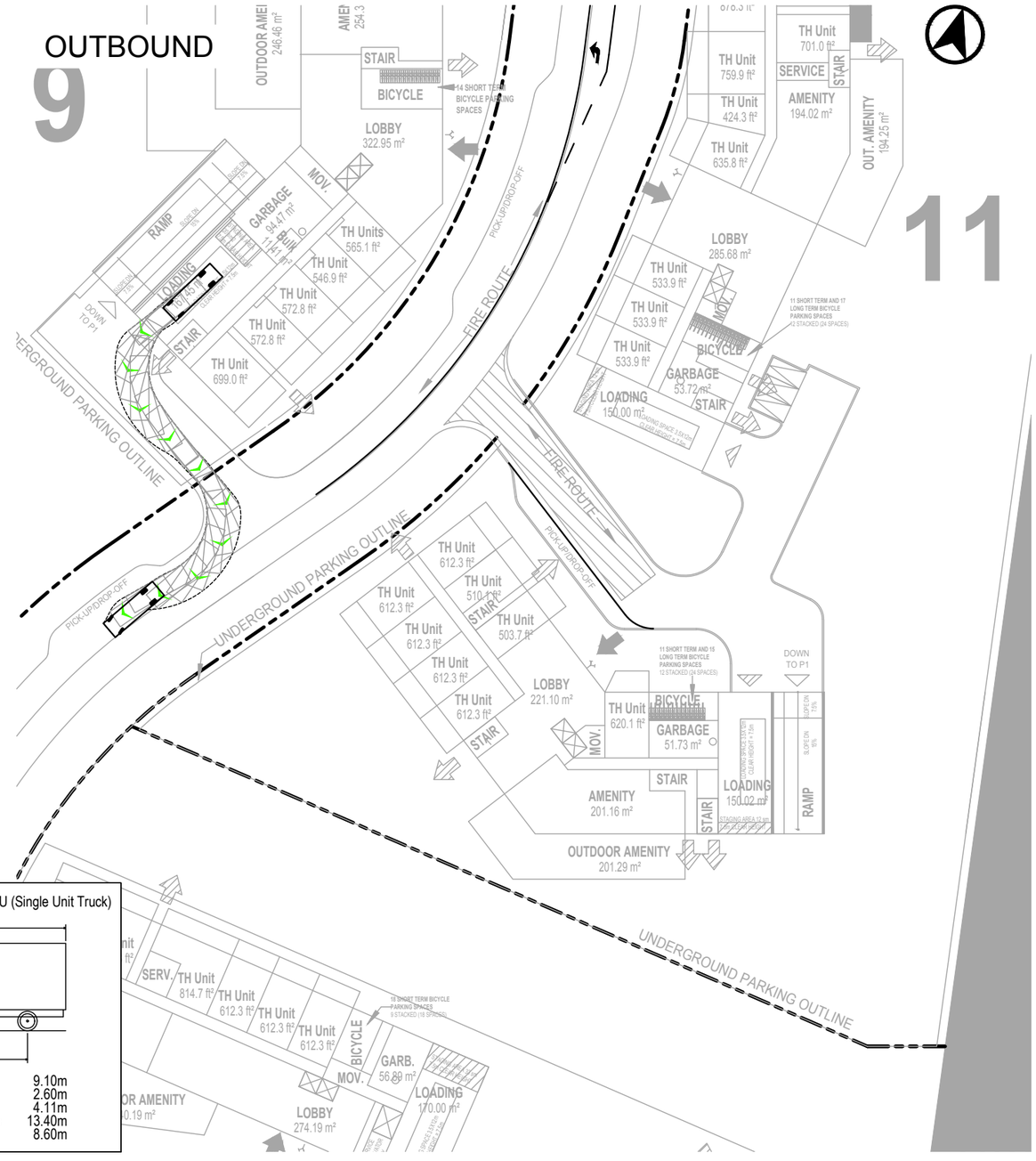
Drawing No. VMD-9

Filename: J:\8279-01\BA\SPR\2026\Block 9-11-12\rev 4 - Feb2-26\BA-Westkirk Trafalgar-Block 9-11-12-SPR-R04-827901.dwg
Date Plotted: February 2, 2026

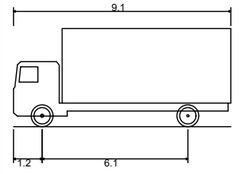
INBOUND



OUTBOUND



Design Vehicle - TAC SU (Single Unit Truck)



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

Filename: J:\8279-01\BA\SPR\2026\Block 9-11-12\rev 4 - Feb2-26\BA-Westkirk Trafalgar-Block 9-11-12-SPR-R04-827901.dwg

Date Plotted: February 2, 2026

BA Group

Vehicle Manoeuvring Diagram

Block 9

Single Unit Truck

Project:	Westerkirk Trafalgar
Project No.	8279-01
Date:	February 2, 2026
Revised:	February 2, 2026

Scale 1:750 (0, 15, 30m)

Drawing No. VMD-10

INBOUND

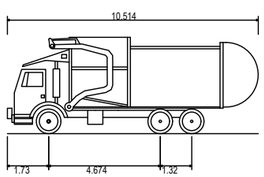
OUTBOUND

TH Unit 606.2 ft²
TH Unit 624.3 ft²
MOV.
Bulk 10.85 m²
BICYCLE
STAIR
8A
GARBAGE 107.08 m²
LOBBY 191.07 m²
154.13 m²
RAMP

TH Unit 1268.3 ft²
609.1 ft²
609.1 ft²
609.1 ft²
609.1 ft²
8
STAIR
10A
AMENITY 324.65 m²
TH Unit 525.0 ft²
TH Unit 524.7 ft²
TH Unit 524.7 ft²
TH Unit 524.7 ft²
TH Unit 524.2 ft²
OUTDOOR AMENITY 312.62 m²
GARBAGE 99.07 m²
BULK 13.47 m²
MOV.
EXITS
LOBBY 262.39 m²
LOADING
RAMP

LOBBY 192.69 m²
TH Unit 649.4 ft²
TH Unit 649.5 ft²
TH Unit 732.3 ft²
TH Unit 745.0 ft²
STAIR
10B
AMENITY 137.28 m²
BULK 10.70 m²
GARBAGE 4.57 m²
CYCLE
TH Unit

Design Vehicle -
HALTON REGION GARBAGE, YR 2008-2014



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

BA Group

VEHICLE MANOEUVRING DIAGRAM

Block 10 - Loading Space 10A

Halton Region Garbage Truck

Project:	Westerkirk Trafalgar
Project No.	8279-01
Date:	December 16, 2025
Revised:	February 3, 2026

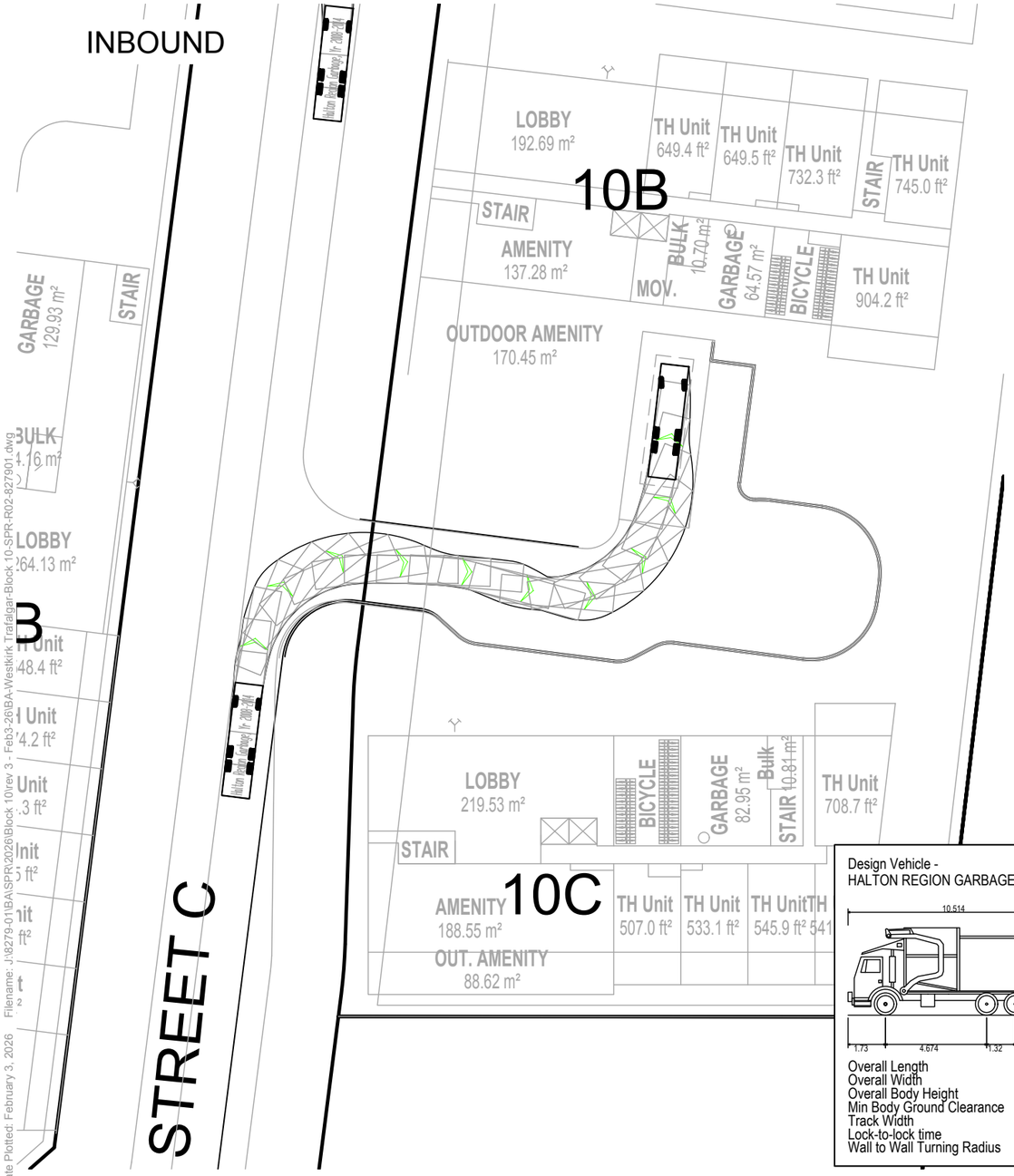
Scale 1:500 (0 5 10 15 20m)

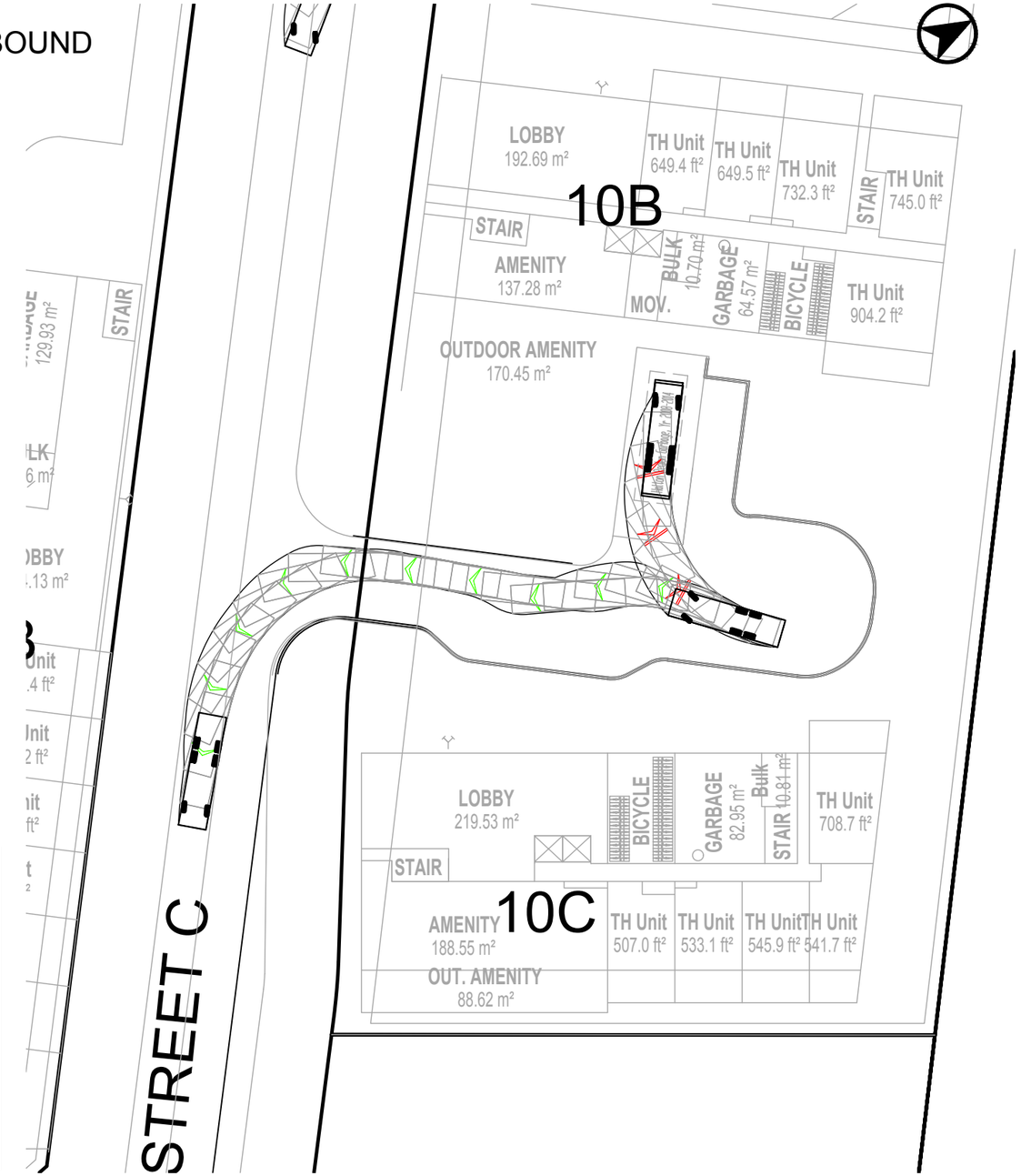
Drawing No.

Date Plotted: February 3, 2026 Filename: J:\8279-01\BA\SPR\2026\Block 10\rev 3 - Feb3-26\BA-Westkirk Trafalgar-Block 10-SPR-R02-8279001.dwg

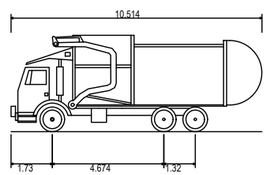
INBOUND

OUTBOUND





Design Vehicle -
HALTON REGION GARBAGE, YR 2008-2014



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

Filename: J:\8279-01\BA\SPR\2026\Block 10\rev 3 - Feb3-26\BA-Westkirk Trafalgar-Block 10-SPR-R02-827901.dwg
Date Plotted: February 3, 2026

BA Group

VEHICLE MANOEUVRING DIAGRAM

Block 10 - Loading Space 10B

Halton Region Garbage Truck

Project:	Westerkirk Trafalgar
Project No.	8279-01
Date:	December 16, 2025
Revised:	February 3, 2026

Scale 1:500 — 0 5 10 15 20m

Drawing No.

INBOUND

OUTBOUND

8A

10A

10B

TH Unit 606.2 ft²
TH Unit 624.3 ft²
MOV.
Bulk 10.85 m²
BICYCLE
STAIR
GARBAGE 107.08 m²
LOBBY 191.07 m²
154.13 m²
RAMP

TH Unit 1268.3 ft²
TH Unit 525.0 ft²
TH Unit 524.7 ft²
TH Unit 524.7 ft²
TH Unit 524.7 ft²
TH Unit 524.2 ft²
AMENITY 324.65 m²
OUTDOOR AMENITY 312.62 m²
GARBAGE 99.07 m²
BULK 13.47 m²
MOV.
EXITS
LOBBY 262.39 m²
LOADING
RAMP

LOBBY 192.69 m²
TH Unit 649.4 ft²
TH Unit 649.5 ft²
TH Unit 732.3 ft²
TH Unit 745.0 ft²
STAIR
AMENITY 137.28 m²
BULK 10.70 m²
GARBAGE 4.57 m²
BICYCLE
TH Unit

Design Vehicle - TAC HSU (Heavy Single Unit)

Overall Length	11.50m
Overall Width	2.60m
Overall Body Height	4.11m
Outside Turning Radius	14.56m
Inside Turning Radius	8.69m

Date Plotted: February 3, 2026 Filename: J:\8279-01\BA\SPR\2026\Block 10\rev 3 - Feb3-26\BA-Westkirk Trafalgar-Block 10-SPR-R02-8279001.dwg

BA Group

VEHICLE MANOEUVRING DIAGRAM

Block 10 - Loading Space 10A

Heavy Single Unit Delivery Truck

Project:	Westerkirk Trafalgar
Project No.	8279-01
Date:	December 16, 2025
Revised:	February 3, 2026

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

Drawing No.

INBOUND

OUTBOUND

10B

LOBBY
192.69 m²

TH Unit
649.4 ft²

TH Unit
649.5 ft²

TH Unit
732.3 ft²

STAIR

TH Unit
745.0 ft²

STAIR

AMENITY
137.28 m²

BULK
10.70 m²

GARBAGE
64.57 m²

BICYCLE

MOV.

TH Unit
904.2 ft²

OUTDOOR AMENITY
170.45 m²

129.93 m²

STAIR

LOBBY
219.53 m²

BICYCLE

GARBAGE
82.95 m²

Bulk

STAIR 10.81 m²

TH Unit
708.7 ft²

STAIR

AMENITY
188.55 m²

10C

TH Unit
507.0 ft²

TH Unit
533.1 ft²

TH Unit
545.9 ft²

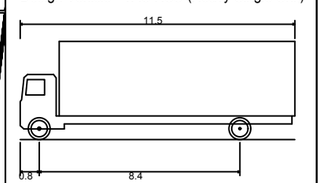
TH Unit
541.7 ft²

OUT. AMENITY
88.62 m²

STREET C

STREET C

Design Vehicle - TAC HSU (Heavy Single Unit)



Overall Length	11.50m
Overall Width	2.60m
Overall Body Height	4.11m
Outside Turning Radius	14.56m
Inside Turning Radius	8.69m

Date Plotted: February 3, 2026 Filename: J:\8279-01\BA\SPR\2026\Block 10\rev 3 - Feb3-26\BA-Westkirk Trafalgar-Block 10-SPR-R02-8279[illegible].dwg

BA Group

VEHICLE MANOEUVRING DIAGRAM

Block 10 - Loading Space 10B

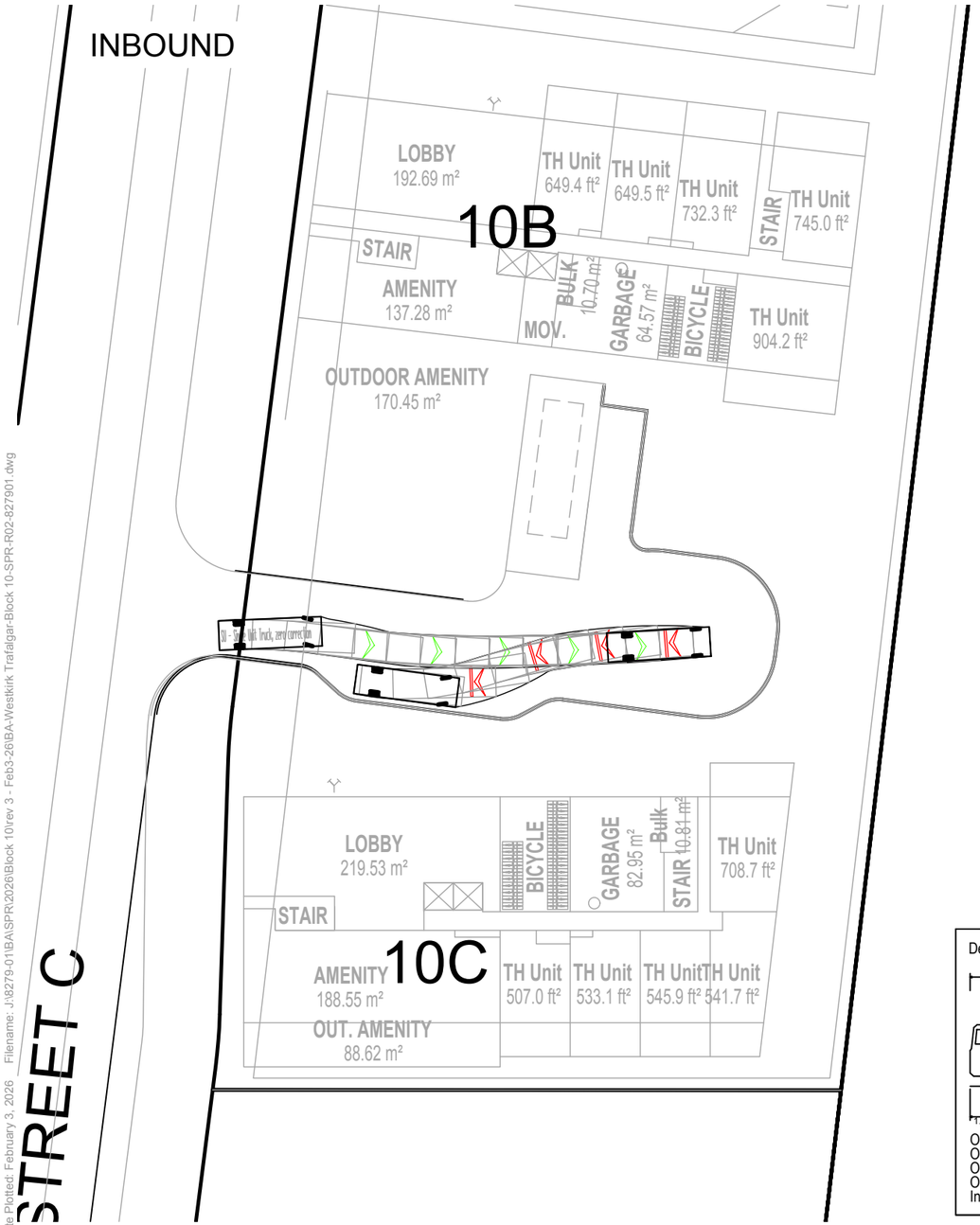
Heavy Single Unit Delivery Truck

Project:	Westerkirk Trafalgar
Project No.	8279-01
Date:	December 16, 2025
Revised:	February 3, 2026

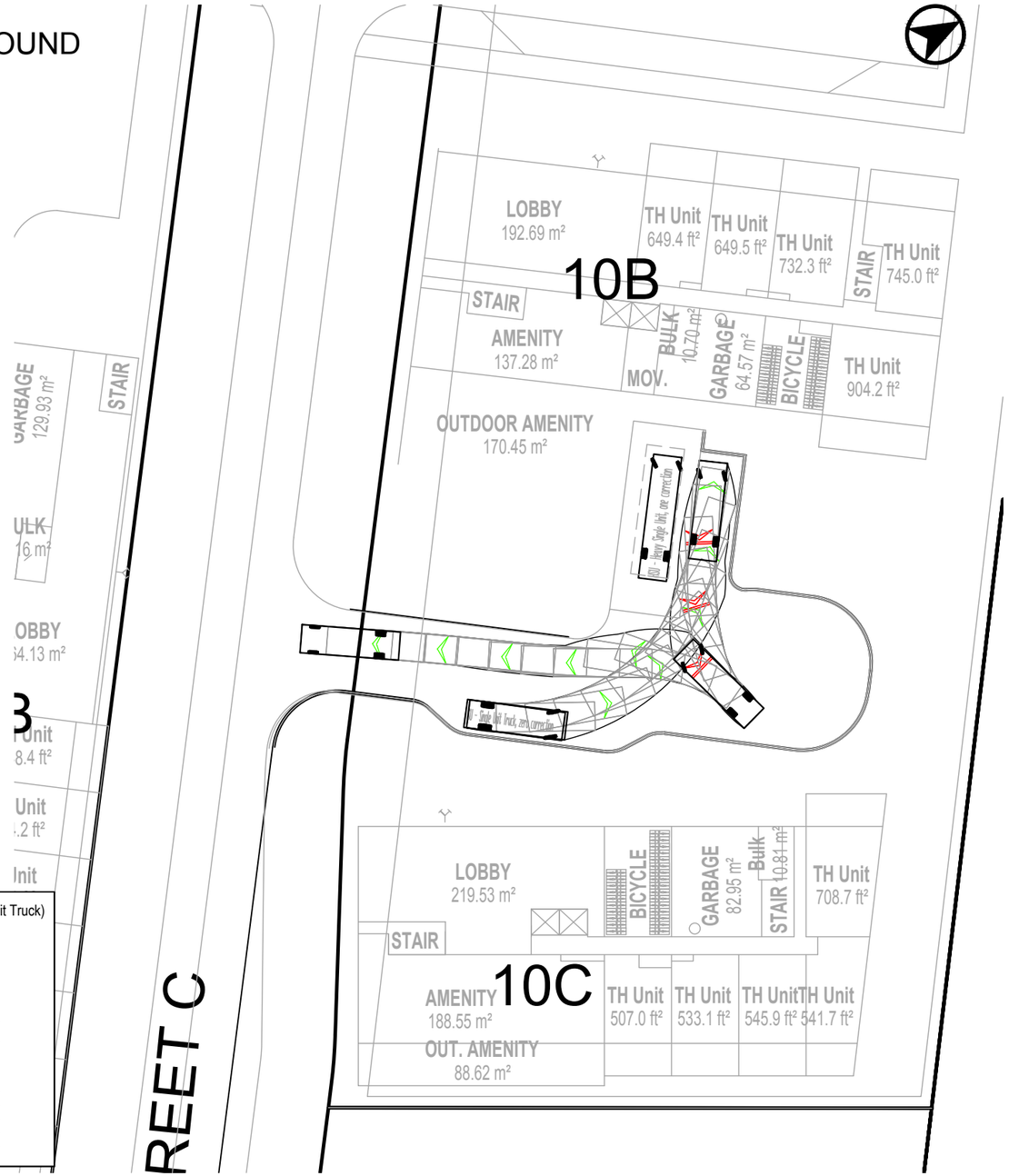
Scale 1:500 0 5 10 15 20m

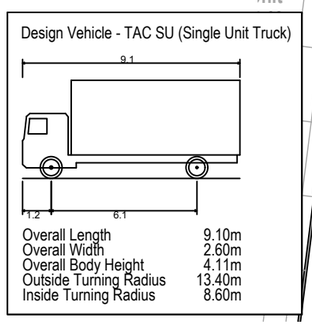
Drawing No.

INBOUND



OUTBOUND





Date Plotted: February 3, 2026 Filename: J:\8279-01\BA\SPR\2026\Block 10\rev 3 - Feb3-26\BA-Westkirk Trafalgar-Block 10-SPR-R02-827901.dwg

BA Group

VEHICLE MANOEUVRING DIAGRAM

Block 10 - Informal Loading Space 10C

Single Unit Delivery Truck

Project:	Westerkirk Trafalgar
Project No.	8279-01
Date:	December 16, 2025
Revised:	February 3, 2026

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

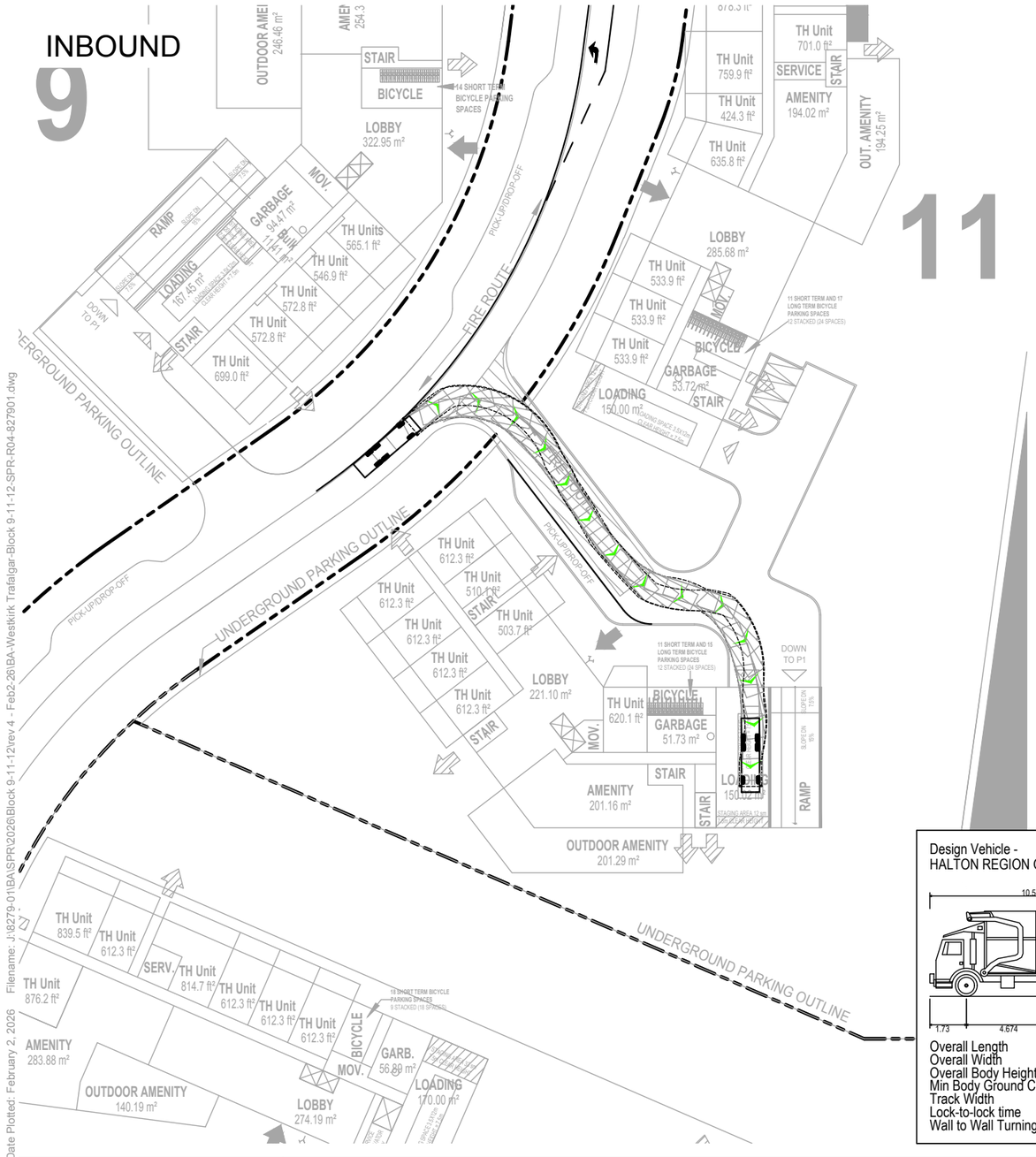
Drawing No.

INBOUND

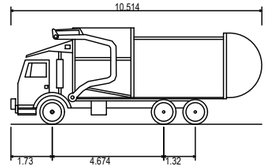
OUTBOUND

9

11



Design Vehicle -
HALTON REGION GARBAGE, YR 2008-2014



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

Filename: J:\8279-01\BA\SPR\2026\Block 9-11-12\rev 4 - Feb2-26\BA-Westkirk Trafalgar-Block 9-11-12-SPR-R04-827901.dwg

Date Plotted: February 2, 2026

BA Group

Vehicle Manoeuvring Diagram

Block 11 - South Building

Halton Region Garbage Truck

Project:	Westerkirk Trafalgar
Project No.	8279-01
Date:	February 2, 2026
Revised:	February 2, 2026

Scale 1:750 (0, 15, 30m)

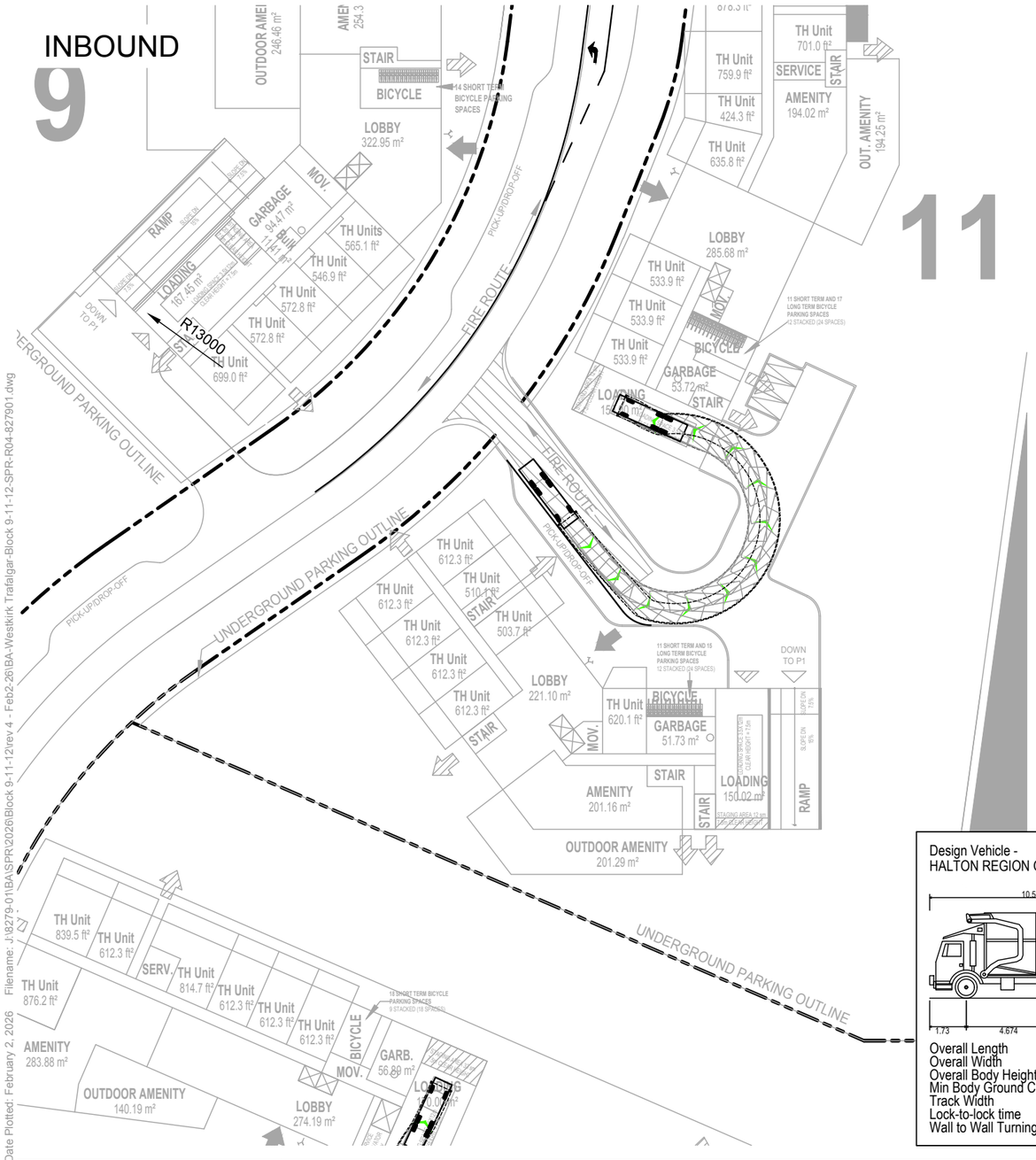
Drawing No. VMD-01

INBOUND

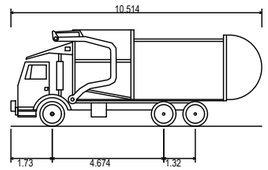
OUTBOUND

9

11



Design Vehicle -
HALTON REGION GARBAGE, YR 2008-2014



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

BA Group

Vehicle Manoeuvring Diagram

Block 11 - North Building

Halton Region Garbage Truck

Project:	Westerkirk Trafalgar
Project No.	8279-01
Date:	February 2, 2026
Revised:	February 2, 2026

Scale 1:750 (0, 15, 30m)

Drawing No. VMD-02

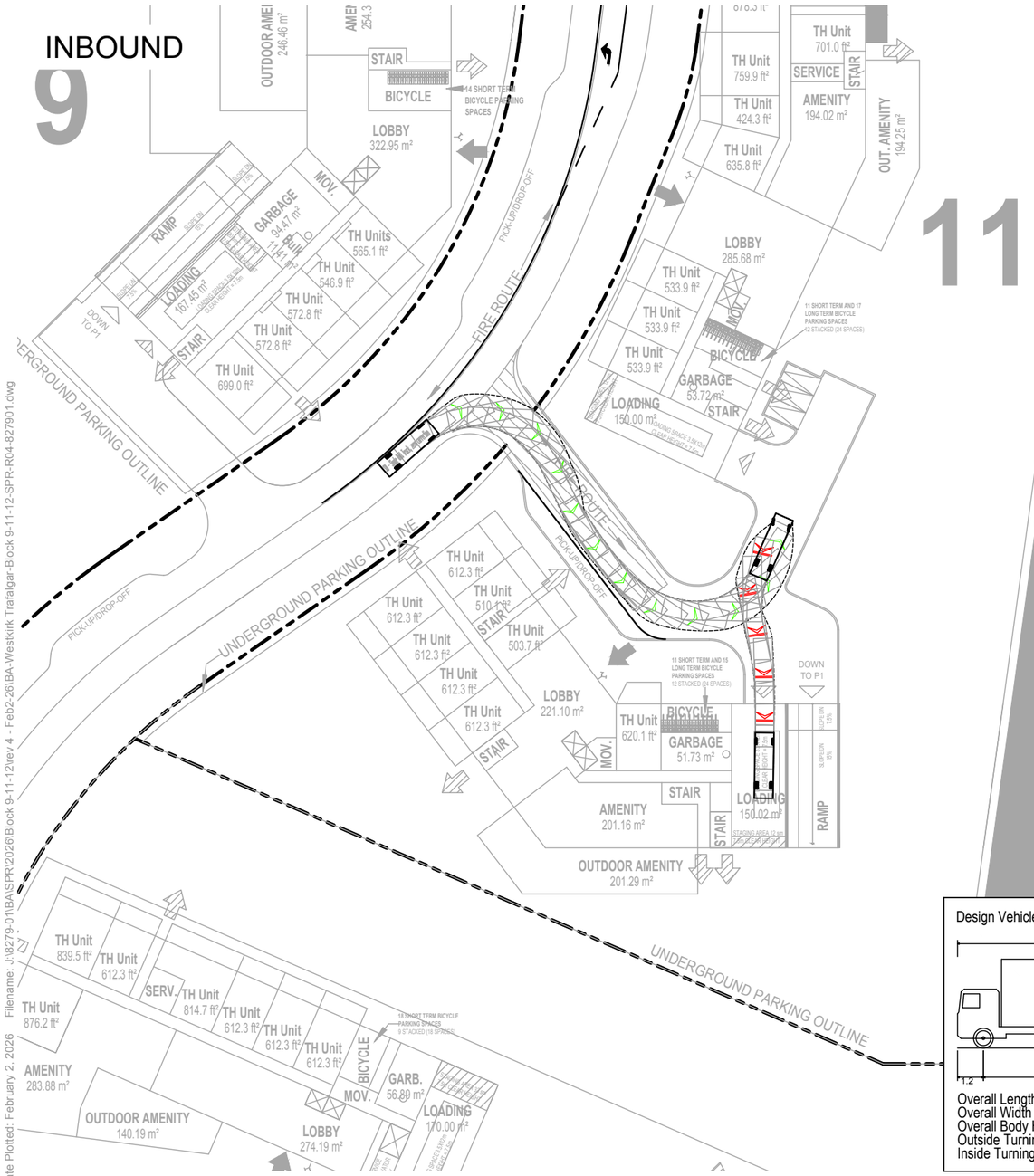
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Date Plotted: February 2, 2026

INBOUND

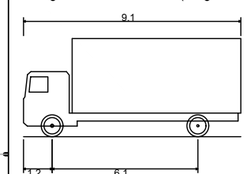
OUTBOUND

9

11



Design Vehicle - TAC SU (Single Unit Truck)



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

BA Group

Vehicle Manoeuvring Diagram

Block 11 - South Building

Single Unit Truck

Project:	Westerkirk Trafalgar
Project No.	8279-01
Date:	February 2, 2026
Revised:	February 2, 2026

Scale 1:750 (0, 15, 30m)

Drawing No. VMD-03

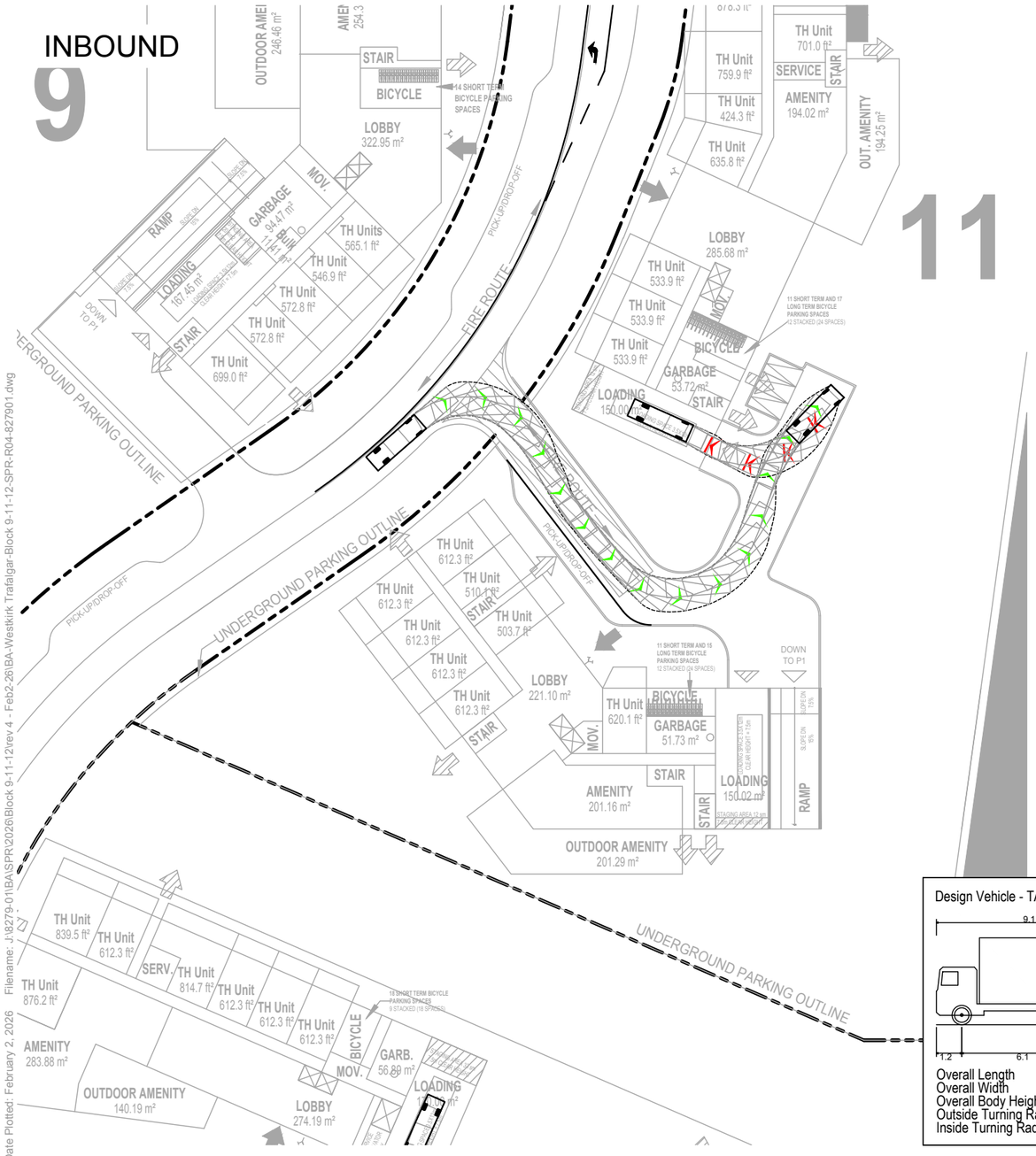
Date Plotted: February 2, 2026 Filename: J:\8279-01\BA\SPR\2026\Block 9-11-12\rev 4 - Feb2-26\BA-Westkirk Trafalgar-Block 9-11-12-SPR-R04-827901.dwg

INBOUND

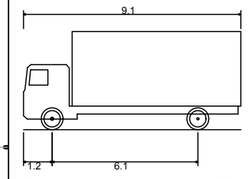
OUTBOUND

9

11



Design Vehicle - TAC SU (Single Unit Truck)



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

Filename: J:\8279-01\BA\SPR\2026\Block 9-11-12\rev 4 - Feb2-26\BA-Westkirk Trafalgar-Block 9-11-12-SPR-R04-827901.dwg

Date Plotted: February 2, 2026

BA Group

Vehicle Manoeuvring Diagram

Block 11 - North Building

Single Unit Truck

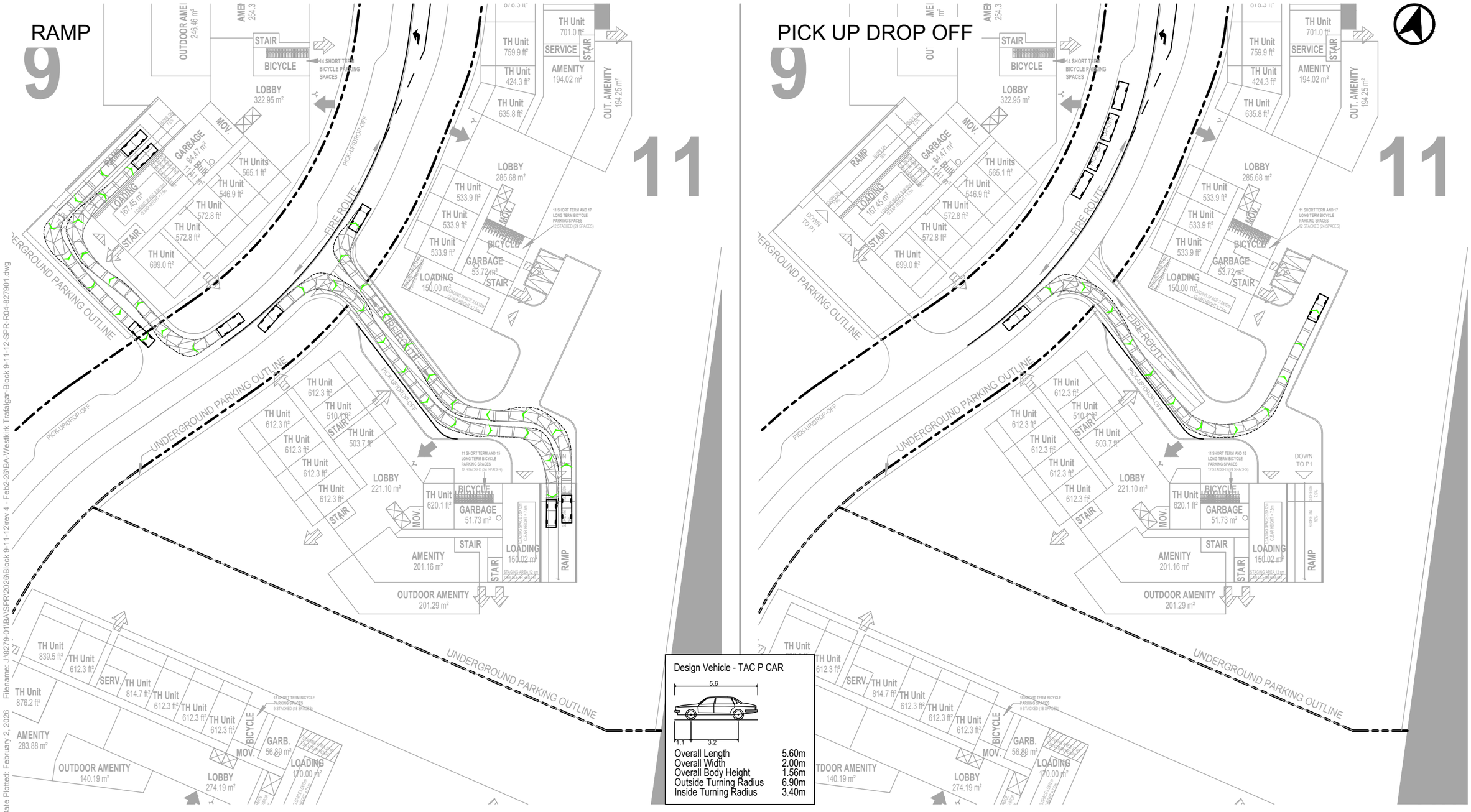
Project:	Westerkirk Trafalgar
Project No.	8279-01
Date:	February 2, 2026
Revised:	February 2, 2026

Scale 1:750 (0, 15, 30m)

Drawing No. VMD-04

RAMP

PICK UP DROP OFF



Design Vehicle - TAC P CAR

Overall Length	5.60m
Overall Width	2.00m
Overall Body Height	1.56m
Outside Turning Radius	6.90m
Inside Turning Radius	3.40m

BA Group

Vehicle Manoeuvring Diagram

Block 11 & Block 9

TAC P Car Typical Movements

Project:	Westerkirk Trafalgar
Project No.	8279-01
Date:	February 2, 2026
Revised:	February 2, 2026

Scale 1:750 (0, 15, 30m)

Drawing No. VMD-05

Filename: J:\8279-01\BA\SPR\2026\Block 9-11-12\rev 4 - Feb2-26\BA-Westkirk Trafalgar-Block 9-11-12-SPR-R04-827901.dwg
Date Plotted: February 2, 2026

INBOUND

OUTBOUND

STREET C

12

LOBBY

AMENITY 201.16 m²

OUTDOOR AMENITY 201.29 m²

OUTDOOR AMENITY 140.19 m²

AMENITY 283.88 m²

LOBBY 274.19 m²

OUTDOOR AMENITY 41.91 m²

PICK-UP/DROP-OFF

FIRE ROUTE

DOWN TO P1

RAMP

OUTDOOR AMENITY 203.44 m²

AMENITY 163.21 m²

LOBBY 281.17 m²

SERVICE

GARBAGE 81.81 m²

MOV.

BICYCLE

GARB. 56.89 m²

LOADING 278.10 m²

LOADING TYPE C

STAIR

TH Unit 839.5 ft²

TH Unit 612.3 ft²

SERV.

TH Unit 814.7 ft²

TH Unit 876.2 ft²

TH Unit 669.9 ft²

TH Unit 454.3 ft²

TH Unit 639.9 ft²

TH Unit 503.8 ft²

TH Unit 504.1 ft²

TH Unit 504.2 ft²

TH Unit 504.3 ft²

TH Unit 651.9 ft²

TH Unit 402.1 ft²

TH Unit 512.2 ft²

TH Unit 423.4 ft²

TH Unit 512.2 ft²

TH Unit 393.8 ft²

OUTDOOR AMENITY 259.51 m²

AMENITY 198.44 m²

TH Unit 612.3 ft²

TH Unit 782.8 ft²

TH Unit 704.1 ft²

TH Unit 698.4 ft²

18 SHORT TERM BICYCLE PARKING SPACES 9 STACKED (18 SPACES)

16 SHORT TERM AND 39 LONG TERM BICYCLE PARKING SPACES 27 STACKED (54 SPACES)

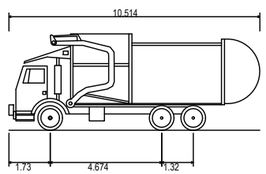
7 SHORT TERM AND 81 LONG TERM BICYCLE PARKING SPACES 88 STACKED (88 SPACES)

UNDERGROUND PARKING OUTLINE

UNDERGROU

UNDER

Design Vehicle -
HALTON REGION GARBAGE, YR 2008-2014



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

BA Group

Vehicle Manoeuvring Diagram

Block 12

Halton Region Garbage Truck

Project:	Westerkirk Trafalgar
Project No.	8279-01
Date:	February 2, 2026
Revised:	February 2, 2026

Scale 1:750 (0, 15, 30m)

Drawing No. VMD-06

Date Plotted: February 2, 2026 Filename: J:\8279-01\BA\SPR\2026\Block 9-11-12\rev 4 - Feb2-26\BA-Westkirk Trafalgar-Block 9-11-12-SPR-R04-827901.dwg

INBOUND

OUTBOUND

STREET C

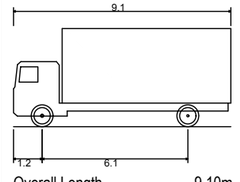
PICK-UP/DROP-OFF

FIRE ROUTE

UNDERGROUND PARKING OUTLINE

12

Design Vehicle - TAC SU (Single Unit Truck)



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

BA Group

Vehicle Manoeuvring Diagram

Block 12

Single Unit Truck

Project:	Westerkirk Trafalgar
Project No.	8279-01
Date:	February 2, 2026
Revised:	February 2, 2026

Scale 1:750 (0, 15, 30m)

Drawing No. VMD-07

Filename: J:\8279-01\BA\SPR\2026\Block 9-11-12\rev 4 - Feb2-26\BA-Westkirk Trafalgar-Block 9-11-12-SPR-R04-827901.dwg

Date Plotted: February 2, 2026

INBOUND

OUTBOUND

12

12

TH Unit 612.3 ft²
TH Unit 612.3 ft²
BICYCLE
18 SHORT TERM BICYCLE PARKING SPACES 9 STACKED (18 SPACES)
GARB. 56.89 m²
MOV.
LOADING 170.00 m²
LOBBY 274.19 m²
OUTDOOR AMENITY 140.19 m²
PICK-UP/DROP-OFF
FIRE ROUTE
DOWN TO P1
RAMP
TH Unit 669.9 ft²
STAIR
TH Unit 454.3 ft²
TH Unit 839.5 ft²
TH Unit 563.9 ft²
TH Unit 691.3 ft²
TH Unit 612.3 ft²
TH Unit 612.3 ft²
TH Unit 782.8 ft²
OUTDOOR AMENITY 259.51 m²
AMENITY 198.44 m²
OUTDOOR AMENITY 203.44 m²
AMENITY 163.21 m²
LOBBY 281.17 m²
TH Unit 704.1 ft²
TH Unit 698.4 ft²
7 SHORT TERM AND 51 LONG TERM BICYCLE PARKING SPACES 29 STACKED (58 SPACES)
PICK-UP/DROP-OFF
OUTBOUND PARKING OUTLET

12 Foot Box - Ford E350 (m)

Overall Length	6.390m
Overall Width	2.480m
Overall Body Height	3.073m
Outside Turning Radius	7.780m
Inside Turning Radius	4.252m

Filename: J:\8279-01\BA\SPR\2026\Block 9-11-12\rev 4 - Feb2-26\BA-Westkirk Trafalgar-Block 9-11-12-SPR-R04-827901.dwg

Date Plotted: February 2, 2026

Vehicle Manoeuvring Diagram

Block 12

Cube Van

Project:	Westerkirk Trafalgar
Project No.	8279-01
Date:	February 2, 2026
Revised:	February 2, 2026

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

Drawing No. VMD-08

Appendix F:
Turning Movement Counts (TMCs)

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Project #24-011 - CGH Transportation

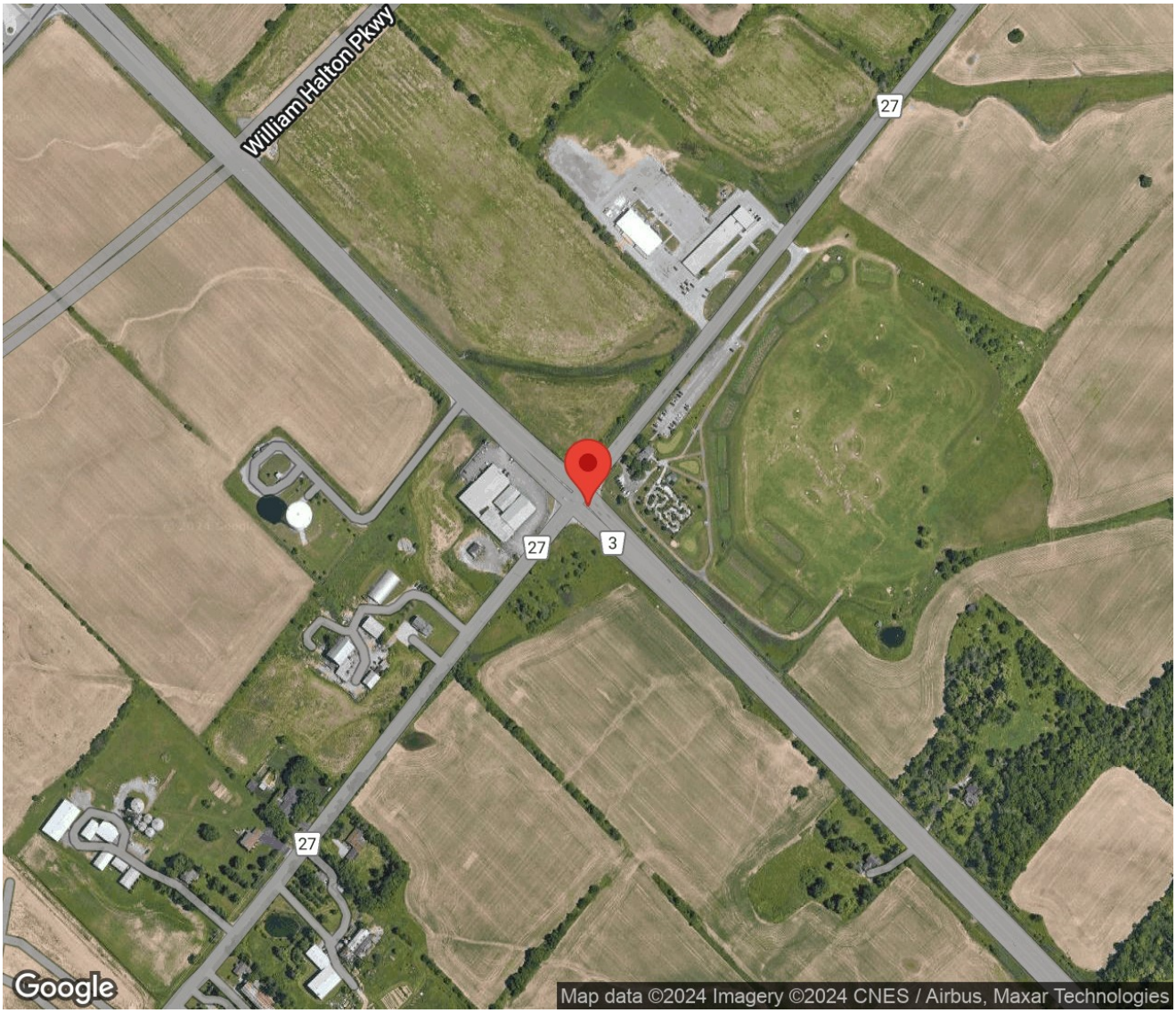
Intersection Count Report

Intersection:	Burnhamthorpe Rd E & Trafalgar Rd
Municipality:	Oakville
Count Date:	Wednesday, Jan 17, 2024
Site Code:	2401100001
Count Categories:	Cars, Trucks, Bicycles, Pedestrians
Count Period:	07:00-09:00, 16:00-18:00
Weather:	Clear
Comments:	

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Map

Intersection:	Burnhamthorpe Rd E & Trafalgar Rd
Site Code:	2401100001
Municipality:	Oakville
Count Date:	Jan 17, 2024



Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Summary

Intersection: Burnhamthorpe Rd E & Trafalgar Rd
Site Code: 2401100001
Municipality: Oakville
Count Date: Jan 17, 2024

Trafalgar Rd - Traffic Summary

	North Approach Totals						South Approach Totals						
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
Hour	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	Total
07:00 - 08:00	3	683	24	0	710	0	23	559	39	0	621	0	1331
08:00 - 09:00	56	916	28	0	1000	0	59	729	90	0	878	1	1878
BREAK													
16:00 - 17:00	11	616	64	0	691	0	74	995	87	0	1156	2	1847
17:00 - 18:00	11	773	68	0	852	0	80	987	81	0	1148	0	2000
GRAND TOTAL	**81**	**2988**	**184**	**0**	**3253**	**0**	**236**	**3270**	**297**	**0**	**3803**	**3**	**7056**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Summary

Intersection: Burnhamthorpe Rd E & Trafalgar Rd
Site Code: 2401100001
Municipality: Oakville
Count Date: Jan 17, 2024

Burnhamthorpe Rd E - Traffic Summary

Hour	East Approach Totals (Includes Cars, Trucks, Bicycles)						West Approach Totals (Includes Cars, Trucks, Bicycles)						Total
	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	
07:00 - 08:00	48	48	5	0	101	1	30	67	66	0	163	0	264
08:00 - 09:00	67	65	29	1	162	0	71	114	75	0	260	0	422
BREAK													
16:00 - 17:00	46	72	5	0	123	0	64	87	53	0	204	0	327
17:00 - 18:00	63	86	8	0	157	0	37	87	39	0	163	0	320
GRAND TOTAL	**224**	**271**	**47**	**1**	**543**	**1**	**202**	**355**	**233**	**0**	**790**	**0**	**1333**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Burnhamthorpe Rd E & Trafalgar Rd
Site Code: 2401100001
Municipality: Oakville
Count Date: Jan 17, 2024

North Approach - Trafalgar Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
					Total					Total					Total	
07:00	1	118	1	0	120	0	8	1	0	9	0	0	0	0	0	0
07:15	1	129	10	0	140	0	6	2	0	8	0	0	0	0	0	0
07:30	1	186	5	0	192	0	8	2	0	10	0	0	0	0	0	0
07:45	0	221	3	0	224	0	7	0	0	7	0	0	0	0	0	0
08:00	9	198	6	0	213	0	9	0	0	9	0	0	0	0	0	0
08:15	16	235	5	0	256	0	7	0	0	7	0	0	0	0	0	0
08:30	18	228	8	0	254	0	7	0	0	7	0	0	0	0	0	0
08:45	13	226	9	0	248	0	6	0	0	6	0	0	0	0	0	0
SUBTOTAL	59	1541	47	0	1647	0	58	5	0	63	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Burnhamthorpe Rd E & Trafalgar Rd
Site Code: 2401100001
Municipality: Oakville
Count Date: Jan 17, 2024

North Approach - Trafalgar Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↷	Total	↰	↑	↱	↷	Total	↰	↑	↱	↷	Total	
16:00	1	138	16	0	155	0	4	4	0	8	0	0	0	0	0	0
16:15	4	146	13	0	163	1	6	3	0	10	0	0	0	0	0	0
16:30	3	156	13	0	172	0	2	3	0	5	0	0	0	0	0	0
16:45	2	161	12	0	175	0	3	0	0	3	0	0	0	0	0	0
17:00	2	176	19	0	197	0	4	0	0	4	0	0	0	0	0	0
17:15	6	192	13	0	211	0	7	0	0	7	0	0	0	0	0	0
17:30	2	177	13	0	192	0	6	0	0	6	0	0	0	0	0	0
17:45	1	209	22	0	232	0	2	1	0	3	0	0	0	0	0	0
SUBTOTAL	21	1355	121	0	1497	1	34	11	0	46	0	0	0	0	0	0
GRAND TOTAL	80	2896	168	0	3144	1	92	16	0	109	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Burnhamthorpe Rd E & Trafalgar Rd
Site Code: 2401100001
Municipality: Oakville
Count Date: Jan 17, 2024

South Approach - Trafalgar Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
					Total					Total					Total	
07:00	4	109	6	0	119	0	2	0	0	2	0	0	0	0	0	0
07:15	5	116	4	0	125	1	4	0	0	5	0	0	0	0	0	0
07:30	6	152	10	0	168	1	8	0	0	9	0	0	0	0	0	0
07:45	5	165	19	0	189	1	3	0	0	4	0	0	0	0	0	0
08:00	6	184	11	0	201	2	6	0	0	8	0	0	0	0	0	0
08:15	22	224	22	0	268	0	5	1	0	6	0	0	0	0	0	0
08:30	17	189	32	0	238	0	3	0	0	3	0	0	0	0	0	1
08:45	11	115	24	0	150	1	3	0	0	4	0	0	0	0	0	0
SUBTOTAL	76	1254	128	0	1458	6	34	1	0	41	0	0	0	0	0	1

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Burnhamthorpe Rd E & Trafalgar Rd
Site Code: 2401100001
Municipality: Oakville
Count Date: Jan 17, 2024

South Approach - Trafalgar Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↷	Total	↰	↑	↱	↷	Total	↰	↑	↱	↷	Total	
16:00	12	209	25	0	246	1	3	0	0	4	0	0	0	0	0	0
16:15	23	249	21	0	293	0	7	0	0	7	0	0	0	0	0	1
16:30	23	238	21	0	282	0	6	0	0	6	0	0	0	0	0	1
16:45	15	276	20	0	311	0	7	0	0	7	0	0	0	0	0	0
17:00	18	253	26	0	297	0	5	0	0	5	0	0	0	0	0	0
17:15	25	274	27	0	326	0	2	0	0	2	0	0	0	0	0	0
17:30	19	256	12	0	287	0	4	0	0	4	0	0	0	0	0	0
17:45	18	190	15	0	223	0	3	1	0	4	0	0	0	0	0	0
SUBTOTAL	153	1945	167	0	2265	1	37	1	0	39	0	0	0	0	0	2
GRAND TOTAL	**229**	**3199**	**295**	**0**	**3723**	**7**	**71**	**2**	**0**	**80**	**0**	**0**	**0**	**0**	**0**	**3**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Burnhamthorpe Rd E & Trafalgar Rd
Site Code: 2401100001
Municipality: Oakville
Count Date: Jan 17, 2024

East Approach - Burnhamthorpe Rd E

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↷	Total	↰	↑	↱	↷	Total	↰	↑	↱	↷	Total	
07:00	21	27	3	0	51	0	1	0	0	1	0	0	0	0	0	1
07:15	12	7	1	0	20	1	1	0	0	2	0	0	0	0	0	0
07:30	9	7	0	0	16	0	0	0	0	0	0	0	0	0	0	0
07:45	5	5	1	0	11	0	0	0	0	0	0	0	0	0	0	0
08:00	9	14	3	0	26	0	0	0	0	0	0	0	0	0	0	0
08:15	14	10	1	0	25	0	1	0	0	1	0	0	0	0	0	0
08:30	25	10	15	1	51	0	0	0	0	0	0	0	0	0	0	0
08:45	19	27	10	0	56	0	3	0	0	3	0	0	0	0	0	0
SUBTOTAL	114	107	34	1	256	1	6	0	0	7	0	0	0	0	0	1

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Burnhamthorpe Rd E & Trafalgar Rd
Site Code: 2401100001
Municipality: Oakville
Count Date: Jan 17, 2024

East Approach - Burnhamthorpe Rd E

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	
16:00	13	17	2	0	32	0	0	1	0	1	0	0	0	0	0	0
16:15	9	16	0	0	25	0	0	0	0	0	0	0	0	0	0	0
16:30	9	20	1	0	30	0	1	0	0	1	0	0	0	0	0	0
16:45	15	18	1	0	34	0	0	0	0	0	0	0	0	0	0	0
17:00	17	16	2	0	35	0	0	0	0	0	0	0	0	0	0	0
17:15	8	24	1	0	33	0	0	0	0	0	0	0	0	0	0	0
17:30	26	25	5	0	56	0	0	0	0	0	0	0	0	0	0	0
17:45	12	21	0	0	33	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	109	157	12	0	278	0	1	1	0	2	0	0	0	0	0	0
GRAND TOTAL	**223**	**264**	**46**	**1**	**534**	**1**	**7**	**1**	**0**	**9**	**0**	**0**	**0**	**0**	**0**	**1**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Burnhamthorpe Rd E & Trafalgar Rd
Site Code: 2401100001
Municipality: Oakville
Count Date: Jan 17, 2024

West Approach - Burnhamthorpe Rd E

Start Time	Cars					Trucks					Bicycles					Total Peds
					Total					Total					Total	
07:00	2	9	8	0	19	0	0	3	0	3	0	0	0	0	0	0
07:15	8	14	15	0	37	0	0	2	0	2	0	0	0	0	0	0
07:30	6	13	13	0	32	1	0	3	0	4	0	0	0	0	0	0
07:45	11	31	22	0	64	2	0	0	0	2	0	0	0	0	0	0
08:00	17	22	13	0	52	0	0	1	0	1	0	0	0	0	0	0
08:15	16	29	17	0	62	0	0	0	0	0	0	0	0	0	0	0
08:30	22	31	29	0	82	0	1	0	0	1	0	0	0	0	0	0
08:45	16	31	15	0	62	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	98	180	132	0	410	3	1	9	0	13	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Burnhamthorpe Rd E & Trafalgar Rd
Site Code: 2401100001
Municipality: Oakville
Count Date: Jan 17, 2024

West Approach - Burnhamthorpe Rd E

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	
16:00	9	20	6	0	35	6	0	2	0	8	0	0	0	0	0	0
16:15	10	23	14	0	47	6	1	0	0	7	0	0	0	0	0	0
16:30	11	20	15	0	46	4	1	0	0	5	0	0	0	0	0	0
16:45	15	21	16	0	52	3	1	0	0	4	0	0	0	0	0	0
17:00	5	25	8	0	38	0	0	0	0	0	0	0	0	0	0	0
17:15	12	18	14	0	44	0	1	0	0	1	0	0	0	0	0	0
17:30	9	19	8	0	36	0	0	0	0	0	0	0	0	0	0	0
17:45	11	24	9	0	44	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	82	170	90	0	342	19	4	2	0	25	0	0	0	0	0	0
GRAND TOTAL	180	350	222	0	752	22	5	11	0	38	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Diagram

Specified Period		One Hour Peak	
From:	07:00:00	From:	08:00:00
To:	09:00:00	To:	09:00:00

Intersection: Burnhamthorpe Rd E & Trafalgar Rd
Site Code: 2401100001
Count Date: Jan 17, 2024

Weather conditions: Clear

**** Signalized Intersection ****

Major Road: Trafalgar Rd runs N/S

North Approach

	Out	In	Total
Cars	971	812	1783
Trucks	29	17	46
Bicycles	0	0	0
	1000	**829**	**1829**

Trafalgar Rd

Bicycles	0	0	0	0
Trucks	0	29	0	0
Cars	28	887	56	0
Totals	**28**	**916**	**56**	**0**

Peds: 0

East Approach

	Out	In	Total
Cars	158	259	417
Trucks	4	2	6
Bicycles	0	0	0
	162	**261**	**423**

Burnhamthorpe Rd E

Bicycles	Trucks	Cars	Totals
0	0	0	**0**
0	0	71	**71**
0	1	113	**114**
0	1	74	**75**

Peds: 0



Peds: 0

Burnhamthorpe Rd E

Totals	Cars	Trucks	Bicycles
1	1	0	0
29	29	0	0
65	61	4	0
67	67	0	0

Peds: 1

West Approach

	Out	In	Total
Cars	258	145	403
Trucks	2	7	9
Bicycles	0	0	0
	260	**152**	**412**

Totals	**59**	**729**	**90**	**0**
Cars	56	712	89	0
Trucks	3	17	1	0
Bicycles	0	0	0	0

Trafalgar Rd

South Approach

	Out	In	Total
Cars	857	1028	1885
Trucks	21	30	51
Bicycles	0	0	0
	878	**1058**	**1936**

Cars - Trucks - Bicycles

Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection: Burnhamthorpe Rd E & Trafalgar Rd
Site Code: 2401100001
Count Date: Jan 17, 2024
Period: 07:00 - 09:00

Peak Hour Data (08:00 - 09:00)

Start Time	North Approach Trafalgar Rd						South Approach Trafalgar Rd						East Approach Burnhamthorpe Rd E						West Approach Burnhamthorpe Rd E						Total Vehicles
					Peds	Total					Peds	Total					Peds	Total					Peds	Total	
08:00	9	207	6	0	0	222	8	190	11	0	0	209	9	14	3	0	0	26	17	22	14	0	0	53	510
08:15	16	242	5	0	0	263	22	229	23	0	0	274	14	11	1	0	0	26	16	29	17	0	0	62	625
08:30	18	235	8	0	0	261	17	192	32	0	1	241	25	10	15	1	0	51	22	32	29	0	0	83	636
08:45	13	232	9	0	0	254	12	118	24	0	0	154	19	30	10	0	0	59	16	31	15	0	0	62	529
Grand Total	**56**	**916**	**28**	**0**	**0**	**1000**	**59**	**729**	**90**	**0**	**1**	**878**	**67**	**65**	**29**	**1**	**0**	**162**	**71**	**114**	**75**	**0**	**0**	**260**	**2300**
Approach %	5.6	91.6	2.8	0		-	6.7	83	10.3	0		-	41.4	40.1	17.9	0.6		-	27.3	43.8	28.8	0		-	
Totals %	2.4	39.8	1.2	0		43.5	2.6	31.7	3.9	0		38.2	2.9	2.8	1.3	0		7	3.1	5	3.3	0		11.3	
PHF	**0.78**	**0.95**	**0.78**	**0**		**0.95**	**0.67**	**0.8**	**0.7**	**0**		**0.8**	**0.67**	**0.54**	**0.48**	**0.25**		**0.69**	**0.81**	**0.89**	**0.65**	**0**		**0.78**	**0.9**
Cars	56	887	28	0		971	56	712	89	0		857	67	61	29	1		158	71	113	74	0		258	2244
% Cars	100	96.8	100	0		97.1	94.9	97.7	98.9	0		97.6	100	93.8	100	100		97.5	100	99.1	98.7	0		99.2	97.6
Trucks	0	29	0	0		29	3	17	1	0		21	0	4	0	0		4	0	1	1	0		2	56
% Trucks	0	3.2	0	0		2.9	5.1	2.3	1.1	0		2.4	0	6.2	0	0		2.5	0	0.9	1.3	0		0.8	2.4
Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
% Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
Peds					0	-					1	-					0	-					0	-	1
% Peds					0	-					100	-					0	-					0	-	

Peak Hour Diagram

Specified Period
From: 16:00:00
To: 18:00:00

One Hour Peak
From: 16:45:00
To: 17:45:00

Intersection: Burnhamthorpe Rd E & Trafalgar Rd
Site Code: 2401100001
Count Date: Jan 17, 2024

Weather conditions: Clear

**** Signalized Intersection ****

Major Road: Trafalgar Rd runs N/S

North Approach

	Out	In	Total
Cars	775	1109	1884
Trucks	20	21	41
Bicycles	0	0	0
	795	**1130**	**1925**

Trafalgar Rd

Bicycles	0	0	0	0
Trucks	0	20	0	0
Cars	57	706	12	0
Totals	**57**	**726**	**12**	**0**

East Approach

	Out	In	Total
Cars	158	180	338
Trucks	0	2	2
Bicycles	0	0	0
	158	**182**	**340**

Peds: 0

Burnhamthorpe Rd E

Bicycles	Trucks	Cars	Totals
0	0	0	**0**
0	3	41	**44**
0	2	83	**85**
0	0	46	**46**

Peds: 0



Peds: 0

Burnhamthorpe Rd E

Totals	Cars	Trucks	Bicycles
0	0	0	0
9	9	0	0
83	83	0	0
66	66	0	0

Peds: 0

West Approach

	Out	In	Total
Cars	170	217	387
Trucks	5	0	5
Bicycles	0	0	0
	175	**217**	**392**

Trafalgar Rd

Totals	**77**	**1077**	**85**	**0**
Cars	77	1059	85	0
Trucks	0	18	0	0
Bicycles	0	0	0	0

South Approach

	Out	In	Total
Cars	1221	818	2039
Trucks	18	20	38
Bicycles	0	0	0
	1239	**838**	**2077**

Cars - Trucks - Bicycles

Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection: Burnhamthorpe Rd E & Trafalgar Rd
Site Code: 2401100001
Count Date: Jan 17, 2024
Period: 16:00 - 18:00

Peak Hour Data (16:45 - 17:45)

Start Time	North Approach Trafalgar Rd						South Approach Trafalgar Rd						East Approach Burnhamthorpe Rd E						West Approach Burnhamthorpe Rd E						Total Vehicles
					Peds	Total					Peds	Total					Peds	Total					Peds	Total	
16:45	2	164	12	0	0	178	15	283	20	0	0	318	15	18	1	0	0	34	18	22	16	0	0	56	586
17:00	2	180	19	0	0	201	18	258	26	0	0	302	17	16	2	0	0	35	5	25	8	0	0	38	576
17:15	6	199	13	0	0	218	25	276	27	0	0	328	8	24	1	0	0	33	12	19	14	0	0	45	624
17:30	2	183	13	0	0	198	19	260	12	0	0	291	26	25	5	0	0	56	9	19	8	0	0	36	581
Grand Total	**12**	**726**	**57**	**0**	**0**	**795**	**77**	**1077**	**85**	**0**	**0**	**1239**	**66**	**83**	**9**	**0**	**0**	**158**	**44**	**85**	**46**	**0**	**0**	**175**	**2367**
Approach %	1.5	91.3	7.2	0		-	6.2	86.9	6.9	0		-	41.8	52.5	5.7	0		-	25.1	48.6	26.3	0		-	
Totals %	0.5	30.7	2.4	0		33.6	3.3	45.5	3.6	0		52.3	2.8	3.5	0.4	0		6.7	1.9	3.6	1.9	0		7.4	
PHF	**0.5**	**0.91**	**0.75**	**0**		**0.91**	**0.77**	**0.95**	**0.79**	**0**		**0.94**	**0.63**	**0.83**	**0.45**	**0**		**0.71**	**0.61**	**0.85**	**0.72**	**0**		**0.78**	**0.95**
Cars	12	706	57	0		775	77	1059	85	0		1221	66	83	9	0		158	41	83	46	0		170	2324
% Cars	100	97.2	100	0		97.5	100	98.3	100	0		98.5	100	100	100	0		100	93.2	97.6	100	0		97.1	98.2
Trucks	0	20	0	0		20	0	18	0	0		18	0	0	0	0		0	3	2	0	0		5	43
% Trucks	0	2.8	0	0		2.5	0	1.7	0	0		1.5	0	0	0	0		0	6.8	2.4	0	0		2.9	1.8
Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
% Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
Peds					0	-					0	-					0	-					0	-	0
% Peds					0	-					0	-					0	-					0	-	

Appendix G:
Transportation Tomorrow Survey (TTS) Data

RESIDENTIAL AM OUTBOUND DISTRIBUTION

Fri Nov 28 2025 01:00:52 GMT-0500 (Eastern Standard Time) - Run Time: 3804ms

Cross Tabulation Query Form - Trip - 2022

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
Primary travel mode of trip - mode_prime In D,M,P,T,U
and
Trip purpose of origin - purp_orig In h
and
2006 GTA zone of origin - gta06_orig In 4032,4034,4035,4036

Trip 2022
Table:

Destination	Origin				Route Selection				Trip Distribution				
	4032	4034	4035	4036	East Burnhamthorpe	West Burnhamthorpe	North Trafalgar	South Trafalgar	East Burnhamthorpe	West Burnhamthorpe	North Trafalgar	South Trafalgar	
PD 1 of Toronto	0	0	0	18	90%		10%		0.3%	0.0%	0.0%	0.0%	100%
PD 3 of Toronto	0	0	12	0	90%		10%		0.2%	0.0%	0.0%	0.0%	100%
PD 4 of Toronto	0	0	73	0	90%		10%		1.4%	0.0%	0.2%	0.0%	100%
PD 8 of Toronto	0	21	0	0	90%		10%		0.4%	0.0%	0.0%	0.0%	100%
PD 9 of Toronto	0	0	37	0	90%		10%		0.7%	0.0%	0.1%	0.0%	100%
PD 10 of Toronto	0	0	0	0	90%		10%		0.0%	0.0%	0.0%	0.0%	100%
Richmond Hill	0	0	0	15	90%		10%		0.3%	0.0%	0.0%	0.0%	100%
Vaughan	0	0	123	21	90%		10%		2.7%	0.0%	0.3%	0.0%	100%
Caledon	0	0	0	36	75%		25%		0.6%	0.0%	0.2%	0.0%	100%
Brampton	0	0	0	37	75%		25%		0.6%	0.0%	0.2%	0.0%	100%
Mississauga	0	274	168	150	60%		30%	10%	7.5%	0.0%	3.7%	1.2%	100%
Halton Hills	12	0	0	0			100%		0.0%	0.0%	0.3%	0.0%	100%
Milton	18	0	87	0		10%	90%		0.0%	0.2%	2.0%	0.0%	100%
Burlington	13	0	17	99		30%	10%	60%	0.0%	0.8%	0.3%	1.6%	100%
Flamborough	0	17	0	0		30%	10%	60%	0.0%	0.1%	0.0%	0.2%	100%
Dundas	0	0	0	0		10%	10%	80%	0.0%	0.0%	0.0%	0.0%	100%
Stoney Creek	0	0	0	0		10%	10%	80%	0.0%	0.0%	0.0%	0.0%	100%
Hamilton	29	0	0	0		10%	10%	80%	0.0%	0.1%	0.1%	0.5%	100%
Lincoln	0	0	0	11		10%	10%	80%	0.0%	0.0%	0.0%	0.2%	100%
Waterloo	0	0	0	0			100%		0.0%	0.0%	0.0%	0.0%	100%
Guelph	0	0	0	65			100%		0.0%	0.0%	1.4%	0.0%	100%
Erin	0	0	0	0			100%		0.0%	0.0%	0.0%	0.0%	100%
Meaford	0	0	0	0	30%		70%		0.0%	0.0%	0.0%	0.0%	100%
Oakville	208	590	570	2037									
4001	0	0	0	0	40%	20%		40%	0.0%	0.0%	0.0%	0.0%	100%
4003	0	0	22	0	40%	20%		40%	0.2%	0.1%	0.0%	0.2%	100%
4004	0	0	0	0	40%	20%		40%	0.0%	0.0%	0.0%	0.0%	100%
4005	0	0	0	0	40%	20%		40%	0.0%	0.0%	0.0%	0.0%	100%
4006	0	0	0	0	40%	20%		40%	0.0%	0.0%	0.0%	0.0%	100%
4008	0	9	36	57	40%	20%		40%	0.9%	0.4%	0.0%	0.9%	100%
4010	0	0	0	0		20%		80%	0.0%	0.0%	0.0%	0.0%	100%
4011	0	382	0	0		20%		80%	0.0%	1.6%	0.0%	6.4%	100%
4014	82	14	32	13		10%		90%	0.0%	0.3%	0.0%	2.7%	100%
4015	0	0	0	0		10%		90%	0.0%	0.0%	0.0%	0.0%	100%
4016	0	23	0	0		10%		90%	0.0%	0.0%	0.0%	0.4%	100%
4018	0	0	13	0	10%			90%	0.0%	0.0%	0.0%	0.2%	100%
4019	0	0	0	0	10%			90%	0.0%	0.0%	0.0%	0.0%	100%
4021	0	0	0	0	30%			70%	0.0%	0.0%	0.0%	0.0%	100%
4023	0	0	0	0	80%			20%	0.0%	0.0%	0.0%	0.0%	100%
4024	36	0	0	125	80%			20%	2.7%	0.0%	0.0%	0.7%	100%
4025	0	0	62	23				100%	0.0%	0.0%	0.0%	1.8%	100%
4026	0	0	0	156				100%	0.0%	0.0%	0.0%	3.3%	100%
4027	0	38	0	0				100%	0.0%	0.0%	0.0%	0.8%	100%
4028	0	104	18	0				100%	0.0%	0.0%	0.0%	2.6%	100%
4029	12	0	0	15				100%	0.0%	0.0%	0.0%	0.6%	100%
4030	0	0	89	765				100%	0.0%	0.0%	0.0%	17.9%	100%
4031	0	0	0	19		30%		70%	0.0%	0.1%	0.0%	0.3%	100%
4032	0	0	0	0				100%	0.0%	0.0%	0.0%	0.0%	100%
4033	0	0	0	0				100%	0.0%	0.0%	0.0%	0.0%	100%
4034	0	0	114	36				100%	0.0%	0.0%	0.0%	3.2%	100%
4035	0	0	9	40				100%	0.0%	0.0%	0.0%	1.0%	100%
4036	0	0	70	408				100%	0.0%	0.0%	0.0%	10.0%	100%
4037	21	0	0	110		40%		60%	0.0%	1.1%	0.0%	1.7%	100%
4038	0	0	0	130		30%		70%	0.0%	0.8%	0.0%	1.9%	100%
4039	0	0	0	12		40%		60%	0.0%	0.1%	0.0%	0.2%	100%
4040	0	0	0	33		30%		70%	0.0%	0.2%	0.0%	0.5%	100%
4041	0	21	0	31		40%		60%	0.0%	0.4%	0.0%	0.7%	100%
4042	0	0	0	0		50%		50%	0.0%	0.0%	0.0%	0.0%	100%
4045	0	0	0	30		70%		30%	0.0%	0.4%	0.0%	0.2%	100%
4048	29	0	0	0		70%	30%		0.0%	0.4%	0.2%	0.0%	100%
4181	0	0	0	0				100%	0.0%	0.0%	0.0%	0.0%	100%
4182	0	0	12	0		100%			0.0%	0.3%	0.0%	0.0%	100%
4183	29	0	0	21		100%			0.0%	1.1%	0.0%	0.0%	100%
4184	0	0	0	11		100%			0.0%	0.2%	0.0%	0.0%	100%
4185	0	0	12	0		90%		10%	0.0%	0.2%	0.0%	0.0%	100%
4186	0	0	82	0		50%		50%	0.0%	0.9%	0.0%	0.9%	100%
External Trips Total	**281**	**903**	**1088**	**2487**					**18.4%**	**10.0%**	**9.0%**	**62.6%**	100%
Trips Total	**4759**								**20%**	**10%**	**10%**	**65%**	**105%**
								Adopted:	**20%**	**10%**	**10%**	**60%**	**100%**

RESIDENTIAL PM INBOUND DISTRIBUTION

Fri Nov 28 2025 01:01:53 GMT-0500 (Eastern Standard Time) - Run Time: 3486ms

Cross Tabulation Query Form - Trip - 2022

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
Primary travel mode of trip - mode_prime In D,M,P,T,U
and
Trip purpose of destination - purp_dest In h
and
2006 GTA zone of destination - gta06_dest In 4032,4034,4035,4036

Trip 2022
Table:

Origin	Destination				Route Selection				Trip Distribution				
	4032	4034	4035	4036	East	West	North	South	East	West	North	South	
					Burnhamthorpe	Burnhamthorpe	Trafalgar	Trafalgar	Burnhamthorpe	Burnhamthorpe	Trafalgar	Trafalgar	
PD 1 of Toronto	0	0	0	18	90%		10%		0.3%	0.0%	0.0%	0.0%	100%
PD 3 of Toronto	0	0	12	114	90%		10%		2.3%	0.0%	0.3%	0.0%	100%
PD 4 of Toronto	0	0	0	0	90%		10%		0.0%	0.0%	0.0%	0.0%	100%
PD 8 of Toronto	0	21	0	0	90%		10%		0.4%	0.0%	0.0%	0.0%	100%
PD 9 of Toronto	0	0	37	0	90%		10%		0.7%	0.0%	0.1%	0.0%	100%
PD 10 of Toronto	0	0	0	0	90%		10%		0.0%	0.0%	0.0%	0.0%	100%
Richmond Hill	0	0	0	15	90%		10%		0.3%	0.0%	0.0%	0.0%	100%
Vaughan	0	0	87	21	90%		10%		2.0%	0.0%	0.2%	0.0%	100%
Caledon	0	0	0	0	75%		25%		0.0%	0.0%	0.0%	0.0%	100%
Brampton	0	0	0	113	75%		25%		1.7%	0.0%	0.6%	0.0%	100%
Mississauga	0	289	222	424	60%		30%	10%	11.3%	0.0%	5.6%	1.9%	100%
Halton Hills	12	0	0	0			100%		0.0%	0.0%	0.2%	0.0%	100%
Milton	10	0	0	0		10%	90%		0.0%	0.0%	0.2%	0.0%	100%
Burlington	22	0	17	270		30%	10%	60%	0.0%	1.9%	0.6%	3.7%	100%
Flamborough	0	17	0	0		30%	10%	60%	0.0%	0.1%	0.0%	0.2%	100%
Dundas	0	0	0	12		10%	10%	80%	0.0%	0.0%	0.0%	0.2%	100%
Stoney Creek	0	49	0	0		10%	10%	80%	0.0%	0.1%	0.1%	0.8%	100%
Hamilton	0	86	0	0		10%	10%	80%	0.0%	0.2%	0.2%	1.4%	100%
Lincoln	0	0	0	11		10%	10%	80%	0.0%	0.0%	0.0%	0.2%	100%
Waterloo	0	0	41	0			100%		0.0%	0.0%	0.8%	0.0%	100%
Guelph	0	0	0	65			100%		0.0%	0.0%	1.3%	0.0%	100%
Erin	0	0	0	0			100%		0.0%	0.0%	0.0%	0.0%	100%
Meaford	0	0	0	0	30%		70%		0.0%	0.0%	0.0%	0.0%	100%
Oakville	156	654	688	1494									
4001	0	0	0	9	40%	20%		40%	0.1%	0.0%	0.0%	0.1%	100%
4003	0	0	22	0	40%	20%		40%	0.2%	0.1%	0.0%	0.2%	100%
4004	0	0	0	0	40%	20%		40%	0.0%	0.0%	0.0%	0.0%	100%
4005	0	0	0	9	40%	20%		40%	0.1%	0.0%	0.0%	0.1%	100%
4006	0	21	0	0	40%	20%		40%	0.2%	0.1%	0.0%	0.2%	100%
4008	0	9	36	45	40%	20%		40%	0.7%	0.4%	0.0%	0.7%	100%
4010	0	0	0	0		20%		80%	0.0%	0.0%	0.0%	0.0%	100%
4011	0	382	0	0		20%		80%	0.0%	1.5%	0.0%	6.1%	100%
4014	0	0	0	253		10%		90%	0.0%	0.5%	0.0%	4.6%	100%
4015	0	0	0	0		10%		90%	0.0%	0.0%	0.0%	0.0%	100%
4016	0	0	45	0		10%		90%	0.0%	0.1%	0.0%	0.8%	100%
4018	0	20	13	0	10%			90%	0.1%	0.0%	0.0%	0.6%	100%
4019	0	20	0	0	10%			90%	0.0%	0.0%	0.0%	0.4%	100%
4021	0	0	0	0	30%			70%	0.0%	0.0%	0.0%	0.0%	100%
4023	0	0	0	0	80%			20%	0.0%	0.0%	0.0%	0.0%	100%
4024	36	0	57	141	80%			20%	3.8%	0.0%	0.0%	0.9%	100%
4025	12	15	62	43				100%	0.0%	0.0%	0.0%	2.7%	100%
4026	0	0	0	120				100%	0.0%	0.0%	0.0%	2.4%	100%
4027	0	48	0	20				100%	0.0%	0.0%	0.0%	1.4%	100%
4028	0	104	0	0				100%	0.0%	0.0%	0.0%	2.1%	100%
4029	0	0	48	146				100%	0.0%	0.0%	0.0%	3.9%	100%
4030	31	15	13	146				100%	0.0%	0.0%	0.0%	4.1%	100%
4031	0	0	25	0		30%		70%	0.0%	0.2%	0.0%	0.4%	100%
4032	0	0	0	0				100%	0.0%	0.0%	0.0%	0.0%	100%
4033	0	0	0	0				100%	0.0%	0.0%	0.0%	0.0%	100%
4034	0	0	58	58				100%	0.0%	0.0%	0.0%	2.3%	100%
4035	34	0	54	93				100%	0.0%	0.0%	0.0%	3.6%	100%
4036	0	0	70	237				100%	0.0%	0.0%	0.0%	6.2%	100%
4037	0	0	33	32		40%		60%	0.0%	0.5%	0.0%	0.8%	100%
4038	0	0	0	0		30%		70%	0.0%	0.0%	0.0%	0.0%	100%
4039	8	0	0	12		40%		60%	0.0%	0.2%	0.0%	0.2%	100%
4040	0	0	16	0		30%		70%	0.0%	0.1%	0.0%	0.2%	100%
4041	0	21	37	31		40%		60%	0.0%	0.7%	0.0%	1.1%	100%
4042	0	0	0	0		50%		50%	0.0%	0.0%	0.0%	0.0%	100%
4045	0	0	0	30		70%		30%	0.0%	0.4%	0.0%	0.2%	100%
4048	0	0	0	0		70%	30%		0.0%	0.0%	0.0%	0.0%	100%
4181	0	0	0	9				100%	0.0%	0.0%	0.0%	0.2%	100%
4182	0	0	0	0		100%			0.0%	0.0%	0.0%	0.0%	100%
4183	36	0	100	59		100%			0.0%	3.9%	0.0%	0.0%	100%
4184	0	0	0	0		100%			0.0%	0.0%	0.0%	0.0%	100%
4185	0	0	0	0		90%		10%	0.0%	0.0%	0.0%	0.0%	100%
4186	0	0	0	0		50%		50%	0.0%	0.0%	0.0%	0.0%	100%
External Trips Total	**201**	**1117**	**1105**	**2556**					**23.9%**	**11.0%**	**10.4%**	**54.7%**	100%
Trips Total	**4979**								**25%**	**10%**	**10%**	**55%**	**100%**
								Adopted:	**25%**	**10%**	**10%**	**55%**	**100%**

RETAIL PM OUTBOUND DISTRIBUTION

Fri Nov 28 2025 00:22:01 GMT-0500 (Eastern Standard Time) - Run Time: 3164ms

Cross Tabulation Query Form - Trip - 2022

Row: Planning district of destination - pd_dest
Column: 2006 GTA zone of origin - gta06_orig

Filters:
Start time of trip - start_time In 1500-1759
and
Primary travel mode of trip - mode_prime In D,M,P,T,U
and
Trip purpose of origin - purp_orig In M
and
2006 GTA zone of origin - gta06_orig In 4032,4034,4035,4036

Trip 2022
Table:

Destination	Origin				Route Selection				Trip Distribution				
	4032	4034	4035	4036	East Burnhamthorpe	West Burnhamthorpe	North Trafalgar	South Trafalgar	East Burnhamthorpe	West Burnhamthorpe	North Trafalgar	South Trafalgar	
PD 1 of Toronto	0	0	0	0	90%		10%		0.0%	0.0%	0.0%	0.0%	100%
PD 3 of Toronto	0	0	0	0	90%		10%		0.0%	0.0%	0.0%	0.0%	100%
PD 4 of Toronto	0	0	0	0	90%		10%		0.0%	0.0%	0.0%	0.0%	100%
PD 8 of Toronto	0	0	0	0	90%		10%		0.0%	0.0%	0.0%	0.0%	100%
PD 9 of Toronto	0	0	0	0	90%		10%		0.0%	0.0%	0.0%	0.0%	100%
PD 10 of Toronto	0	0	0	0	90%		10%		0.0%	0.0%	0.0%	0.0%	100%
Richmond Hill	0	0	0	0	90%		10%		0.0%	0.0%	0.0%	0.0%	100%
Vaughan	0	0	0	0	90%		10%		0.0%	0.0%	0.0%	0.0%	100%
Caledon	0	0	0	0	75%		25%		0.0%	0.0%	0.0%	0.0%	100%
Brampton	0	0	0	0	75%		25%		0.0%	0.0%	0.0%	0.0%	100%
Mississauga	0	71	23	0	60%		30%	10%	2.8%	0.0%	1.4%	0.5%	100%
Halton Hills	0	0	0	0			100%		0.0%	0.0%	0.0%	0.0%	100%
Milton	0	13	8	0		10%	90%		0.0%	0.1%	0.9%	0.0%	100%
Burlington	0	0	31	0		30%	10%	60%	0.0%	0.5%	0.2%	0.9%	100%
Flamborough	0	0	0	0		30%	10%	60%	0.0%	0.0%	0.0%	0.0%	100%
Dundas	0	0	12	0		10%	10%	80%	0.0%	0.1%	0.1%	0.5%	100%
Stoney Creek	0	0	0	0		10%	10%	80%	0.0%	0.0%	0.0%	0.0%	100%
Hamilton	0	0	0	4		10%	10%	80%	0.0%	0.0%	0.0%	0.2%	100%
Lincoln	0	0	0	0		10%	10%	80%	0.0%	0.0%	0.0%	0.0%	100%
Waterloo	0	0	0	0			100%		0.0%	0.0%	0.0%	0.0%	100%
Guelph	0	0	0	0			100%		0.0%	0.0%	0.0%	0.0%	100%
Erin	0	10	0	0			100%		0.0%	0.0%	0.5%	0.0%	100%
Meaford	0	8	0	0	30%		70%		0.1%	0.0%	0.3%	0.0%	100%
Oakville	0	607	1239	25									
4001	0	0	140	0	40%	20%		40%	2.7%	1.4%	0.0%	2.7%	100%
4003	0	0	0	0	40%	20%		40%	0.0%	0.0%	0.0%	0.0%	100%
4004	0	0	0	0	40%	20%		40%	0.0%	0.0%	0.0%	0.0%	100%
4005	0	13	0	0	40%	20%		40%	0.3%	0.1%	0.0%	0.3%	100%
4006	0	13	0	0	40%	20%		40%	0.3%	0.1%	0.0%	0.3%	100%
4008	0	0	0	0	40%	20%		40%	0.0%	0.0%	0.0%	0.0%	100%
4010	0	11	0	0		20%		80%	0.0%	0.1%	0.0%	0.4%	100%
4011	0	0	0	0		20%		80%	0.0%	0.0%	0.0%	0.0%	100%
4014	0	0	0	0		10%		90%	0.0%	0.0%	0.0%	0.0%	100%
4015	0	8	0	0		10%		90%	0.0%	0.0%	0.0%	0.4%	100%
4016	0	0	21	0		10%		90%	0.0%	0.1%	0.0%	0.9%	100%
4018	0	0	0	0	10%			90%	0.0%	0.0%	0.0%	0.0%	100%
4019	0	0	25	0	10%			90%	0.1%	0.0%	0.0%	1.1%	100%
4021	0	0	0	0	30%			70%	0.0%	0.0%	0.0%	0.0%	100%
4023	0	38	31	0	80%			20%	2.7%	0.0%	0.0%	0.7%	100%
4024	0	18	0	0	80%			20%	0.7%	0.0%	0.0%	0.2%	100%
4025	0	20	93	0				100%	0.0%	0.0%	0.0%	5.5%	100%
4026	0	43	0	0				100%	0.0%	0.0%	0.0%	2.1%	100%
4027	0	0	0	0				100%	0.0%	0.0%	0.0%	0.0%	100%
4028	0	0	9	0				100%	0.0%	0.0%	0.0%	0.4%	100%
4029	0	0	59	0				100%	0.0%	0.0%	0.0%	2.9%	100%
4030	0	39	97	0				100%	0.0%	0.0%	0.0%	6.6%	100%
4031	0	0	51	25		30%		70%	0.0%	1.1%	0.0%	2.6%	100%
4032	0	0	34	0				100%	0.0%	0.0%	0.0%	1.7%	100%
4033	0	124	236	0				100%	0.0%	0.0%	0.0%	17.6%	100%
4034	0	0	0	0				100%	0.0%	0.0%	0.0%	0.0%	100%
4035	0	165	78	0				100%	0.0%	0.0%	0.0%	11.9%	100%
4036	0	21	65	0				100%	0.0%	0.0%	0.0%	4.2%	100%
4037	0	17	176	0		40%		60%	0.0%	3.8%	0.0%	5.6%	100%
4038	0	0	32	0		30%		70%	0.0%	0.5%	0.0%	1.1%	100%
4039	0	11	11	0		40%		60%	0.0%	0.4%	0.0%	0.6%	100%
4040	0	16	0	0		30%		70%	0.0%	0.2%	0.0%	0.5%	100%
4041	0	18	0	0		40%		60%	0.0%	0.4%	0.0%	0.5%	100%
4042	0	0	25	0		50%		50%	0.0%	0.6%	0.0%	0.6%	100%
4045	0	0	0	0		70%		30%	0.0%	0.0%	0.0%	0.0%	100%
4048	0	0	0	0		70%	30%		0.0%	0.0%	0.0%	0.0%	100%
4181	0	0	0	0				100%	0.0%	0.0%	0.0%	0.0%	100%
4182	0	0	33	0		100%			0.0%	1.6%	0.0%	0.0%	100%
4183	0	32	0	0		100%			0.0%	1.6%	0.0%	0.0%	100%
4184	0	0	0	0		100%			0.0%	0.0%	0.0%	0.0%	100%
4185	0	0	0	0		90%		10%	0.0%	0.0%	0.0%	0.0%	100%
4186	0	0	22	0		50%		50%	0.0%	0.5%	0.0%	0.5%	100%
External Trips Total	**0**	**709**	**1312**	**29**					**9.6%**	**13.2%**	**3.3%**	**73.9%**	100%
Trips Total	**2050**								**10%**	**15%**	**5%**	**75%**	**105%**
								Adopted:	**10%**	**20%**	**10%**	**60%**	**100%**

RETAIL PM INBOUND DISTRIBUTION

Fri Nov 28 2025 00:34:57 GMT-0500 (Eastern Standard Time) - Run Time: 3480ms

Cross Tabulation Query Form - Trip - 2022

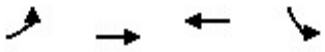
Row: Planning district of origin - pd_orig
Column: 2006 GTA zone of destination - gta06_dest

Filters:
Start time of trip - start_time In 1500-1759
and
Primary travel mode of trip - mode_prime In D,M,P,T,U
and
Trip purpose of destination - purp_dest In M
and
2006 GTA zone of destination - gta06_dest In 4032,4034,4035,4036

Trip 2022
Table:

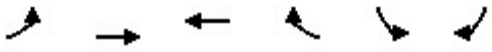
Origin	Destination				Route Selection				Trip Distribution				
	4032	4034	4035	4036	East	West	North	South	East	West	North	South	
					Burnhamthorpe	Burnhamthorpe	Trafalgar	Trafalgar	Burnhamthorpe	Burnhamthorpe	Trafalgar	Trafalgar	
PD 1 of Toronto	0	0	0	0	90%		10%		0.0%	0.0%	0.0%	0.0%	100%
PD 3 of Toronto	0	0	0	0	90%		10%		0.0%	0.0%	0.0%	0.0%	100%
PD 4 of Toronto	0	0	0	0	90%		10%		0.0%	0.0%	0.0%	0.0%	100%
PD 8 of Toronto	0	53	0	0	90%		10%		2.5%	0.0%	0.3%	0.0%	100%
PD 9 of Toronto	0	0	0	0	90%		10%		0.0%	0.0%	0.0%	0.0%	100%
PD 10 of Toronto	0	8	0	0	90%		10%		0.4%	0.0%	0.0%	0.0%	100%
Richmond Hill	0	0	0	0	90%		10%		0.0%	0.0%	0.0%	0.0%	100%
Vaughan	0	0	36	0	90%		10%		1.7%	0.0%	0.2%	0.0%	100%
Caledon	0	0	24	0	75%		25%		1.0%	0.0%	0.3%	0.0%	100%
Brampton	0	0	0	0	75%		25%		0.0%	0.0%	0.0%	0.0%	100%
Mississauga	0	77	217	0	60%		30%	10%	9.4%	0.0%	4.7%	1.6%	100%
Halton Hills	0	0	0	0			100%		0.0%	0.0%	0.0%	0.0%	100%
Milton	0	9	0	0		10%	90%		0.0%	0.0%	0.4%	0.0%	100%
Burlington	0	32	70	0		30%	10%	60%	0.0%	1.6%	0.5%	3.3%	100%
Flamborough	0	0	0	0		30%	10%	60%	0.0%	0.0%	0.0%	0.0%	100%
Dundas	0	0	0	0		10%	10%	80%	0.0%	0.0%	0.0%	0.0%	100%
Stoney Creek	0	0	0	0		10%	10%	80%	0.0%	0.0%	0.0%	0.0%	100%
Hamilton	0	0	0	0		10%	10%	80%	0.0%	0.0%	0.0%	0.0%	100%
Lincoln	0	0	0	0		10%	10%	80%	0.0%	0.0%	0.0%	0.0%	100%
Waterloo	0	0	0	0			100%		0.0%	0.0%	0.0%	0.0%	100%
Guelph	0	0	0	0			100%		0.0%	0.0%	0.0%	0.0%	100%
Erin	0	0	0	0			100%		0.0%	0.0%	0.0%	0.0%	100%
Meaford	0	0	0	0	30%		70%		0.0%	0.0%	0.0%	0.0%	100%
Oakville	0	406	918	30									
4001	0	0	0	0	40%	20%		40%	0.0%	0.0%	0.0%	0.0%	100%
4003	0	0	0	0	40%	20%		40%	0.0%	0.0%	0.0%	0.0%	100%
4004	0	0	11	0	40%	20%		40%	0.2%	0.1%	0.0%	0.2%	100%
4005	0	12	51	0	40%	20%		40%	1.3%	0.7%	0.0%	1.3%	100%
4006	0	0	0	0	40%	20%		40%	0.0%	0.0%	0.0%	0.0%	100%
4008	0	0	0	0	40%	20%		40%	0.0%	0.0%	0.0%	0.0%	100%
4010	0	0	0	0		20%		80%	0.0%	0.0%	0.0%	0.0%	100%
4011	0	0	0	0		20%		80%	0.0%	0.0%	0.0%	0.0%	100%
4014	0	0	33	0		10%		90%	0.0%	0.2%	0.0%	1.6%	100%
4015	0	0	0	0		10%		90%	0.0%	0.0%	0.0%	0.0%	100%
4016	0	0	21	0		10%		90%	0.0%	0.1%	0.0%	1.0%	100%
4018	0	0	0	0	10%			90%	0.0%	0.0%	0.0%	0.0%	100%
4019	0	0	25	0	10%			90%	0.1%	0.0%	0.0%	1.2%	100%
4021	0	0	4	0	30%			70%	0.1%	0.0%	0.0%	0.1%	100%
4023	0	0	0	0	80%			20%	0.0%	0.0%	0.0%	0.0%	100%
4024	0	0	0	0	80%			20%	0.0%	0.0%	0.0%	0.0%	100%
4025	0	84	79	0				100%	0.0%	0.0%	0.0%	8.7%	100%
4026	0	49	0	0				100%	0.0%	0.0%	0.0%	2.6%	100%
4027	0	0	0	0				100%	0.0%	0.0%	0.0%	0.0%	100%
4028	0	0	0	0				100%	0.0%	0.0%	0.0%	0.0%	100%
4029	0	0	64	0				100%	0.0%	0.0%	0.0%	3.4%	100%
4030	0	33	40	0				100%	0.0%	0.0%	0.0%	3.9%	100%
4031	0	0	51	25		30%		70%	0.0%	1.2%	0.0%	2.8%	100%
4032	0	0	23	0				100%	0.0%	0.0%	0.0%	1.2%	100%
4033	0	124	188	0				100%	0.0%	0.0%	0.0%	16.6%	100%
4034	0	0	84	0				100%	0.0%	0.0%	0.0%	4.5%	100%
4035	0	27	0	0				100%	0.0%	0.0%	0.0%	1.4%	100%
4036	0	34	73	0				100%	0.0%	0.0%	0.0%	5.7%	100%
4037	0	0	57	0		40%		60%	0.0%	1.2%	0.0%	1.8%	100%
4038	0	0	17	0		30%		70%	0.0%	0.3%	0.0%	0.6%	100%
4039	0	0	0	0		40%		60%	0.0%	0.0%	0.0%	0.0%	100%
4040	0	0	24	0		30%		70%	0.0%	0.4%	0.0%	0.9%	100%
4041	0	45	0	0		40%		60%	0.0%	1.0%	0.0%	1.4%	100%
4042	0	0	25	0		50%		50%	0.0%	0.7%	0.0%	0.7%	100%
4045	0	0	0	0		70%		30%	0.0%	0.0%	0.0%	0.0%	100%
4048	0	0	0	0		70%	30%		0.0%	0.0%	0.0%	0.0%	100%
4181	0	0	0	0				100%	0.0%	0.0%	0.0%	0.0%	100%
4182	0	0	0	0		100%			0.0%	0.0%	0.0%	0.0%	100%
4183	0	0	0	4		100%			0.0%	0.2%	0.0%	0.0%	100%
4184	0	0	0	0		100%			0.0%	0.0%	0.0%	0.0%	100%
4185	0	0	0	0		90%		10%	0.0%	0.0%	0.0%	0.0%	100%
4186	0	0	48	0		50%		50%	0.0%	1.3%	0.0%	1.3%	100%
External Trips Total	**0**	**587**	**1265**	**29**					**16.7%**	**8.9%**	**6.5%**	**67.8%**	100%
Trips Total	**1881**								**15%**	**10%**	**5%**	**70%**	**100%**
								Adopted:	**15%**	**15%**	**15%**	**55%**	**100%**

Appendix H:
Synchro Worksheets



Lane Group	EBL	EBT	WBT	SBL
Lane Group Flow (vph)	30	755	560	30
v/c Ratio	0.05	0.26	0.19	0.07
Control Delay	6.9	5.3	5.0	10.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	6.9	5.3	5.0	10.3
Queue Length 50th (m)	0.0	0.0	0.0	0.6
Queue Length 95th (m)	6.7	48.5	34.8	5.8
Internal Link Dist (m)		313.0	126.7	127.4
Turn Bay Length (m)	30.0			35.0
Base Capacity (vph)	790	3574	3534	1040
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.04	0.21	0.16	0.03

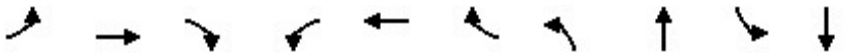
Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	30	755	555	5	10	20
Future Volume (vph)	30	755	555	5	10	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.5	3.3	3.5
Total Lost time (s)	6.0	6.0	6.0		6.0	
Lane Util. Factor	1.00	0.95	0.95		1.00	
Frpb, ped/bikes	1.00	1.00	1.00		0.98	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	1.00		0.91	
Flt Protected	0.95	1.00	1.00		0.98	
Satd. Flow (prot)	1705	3574	3534		1582	
Flt Permitted	0.44	1.00	1.00		0.98	
Satd. Flow (perm)	793	3574	3534		1582	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	30	755	555	5	10	20
RTOR Reduction (vph)	0	0	0	0	18	0
Lane Group Flow (vph)	30	755	560	0	12	0
Confl. Peds. (#/hr)	5			5	5	5
Confl. Bikes (#/hr)				5		5
Heavy Vehicles (%)	2%	1%	2%	2%	2%	2%
Turn Type	Perm	NA	NA		Perm	
Protected Phases		4	8			
Permitted Phases	4				6	
Actuated Green, G (s)	36.2	36.2	36.2		5.4	
Effective Green, g (s)	36.2	36.2	36.2		5.4	
Actuated g/C Ratio	0.68	0.68	0.68		0.10	
Clearance Time (s)	6.0	6.0	6.0		6.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	535	2413	2386		159	
v/s Ratio Prot		c0.21	0.16			
v/s Ratio Perm	0.04				c0.01	
v/c Ratio	0.06	0.31	0.23		0.08	
Uniform Delay, d1	2.9	3.6	3.4		21.8	
Progression Factor	1.00	1.00	1.00		1.00	
Incremental Delay, d2	0.0	0.1	0.1		0.2	
Delay (s)	3.0	3.7	3.4		22.0	
Level of Service	A	A	A		C	
Approach Delay (s)		3.6	3.4		22.0	
Approach LOS		A	A		C	

Intersection Summary			
HCM 2000 Control Delay	3.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	53.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	45.2%	ICU Level of Service	A
Analysis Period (min)	15		

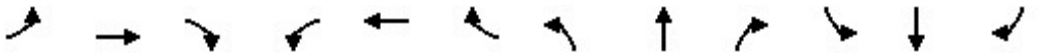
c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	215	315	125	220	235	130	220	2140	110	1490
v/c Ratio	0.69	0.55	0.35	0.81	0.43	0.36	0.79	0.95	0.58	0.75
Control Delay	44.0	43.4	7.7	56.0	41.1	8.3	43.9	36.0	29.8	28.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.0	43.4	7.7	56.0	41.1	8.3	43.9	36.0	29.8	28.2
Queue Length 50th (m)	37.1	32.7	0.0	38.1	23.9	0.0	27.5	161.1	7.6	102.8
Queue Length 95th (m)	57.4	46.1	12.6	59.0	35.3	14.0	#78.0	#284.9	#37.5	#181.5
Internal Link Dist (m)		334.1			313.0			202.3		436.5
Turn Bay Length (m)	50.0		30.0	50.0		30.0	100.0		100.0	
Base Capacity (vph)	311	1138	585	270	1084	590	322	2243	191	1988
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	0.69	0.28	0.21	0.81	0.22	0.22	0.68	0.95	0.58	0.75

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	215	315	125	220	235	130	220	1780	360	110	1405	85
Future Volume (vph)	215	315	125	220	235	130	220	1780	360	110	1405	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	*0.80		1.00	*0.80	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1741	3574	1544	1743	3406	1560	1662	4351		1745	4392	
Flt Permitted	0.59	1.00	1.00	0.46	1.00	1.00	0.08	1.00		0.08	1.00	
Satd. Flow (perm)	1081	3574	1544	852	3406	1560	137	4351		156	4392	
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)	215	315	125	220	235	130	220	1780	360	110	1405	85
RTOR Reduction (vph)	0	0	105	0	0	109	0	18	0	0	4	0
Lane Group Flow (vph)	215	315	20	220	235	21	220	2122	0	110	1486	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	0%	1%	1%	0%	6%	0%	5%	2%	1%	0%	3%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	23.7	16.7	16.7	23.7	16.7	16.7	64.3	53.3		54.1	47.1	
Effective Green, g (s)	23.7	16.7	16.7	23.7	16.7	16.7	64.3	53.3		54.1	47.1	
Actuated g/C Ratio	0.23	0.16	0.16	0.23	0.16	0.16	0.62	0.51		0.52	0.45	
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	290	573	247	254	546	250	278	2229		188	1989	
v/s Ratio Prot	0.05	0.09		c0.06	0.07		c0.10	c0.49		0.04	0.34	
v/s Ratio Perm	0.12		0.01	c0.14		0.01	0.39			0.26		
v/c Ratio	0.74	0.55	0.08	0.87	0.43	0.08	0.79	0.95		0.59	0.75	
Uniform Delay, d1	36.0	40.2	37.1	37.3	39.4	37.1	26.5	24.1		20.7	23.5	
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	9.8	1.1	0.1	25.1	0.5	0.1	14.2	10.3		4.6	1.9	
Delay (s)	45.8	41.3	37.3	62.4	39.9	37.3	40.7	34.5		25.3	25.4	
Level of Service	D	D	D	E	D	D	D	C		C	C	
Approach Delay (s)		42.0			47.8			35.0			25.4	
Approach LOS		D			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	34.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	104.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	89.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	NBL	NBT	SBT
Lane Group Flow (vph)	100	25	2280	1750
v/c Ratio	0.41	0.24	0.69	0.54
Control Delay	40.0	13.6	9.9	7.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	40.0	13.6	10.0	7.6
Queue Length 50th (m)	17.1	1.1	71.6	44.5
Queue Length 95th (m)	32.1	9.7	193.8	122.0
Internal Link Dist (m)	170.8		238.4	202.3
Turn Bay Length (m)	40.0	30.0		
Base Capacity (vph)	547	107	3344	3300
Starvation Cap Reductn	0	0	98	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.18	0.23	0.70	0.53

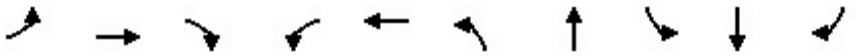
Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	80	20	25	2280	1720	30
Future Volume (vph)	80	20	25	2280	1720	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.5	3.3	3.6	3.6	3.5
Total Lost time (s)	6.0		6.0	6.0	6.0	
Lane Util. Factor	1.00		1.00	*0.80	*0.80	
Frpb, ped/bikes	1.00		1.00	1.00	1.00	
Flpb, ped/bikes	1.00		1.00	1.00	1.00	
Frt	0.97		1.00	1.00	1.00	
Flt Protected	0.96		0.95	1.00	1.00	
Satd. Flow (prot)	1670		1709	4471	4414	
Flt Permitted	0.96		0.08	1.00	1.00	
Satd. Flow (perm)	1670		145	4471	4414	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	80	20	25	2280	1720	30
RTOR Reduction (vph)	9	0	0	0	1	0
Lane Group Flow (vph)	91	0	25	2280	1749	0
Confl. Peds. (#/hr)	5	5	5			5
Confl. Bikes (#/hr)		5				5
Heavy Vehicles (%)	2%	2%	2%	2%	3%	2%
Turn Type	Perm		Perm	NA	NA	
Protected Phases				2	6	
Permitted Phases	4		2			
Actuated Green, G (s)	14.6		76.1	76.1	76.1	
Effective Green, g (s)	14.6		76.1	76.1	76.1	
Actuated g/C Ratio	0.14		0.74	0.74	0.74	
Clearance Time (s)	6.0		6.0	6.0	6.0	
Vehicle Extension (s)	3.0		5.0	5.0	5.0	
Lane Grp Cap (vph)	237		107	3312	3270	
v/s Ratio Prot				c0.51	0.40	
v/s Ratio Perm	c0.05		0.17			
v/c Ratio	0.39		0.23	0.69	0.53	
Uniform Delay, d1	40.0		4.2	7.0	5.7	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	1.0		2.3	0.8	0.3	
Delay (s)	41.0		6.5	7.8	6.0	
Level of Service	D		A	A	A	
Approach Delay (s)	41.0			7.8	6.0	
Approach LOS	D			A	A	

Intersection Summary			
HCM 2000 Control Delay	7.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	102.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	65.3%	ICU Level of Service	C
Analysis Period (min)	15		

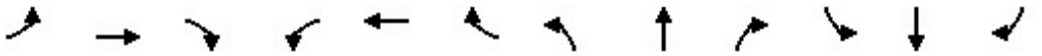
c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	155	50	195	20	140	90	2080	50	1570	120
v/c Ratio	0.64	0.13	0.42	0.06	0.31	0.43	0.83	0.24	0.66	0.14
Control Delay	47.9	32.3	7.7	24.2	19.7	19.5	24.7	12.5	20.8	5.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.9	32.3	7.7	24.2	19.7	19.5	24.7	12.5	20.8	5.8
Queue Length 50th (m)	26.5	7.7	0.0	2.9	14.3	4.4	121.6	2.4	75.9	1.5
Queue Length 95th (m)	52.0	18.9	17.4	8.1	28.9	24.0	#281.6	12.4	169.0	14.7
Internal Link Dist (m)		188.1			109.9		464.0		238.4	
Turn Bay Length (m)	60.0		40.0	60.0		90.0		70.0		30.0
Base Capacity (vph)	478	743	729	330	912	207	2516	209	2455	880
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	0.32	0.07	0.27	0.06	0.15	0.43	0.83	0.24	0.64	0.14

Intersection Summary

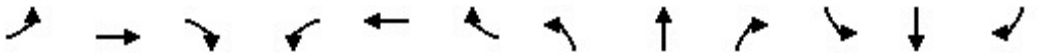
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	155	50	195	20	70	70	90	2080	0	50	1570	120
Future Volume (vph)	155	50	195	20	70	70	90	2080	0	50	1570	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	6.0	6.0	6.0	4.0	6.0		4.0	6.0		4.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	*0.80		1.00	*0.80	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	0.99		1.00	1.00		1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.93		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1705	1863	1532	1707	1706		1711	4471		1711	4427	1512
Flt Permitted	0.67	1.00	1.00	0.60	1.00		0.08	1.00		0.08	1.00	1.00
Satd. Flow (perm)	1198	1863	1532	1073	1706		137	4471		142	4427	1512
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	155	50	195	20	70	70	90	2080	0	50	1570	120
RTOR Reduction (vph)	0	0	157	0	36	0	0	0	0	0	0	48
Lane Group Flow (vph)	155	50	38	20	104	0	90	2080	0	50	1570	72
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%
Turn Type	Perm	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		6
Actuated Green, G (s)	18.8	18.8	18.8	25.1	25.1		57.9	52.5		54.7	50.9	50.9
Effective Green, g (s)	18.8	18.8	18.8	25.1	25.1		57.9	52.5		54.7	50.9	50.9
Actuated g/C Ratio	0.19	0.19	0.19	0.26	0.26		0.59	0.54		0.56	0.52	0.52
Clearance Time (s)	6.0	6.0	6.0	4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	5.0		3.0	5.0	5.0
Lane Grp Cap (vph)	231	359	295	291	439		168	2409		140	2313	790
v/s Ratio Prot		0.03		0.00	c0.06		c0.03	c0.47		0.01	0.35	
v/s Ratio Perm	c0.13		0.02	0.02			0.29			0.19		0.05
v/c Ratio	0.67	0.14	0.13	0.07	0.24		0.54	0.86		0.36	0.68	0.09
Uniform Delay, d1	36.4	32.6	32.5	27.2	28.6		12.5	19.4		16.4	17.2	11.7
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	7.4	0.2	0.2	0.1	0.3		3.3	3.8		1.6	1.1	0.1
Delay (s)	43.9	32.8	32.7	27.3	28.9		15.8	23.1		18.0	18.3	11.8
Level of Service	D	C	C	C	C		B	C		B	B	B
Approach Delay (s)		37.0			28.7			22.8			17.8	
Approach LOS		D			C			C			B	

Intersection Summary			
HCM 2000 Control Delay	22.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	97.4	Sum of lost time (s)	20.0
Intersection Capacity Utilization	84.6%	ICU Level of Service	E
Analysis Period (min)	15		

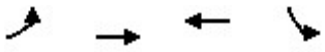
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	55	45	0	125	0	35	0	15	0	0	0
Future Volume (Veh/h)	0	55	45	0	125	0	35	0	15	0	0	0
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)	0	55	45	0	125	0	35	0	15	0	0	0
Pedestrians		5			5			5			5	
Lane Width (m)		3.5			3.5			3.5			3.6	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		134										
pX, platoon unblocked												
vC, conflicting volume	130			105			212	212	88	205	235	135
vC1, stage 1 conf vol							82	82		130	130	
vC2, stage 2 conf vol							130	130		75	105	
vCu, unblocked vol	130			105			212	212	88	205	235	135
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			96	100	98	100	100	100
cM capacity (veh/h)	1449			1480			818	742	963	816	732	906

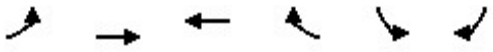
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1
Volume Total	0	100	0	125	35	15	0
Volume Left	0	0	0	0	35	0	0
Volume Right	0	45	0	0	0	15	0
cSH	1700	1700	1700	1700	818	963	1700
Volume to Capacity	0.00	0.06	0.00	0.07	0.04	0.02	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	1.1	0.4	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	9.6	8.8	0.0
Lane LOS					A	A	A
Approach Delay (s)	0.0		0.0		9.4		0.0
Approach LOS					A		A

Intersection Summary				
Average Delay	1.7			
Intersection Capacity Utilization	19.2%	ICU Level of Service		A
Analysis Period (min)	15			



Lane Group	EBL	EBT	WBT	SBL
Lane Group Flow (vph)	55	630	710	30
v/c Ratio	0.10	0.22	0.24	0.07
Control Delay	7.3	5.2	5.3	10.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	7.3	5.2	5.3	10.0
Queue Length 50th (m)	0.0	0.0	0.0	0.6
Queue Length 95th (m)	11.1	39.7	45.2	5.6
Internal Link Dist (m)		313.0	126.7	127.4
Turn Bay Length (m)	30.0			35.0
Base Capacity (vph)	684	3574	3605	1076
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.08	0.18	0.20	0.03

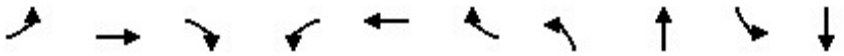
Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	55	630	705	5	10	20
Future Volume (vph)	55	630	705	5	10	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.5	3.3	3.5
Total Lost time (s)	6.0	6.0	6.0		6.0	
Lane Util. Factor	1.00	0.95	0.95		1.00	
Frpb, ped/bikes	1.00	1.00	1.00		0.98	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	1.00		0.91	
Flt Protected	0.95	1.00	1.00		0.98	
Satd. Flow (prot)	1706	3574	3605		1582	
Flt Permitted	0.38	1.00	1.00		0.98	
Satd. Flow (perm)	685	3574	3605		1582	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	55	630	705	5	10	20
RTOR Reduction (vph)	0	0	0	0	18	0
Lane Group Flow (vph)	55	630	710	0	12	0
Confl. Peds. (#/hr)	5			5	5	5
Confl. Bikes (#/hr)				5		5
Heavy Vehicles (%)	2%	1%	0%	2%	2%	2%
Turn Type	Perm	NA	NA		Perm	
Protected Phases		4	8			
Permitted Phases	4				6	
Actuated Green, G (s)	35.9	35.9	35.9		5.4	
Effective Green, g (s)	35.9	35.9	35.9		5.4	
Actuated g/C Ratio	0.67	0.67	0.67		0.10	
Clearance Time (s)	6.0	6.0	6.0		6.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	461	2407	2428		160	
v/s Ratio Prot		0.18	c0.20			
v/s Ratio Perm	0.08				c0.01	
v/c Ratio	0.12	0.26	0.29		0.08	
Uniform Delay, d1	3.1	3.4	3.5		21.7	
Progression Factor	1.00	1.00	1.00		1.00	
Incremental Delay, d2	0.1	0.1	0.1		0.2	
Delay (s)	3.2	3.5	3.6		21.9	
Level of Service	A	A	A		C	
Approach Delay (s)		3.5	3.6		21.9	
Approach LOS		A	A		C	

Intersection Summary			
HCM 2000 Control Delay	3.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.26		
Actuated Cycle Length (s)	53.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.6%	ICU Level of Service	B
Analysis Period (min)	15		

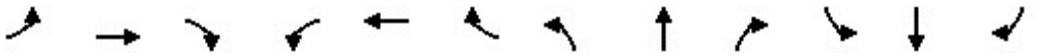
c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	170	280	170	315	290	125	125	2055	140	1785
v/c Ratio	0.81	0.37	0.39	0.94	0.26	0.22	0.70	0.97	0.78	0.85
Control Delay	69.7	38.0	11.8	70.8	28.6	5.5	39.8	43.2	49.9	31.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	69.7	38.0	11.8	70.8	28.6	5.5	39.8	43.2	49.9	31.2
Queue Length 50th (m)	37.1	28.7	5.9	58.1	25.8	0.0	11.7	184.7	14.9	143.8
Queue Length 95th (m)	63.1	41.3	23.7	#103.0	36.7	12.8	#45.6	#266.4	#55.6	#200.5
Internal Link Dist (m)		334.1			313.0			202.3		436.5
Turn Bay Length (m)	50.0		30.0	50.0		30.0	100.0		100.0	
Base Capacity (vph)	293	1056	563	334	1436	697	179	2114	179	2091
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	0.58	0.27	0.30	0.94	0.20	0.18	0.70	0.97	0.78	0.85

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	170	280	170	315	290	125	125	1790	265	140	1515	270
Future Volume (vph)	170	280	170	315	290	125	125	1790	265	140	1515	270
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	6.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	*0.80		1.00	*0.80	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1625	3539	1562	1742	3610	1564	1745	4384		1745	4333	
Flt Permitted	0.57	1.00	1.00	0.46	1.00	1.00	0.08	1.00		0.08	1.00	
Satd. Flow (perm)	982	3539	1562	842	3610	1564	138	4384		138	4333	
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)	170	280	170	315	290	125	125	1790	265	140	1515	270
RTOR Reduction (vph)	0	0	109	0	0	86	0	12	0	0	16	0
Lane Group Flow (vph)	170	280	61	315	290	39	125	2043	0	140	1769	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	7%	2%	0%	0%	0%	0%	0%	2%	0%	0%	3%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	23.7	23.7	23.7	34.7	34.7	34.7	60.2	53.2		60.2	53.2	
Effective Green, g (s)	23.7	23.7	23.7	34.7	34.7	34.7	60.2	53.2		60.2	53.2	
Actuated g/C Ratio	0.21	0.21	0.21	0.31	0.31	0.31	0.54	0.48		0.54	0.48	
Clearance Time (s)	6.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	209	756	333	320	1129	489	176	2103		176	2078	
v/s Ratio Prot		0.08		c0.06	0.08		0.04	c0.47		c0.05	0.41	
v/s Ratio Perm	0.17		0.04	c0.25		0.03	0.34			0.38		
v/c Ratio	0.81	0.37	0.18	0.98	0.26	0.08	0.71	0.97		0.80	0.85	
Uniform Delay, d1	41.5	37.2	35.7	37.2	28.5	26.9	20.4	28.1		24.1	25.4	
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	20.9	0.3	0.3	45.7	0.1	0.1	12.7	13.6		21.5	3.9	
Delay (s)	62.4	37.5	36.0	83.0	28.6	26.9	33.0	41.8		45.6	29.3	
Level of Service	E	D	D	F	C	C	C	D		D	C	
Approach Delay (s)		43.9			51.8			41.3			30.5	
Approach LOS		D			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	39.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	110.9	Sum of lost time (s)	20.0
Intersection Capacity Utilization	93.7%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	NBL	NBT	SBT
Lane Group Flow (vph)	75	25	2130	2000
v/c Ratio	0.29	0.31	0.60	0.58
Control Delay	34.5	20.6	8.0	7.6
Queue Delay	0.0	0.0	0.0	0.1
Total Delay	34.5	20.6	8.0	7.7
Queue Length 50th (m)	11.6	1.2	60.4	54.2
Queue Length 95th (m)	23.8	14.1	169.5	153.3
Internal Link Dist (m)	170.8		238.4	202.3
Turn Bay Length (m)	40.0	30.0		
Base Capacity (vph)	614	81	3536	3478
Starvation Cap Reductn	0	0	0	364
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.12	0.31	0.60	0.64

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	50	25	25	2130	1920	80
Future Volume (vph)	50	25	25	2130	1920	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.5	3.3	3.6	3.6	3.5
Total Lost time (s)	6.0		6.0	6.0	6.0	
Lane Util. Factor	1.00		1.00	*0.80	*0.80	
Frpb, ped/bikes	0.99		1.00	1.00	1.00	
Flpb, ped/bikes	1.00		1.00	1.00	1.00	
Frt	0.95		1.00	1.00	0.99	
Flt Protected	0.97		0.95	1.00	1.00	
Satd. Flow (prot)	1645		1710	4471	4396	
Flt Permitted	0.97		0.06	1.00	1.00	
Satd. Flow (perm)	1645		102	4471	4396	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	50	25	25	2130	1920	80
RTOR Reduction (vph)	14	0	0	0	2	0
Lane Group Flow (vph)	61	0	25	2130	1998	0
Confl. Peds. (#/hr)	5	5	5			5
Confl. Bikes (#/hr)		5				5
Heavy Vehicles (%)	2%	2%	2%	2%	3%	2%
Turn Type	Perm		Perm	NA	NA	
Protected Phases				2	6	
Permitted Phases	4		2			
Actuated Green, G (s)	11.1		73.4	73.4	73.4	
Effective Green, g (s)	11.1		73.4	73.4	73.4	
Actuated g/C Ratio	0.12		0.76	0.76	0.76	
Clearance Time (s)	6.0		6.0	6.0	6.0	
Vehicle Extension (s)	3.0		5.0	5.0	5.0	
Lane Grp Cap (vph)	189		77	3400	3343	
v/s Ratio Prot				c0.48	0.45	
v/s Ratio Perm	c0.04		0.24			
v/c Ratio	0.32		0.32	0.63	0.60	
Uniform Delay, d1	39.2		3.7	5.3	5.1	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	1.0		5.1	0.5	0.4	
Delay (s)	40.2		8.8	5.8	5.5	
Level of Service	D		A	A	A	
Approach Delay (s)	40.2			5.8	5.5	
Approach LOS	D			A	A	

Intersection Summary			
HCM 2000 Control Delay	6.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	96.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	62.4%	ICU Level of Service	B
Analysis Period (min)	15		

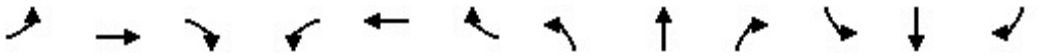
c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	85	65	140	110	200	2030	130	1700	115
v/c Ratio	0.43	0.22	0.39	0.37	0.72	0.78	0.56	0.69	0.13
Control Delay	43.6	36.7	9.0	31.3	37.6	20.5	25.1	19.2	7.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.6	36.7	9.0	31.3	37.6	20.5	25.1	19.2	7.2
Queue Length 50th (m)	15.9	11.7	0.0	15.7	19.3	102.9	6.7	89.1	4.1
Queue Length 95th (m)	29.9	23.0	15.0	30.6	#73.4	#254.8	34.0	175.9	18.2
Internal Link Dist (m)		188.1		109.9		464.0		238.4	
Turn Bay Length (m)	60.0		40.0		90.0		70.0		30.0
Base Capacity (vph)	459	696	661	668	305	2601	324	2529	888
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	0.19	0.09	0.21	0.16	0.66	0.78	0.40	0.67	0.13

Intersection Summary

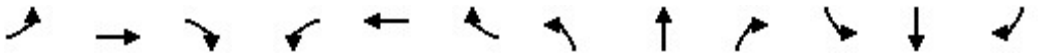
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	85	65	140	0	70	40	200	2030	0	130	1700	115
Future Volume (vph)	85	65	140	0	70	40	200	2030	0	130	1700	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	6.0	6.0	6.0		6.0		4.0	6.0		4.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00		1.00		1.00	*0.80		1.00	*0.80	1.00
Frpb, ped/bikes	1.00	1.00	0.98		0.99		1.00	1.00		1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85		0.95		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00		1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1705	1863	1530		1746		1711	4471		1711	4427	1512
Flt Permitted	0.69	1.00	1.00		1.00		0.07	1.00		0.07	1.00	1.00
Satd. Flow (perm)	1231	1863	1530		1746		127	4471		132	4427	1512
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)	85	65	140	0	70	40	200	2030	0	130	1700	115
RTOR Reduction (vph)	0	0	118	0	20	0	0	0	0	0	0	28
Lane Group Flow (vph)	85	65	22	0	90	0	200	2030	0	130	1700	87
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		6
Actuated Green, G (s)	15.6	15.6	15.6		15.6		68.4	56.9		63.4	54.4	54.4
Effective Green, g (s)	15.6	15.6	15.6		15.6		68.4	56.9		63.4	54.4	54.4
Actuated g/C Ratio	0.16	0.16	0.16		0.16		0.70	0.58		0.65	0.56	0.56
Clearance Time (s)	6.0	6.0	6.0		6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0	5.0		3.0	5.0	5.0
Lane Grp Cap (vph)	196	298	244		279		275	2609		231	2470	843
v/s Ratio Prot		0.03			0.05		c0.09	c0.45		0.05	0.38	
v/s Ratio Perm	c0.07		0.01				0.42			0.31		0.06
v/c Ratio	0.43	0.22	0.09		0.32		0.73	0.78		0.56	0.69	0.10
Uniform Delay, d1	37.0	35.6	34.9		36.3		22.9	15.5		14.0	15.5	10.1
Progression Factor	1.00	1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.5	0.4	0.2		0.7		9.2	1.8		3.1	1.0	0.1
Delay (s)	38.5	36.0	35.1		36.9		32.1	17.3		17.1	16.5	10.2
Level of Service	D	D	D		D		C	B		B	B	B
Approach Delay (s)		36.3			36.9			18.6			16.2	
Approach LOS		D			D			B			B	

Intersection Summary					
HCM 2000 Control Delay	19.1	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio	0.73				
Actuated Cycle Length (s)	97.5	Sum of lost time (s)		16.0	
Intersection Capacity Utilization	74.0%	ICU Level of Service		D	
Analysis Period (min)	15				

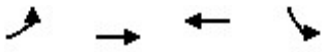
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	85	110	0	85	0	25	0	10	0	0	0
Future Volume (Veh/h)	0	85	110	0	85	0	25	0	10	0	0	0
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)	0	85	110	0	85	0	25	0	10	0	0	0
Pedestrians		5			5			5			5	
Lane Width (m)		3.5			3.5			3.5			3.6	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		134										
pX, platoon unblocked				1.00			1.00	1.00	1.00	1.00	1.00	
vC, conflicting volume	90			200			235	235	150	190	290	95
vC1, stage 1 conf vol							145	145		90	90	
vC2, stage 2 conf vol							90	90		100	200	
vCu, unblocked vol	90			198			233	233	148	188	288	95
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			97	100	99	100	100	100
cM capacity (veh/h)	1499			1367			803	730	890	832	695	954

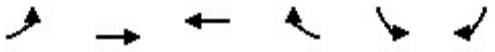
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1
Volume Total	0	195	0	85	25	10	0
Volume Left	0	0	0	0	25	0	0
Volume Right	0	110	0	0	0	10	0
cSH	1700	1700	1700	1700	803	890	1700
Volume to Capacity	0.00	0.11	0.00	0.05	0.03	0.01	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.8	0.3	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	9.6	9.1	0.0
Lane LOS					A	A	A
Approach Delay (s)	0.0		0.0		9.5		0.0
Approach LOS					A		A

Intersection Summary				
Average Delay	1.1			
Intersection Capacity Utilization	23.3%	ICU Level of Service		A
Analysis Period (min)	15			



Lane Group	EBL	EBT	WBT	SBL
Lane Group Flow (vph)	30	755	560	30
v/c Ratio	0.05	0.26	0.19	0.07
Control Delay	6.9	5.3	5.0	10.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	6.9	5.3	5.0	10.3
Queue Length 50th (m)	0.0	0.0	0.0	0.6
Queue Length 95th (m)	6.7	48.5	34.8	5.8
Internal Link Dist (m)		313.0	126.7	127.4
Turn Bay Length (m)	30.0			35.0
Base Capacity (vph)	790	3574	3534	1040
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.04	0.21	0.16	0.03

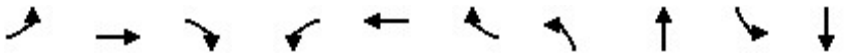
Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	30	755	555	5	10	20
Future Volume (vph)	30	755	555	5	10	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.5	3.3	3.5
Total Lost time (s)	6.0	6.0	6.0		6.0	
Lane Util. Factor	1.00	0.95	0.95		1.00	
Frpb, ped/bikes	1.00	1.00	1.00		0.98	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	1.00		0.91	
Flt Protected	0.95	1.00	1.00		0.98	
Satd. Flow (prot)	1705	3574	3534		1582	
Flt Permitted	0.44	1.00	1.00		0.98	
Satd. Flow (perm)	793	3574	3534		1582	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	30	755	555	5	10	20
RTOR Reduction (vph)	0	0	0	0	18	0
Lane Group Flow (vph)	30	755	560	0	12	0
Confl. Peds. (#/hr)	5			5	5	5
Confl. Bikes (#/hr)				5		5
Heavy Vehicles (%)	2%	1%	2%	2%	2%	2%
Turn Type	Perm	NA	NA		Perm	
Protected Phases		4	8			
Permitted Phases	4				6	
Actuated Green, G (s)	36.2	36.2	36.2		5.4	
Effective Green, g (s)	36.2	36.2	36.2		5.4	
Actuated g/C Ratio	0.68	0.68	0.68		0.10	
Clearance Time (s)	6.0	6.0	6.0		6.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	535	2413	2386		159	
v/s Ratio Prot		c0.21	0.16			
v/s Ratio Perm	0.04				c0.01	
v/c Ratio	0.06	0.31	0.23		0.08	
Uniform Delay, d1	2.9	3.6	3.4		21.8	
Progression Factor	1.00	1.00	1.00		1.00	
Incremental Delay, d2	0.0	0.1	0.1		0.2	
Delay (s)	3.0	3.7	3.4		22.0	
Level of Service	A	A	A		C	
Approach Delay (s)		3.6	3.4		22.0	
Approach LOS		A	A		C	

Intersection Summary			
HCM 2000 Control Delay	3.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	53.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	45.2%	ICU Level of Service	A
Analysis Period (min)	15		

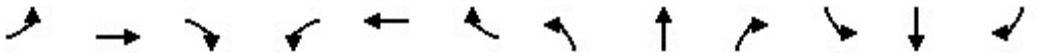
c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	215	315	130	220	235	130	230	2170	110	1500
v/c Ratio	0.69	0.55	0.36	0.81	0.43	0.36	0.80	0.97	0.58	0.76
Control Delay	44.0	43.4	8.3	56.0	41.1	8.3	44.7	38.1	29.6	28.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.0	43.4	8.3	56.0	41.1	8.3	44.7	38.1	29.6	28.9
Queue Length 50th (m)	37.1	32.7	0.0	38.1	23.9	0.0	29.3	165.6	7.6	106.2
Queue Length 95th (m)	57.4	46.1	14.0	59.0	35.3	14.0	#83.4	#291.5	#37.1	#183.9
Internal Link Dist (m)		334.1			313.0			202.3		436.5
Turn Bay Length (m)	50.0		30.0	50.0		30.0	100.0		100.0	
Base Capacity (vph)	311	1138	585	270	1084	590	323	2243	191	1965
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	0.69	0.28	0.22	0.81	0.22	0.22	0.71	0.97	0.58	0.76

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	215	315	130	220	235	130	230	1810	360	110	1415	85
Future Volume (vph)	215	315	130	220	235	130	230	1810	360	110	1415	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	*0.80		1.00	*0.80	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1741	3574	1544	1743	3406	1560	1662	4352		1745	4392	
Flt Permitted	0.59	1.00	1.00	0.46	1.00	1.00	0.08	1.00		0.09	1.00	
Satd. Flow (perm)	1080	3574	1544	852	3406	1560	138	4352		158	4392	
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)	215	315	130	220	235	130	230	1810	360	110	1415	85
RTOR Reduction (vph)	0	0	109	0	0	109	0	18	0	0	4	0
Lane Group Flow (vph)	215	315	21	220	235	21	230	2152	0	110	1496	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	0%	1%	1%	0%	6%	0%	5%	2%	1%	0%	3%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	23.7	16.7	16.7	23.7	16.7	16.7	64.4	53.4		53.6	46.6	
Effective Green, g (s)	23.7	16.7	16.7	23.7	16.7	16.7	64.4	53.4		53.6	46.6	
Actuated g/C Ratio	0.23	0.16	0.16	0.23	0.16	0.16	0.62	0.51		0.51	0.45	
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	290	573	247	253	546	250	287	2232		188	1966	
v/s Ratio Prot	0.05	0.09		c0.06	0.07		c0.11	c0.49		0.04	0.34	
v/s Ratio Perm	0.12		0.01	c0.14		0.01	0.39			0.26		
v/c Ratio	0.74	0.55	0.08	0.87	0.43	0.08	0.80	0.96		0.59	0.76	
Uniform Delay, d1	36.0	40.2	37.2	37.3	39.4	37.2	27.1	24.4		21.1	24.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	9.8	1.1	0.1	25.6	0.5	0.1	14.8	12.0		4.6	2.1	
Delay (s)	45.8	41.3	37.3	63.0	40.0	37.3	41.9	36.4		25.7	26.2	
Level of Service	D	D	D	E	D	D	D	D		C	C	
Approach Delay (s)		42.0			48.0			36.9			26.2	
Approach LOS		D			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	35.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	104.1	Sum of lost time (s)	20.0
Intersection Capacity Utilization	89.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	NBL	NBT	SBT
Lane Group Flow (vph)	100	25	2320	1765
v/c Ratio	0.41	0.24	0.70	0.54
Control Delay	40.3	13.8	10.1	7.6
Queue Delay	0.0	0.0	0.1	0.0
Total Delay	40.3	13.8	10.2	7.6
Queue Length 50th (m)	17.1	1.1	74.2	45.2
Queue Length 95th (m)	32.1	9.8	201.2	123.7
Internal Link Dist (m)	170.8		238.4	202.3
Turn Bay Length (m)	40.0	30.0		
Base Capacity (vph)	541	105	3327	3284
Starvation Cap Reductn	0	0	96	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.18	0.24	0.72	0.54

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	80	20	25	2320	1735	30
Future Volume (vph)	80	20	25	2320	1735	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.5	3.3	3.6	3.6	3.5
Total Lost time (s)	6.0		6.0	6.0	6.0	
Lane Util. Factor	1.00		1.00	*0.80	*0.80	
Frpb, ped/bikes	1.00		1.00	1.00	1.00	
Flpb, ped/bikes	1.00		1.00	1.00	1.00	
Frt	0.97		1.00	1.00	1.00	
Flt Protected	0.96		0.95	1.00	1.00	
Satd. Flow (prot)	1670		1709	4471	4414	
Flt Permitted	0.96		0.08	1.00	1.00	
Satd. Flow (perm)	1670		142	4471	4414	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	80	20	25	2320	1735	30
RTOR Reduction (vph)	9	0	0	0	1	0
Lane Group Flow (vph)	91	0	25	2320	1764	0
Confl. Peds. (#/hr)	5	5	5			5
Confl. Bikes (#/hr)		5				5
Heavy Vehicles (%)	2%	2%	2%	2%	3%	2%
Turn Type	Perm		Perm	NA	NA	
Protected Phases				2	6	
Permitted Phases	4		2			
Actuated Green, G (s)	14.7		77.0	77.0	77.0	
Effective Green, g (s)	14.7		77.0	77.0	77.0	
Actuated g/C Ratio	0.14		0.74	0.74	0.74	
Clearance Time (s)	6.0		6.0	6.0	6.0	
Vehicle Extension (s)	3.0		5.0	5.0	5.0	
Lane Grp Cap (vph)	236		105	3319	3277	
v/s Ratio Prot				c0.52	0.40	
v/s Ratio Perm	c0.05		0.18			
v/c Ratio	0.39		0.24	0.70	0.54	
Uniform Delay, d1	40.4		4.2	7.1	5.7	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	1.1		2.4	0.8	0.3	
Delay (s)	41.5		6.6	8.0	6.0	
Level of Service	D		A	A	A	
Approach Delay (s)	41.5			8.0	6.0	
Approach LOS	D			A	A	

Intersection Summary			
HCM 2000 Control Delay	8.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	103.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	66.1%	ICU Level of Service	C
Analysis Period (min)	15		

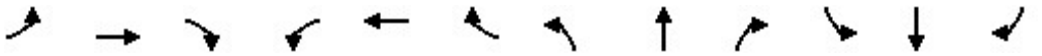
c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	155	50	195	125	185	90	2080	35	65	1570	120
v/c Ratio	0.69	0.14	0.43	0.32	0.33	0.48	0.94	0.04	0.34	0.72	0.15
Control Delay	54.3	34.2	8.2	27.4	17.8	22.1	36.5	0.1	16.0	24.8	5.9
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	54.3	34.2	8.2	27.4	17.8	22.1	36.5	0.1	16.0	24.8	5.9
Queue Length 50th (m)	31.1	8.9	0.7	19.5	18.1	7.2	169.2	0.0	5.1	105.7	2.1
Queue Length 95th (m)	52.6	18.9	18.2	33.3	35.4	23.3	#281.6	0.0	15.2	169.0	14.7
Internal Link Dist (m)		188.1			109.9		464.0			238.4	
Turn Bay Length (m)	60.0		40.0	60.0		90.0		40.0	70.0		30.0
Base Capacity (vph)	409	662	668	394	817	189	2209	795	189	2188	795
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	0.38	0.08	0.29	0.32	0.23	0.48	0.94	0.04	0.34	0.72	0.15

Intersection Summary

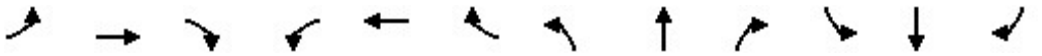
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	155	50	195	125	75	110	90	2080	35	65	1570	120
Future Volume (vph)	155	50	195	125	75	110	90	2080	35	65	1570	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	6.0	6.0	6.0	4.0	6.0		4.0	6.0	6.0	4.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	*0.80	1.00	1.00	*0.80	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	0.99		1.00	1.00	0.96	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	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.91		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1705	1863	1531	1707	1677		1711	4471	1511	1711	4427	1511
Flt Permitted	0.64	1.00	1.00	0.60	1.00		0.08	1.00	1.00	0.08	1.00	1.00
Satd. Flow (perm)	1150	1863	1531	1086	1677		142	4471	1511	142	4427	1511
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	155	50	195	125	75	110	90	2080	35	65	1570	120
RTOR Reduction (vph)	0	0	154	0	50	0	0	0	18	0	0	51
Lane Group Flow (vph)	155	50	41	125	135	0	90	2080	17	65	1570	69
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%
Turn Type	Perm	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		6
Actuated Green, G (s)	20.1	20.1	20.1	31.2	31.2		56.1	50.7	50.7	56.1	50.7	50.7
Effective Green, g (s)	20.1	20.1	20.1	31.2	31.2		56.1	50.7	50.7	56.1	50.7	50.7
Actuated g/C Ratio	0.19	0.19	0.19	0.30	0.30		0.54	0.49	0.49	0.54	0.49	0.49
Clearance Time (s)	6.0	6.0	6.0	4.0	6.0		4.0	6.0	6.0	4.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	223	362	297	370	506		159	2194	741	159	2172	741
v/s Ratio Prot		0.03		c0.02	0.08		c0.03	c0.47		0.02	0.35	
v/s Ratio Perm	c0.13		0.03	0.08			0.28		0.01	0.20		0.05
v/c Ratio	0.70	0.14	0.14	0.34	0.27		0.57	0.95	0.02	0.41	0.72	0.09
Uniform Delay, d1	38.7	34.4	34.4	27.2	27.4		15.6	25.0	13.5	20.8	20.8	14.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	9.0	0.2	0.2	0.5	0.3		4.6	9.9	0.0	1.7	1.5	0.1
Delay (s)	47.8	34.6	34.6	27.8	27.6		20.1	34.9	13.6	22.5	22.3	14.1
Level of Service	D	C	C	C	C		C	C	B	C	C	B
Approach Delay (s)		39.7			27.7			34.0			21.7	
Approach LOS		D			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	29.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	103.3	Sum of lost time (s)	20.0
Intersection Capacity Utilization	86.9%	ICU Level of Service	E
Analysis Period (min)	15		

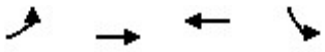
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	55	45	5	125	15	45	10	25	40	25	140
Future Volume (Veh/h)	50	55	45	5	125	15	45	10	25	40	25	140
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)	50	55	45	5	125	15	45	10	25	40	25	140
Pedestrians		5			5			5			5	
Lane Width (m)		3.5			3.5			3.5			3.6	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		134										
pX, platoon unblocked												
vC, conflicting volume	145			105			475	338	88	338	352	142
vC1, stage 1 conf vol							182	182		148	148	
vC2, stage 2 conf vol							292	155		190	205	
vCu, unblocked vol	145			105			475	338	88	338	352	142
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100			91	98	97	94	96	84
cM capacity (veh/h)	1431			1480			506	647	963	693	650	898

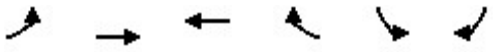
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1
Volume Total	50	100	5	140	45	35	205
Volume Left	50	0	5	0	45	0	40
Volume Right	0	45	0	15	0	25	140
cSH	1431	1700	1480	1700	506	845	813
Volume to Capacity	0.03	0.06	0.00	0.08	0.09	0.04	0.25
Queue Length 95th (m)	0.9	0.0	0.1	0.0	2.3	1.0	8.0
Control Delay (s)	7.6	0.0	7.4	0.0	12.8	9.4	10.9
Lane LOS	A		A		B	A	B
Approach Delay (s)	2.5		0.3		11.3		10.9
Approach LOS					B		B

Intersection Summary				
Average Delay	6.1			
Intersection Capacity Utilization	40.9%	ICU Level of Service		A
Analysis Period (min)	15			



Lane Group	EBL	EBT	WBT	SBL
Lane Group Flow (vph)	55	635	710	30
v/c Ratio	0.10	0.22	0.24	0.07
Control Delay	7.3	5.2	5.3	10.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	7.3	5.2	5.3	10.0
Queue Length 50th (m)	0.0	0.0	0.0	0.6
Queue Length 95th (m)	11.1	40.1	45.2	5.6
Internal Link Dist (m)		313.0	126.7	127.4
Turn Bay Length (m)	30.0			35.0
Base Capacity (vph)	684	3574	3605	1076
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.08	0.18	0.20	0.03

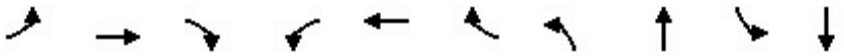
Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	55	635	705	5	10	20
Future Volume (vph)	55	635	705	5	10	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.5	3.3	3.5
Total Lost time (s)	6.0	6.0	6.0		6.0	
Lane Util. Factor	1.00	0.95	0.95		1.00	
Frpb, ped/bikes	1.00	1.00	1.00		0.98	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	1.00		0.91	
Flt Protected	0.95	1.00	1.00		0.98	
Satd. Flow (prot)	1706	3574	3605		1582	
Flt Permitted	0.38	1.00	1.00		0.98	
Satd. Flow (perm)	685	3574	3605		1582	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	55	635	705	5	10	20
RTOR Reduction (vph)	0	0	0	0	18	0
Lane Group Flow (vph)	55	635	710	0	12	0
Confl. Peds. (#/hr)	5			5	5	5
Confl. Bikes (#/hr)				5		5
Heavy Vehicles (%)	2%	1%	0%	2%	2%	2%
Turn Type	Perm	NA	NA		Perm	
Protected Phases		4	8			
Permitted Phases	4				6	
Actuated Green, G (s)	35.9	35.9	35.9		5.4	
Effective Green, g (s)	35.9	35.9	35.9		5.4	
Actuated g/C Ratio	0.67	0.67	0.67		0.10	
Clearance Time (s)	6.0	6.0	6.0		6.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	461	2407	2428		160	
v/s Ratio Prot		0.18	c0.20			
v/s Ratio Perm	0.08				c0.01	
v/c Ratio	0.12	0.26	0.29		0.08	
Uniform Delay, d1	3.1	3.5	3.5		21.7	
Progression Factor	1.00	1.00	1.00		1.00	
Incremental Delay, d2	0.1	0.1	0.1		0.2	
Delay (s)	3.2	3.5	3.6		21.9	
Level of Service	A	A	A		C	
Approach Delay (s)		3.5	3.6		21.9	
Approach LOS		A	A		C	

Intersection Summary			
HCM 2000 Control Delay	3.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.26		
Actuated Cycle Length (s)	53.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.6%	ICU Level of Service	B
Analysis Period (min)	15		

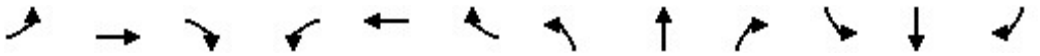
c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	170	280	180	315	290	125	130	2080	140	1815
v/c Ratio	0.81	0.37	0.41	0.94	0.26	0.22	0.73	0.98	0.78	0.87
Control Delay	69.7	38.0	13.1	70.8	28.6	5.5	42.8	45.5	49.9	32.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	69.7	38.0	13.1	70.8	28.6	5.5	42.8	45.5	49.9	32.0
Queue Length 50th (m)	37.1	28.7	8.0	58.1	25.8	0.0	12.4	188.9	14.9	148.2
Queue Length 95th (m)	63.1	41.3	27.0	#103.0	36.7	12.8	#49.3	#271.8	#55.6	#216.0
Internal Link Dist (m)		334.1			313.0			202.3		436.5
Turn Bay Length (m)	50.0		30.0	50.0		30.0	100.0		100.0	
Base Capacity (vph)	293	1056	562	334	1436	697	179	2114	179	2093
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	0.58	0.27	0.32	0.94	0.20	0.18	0.73	0.98	0.78	0.87

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	170	280	180	315	290	125	130	1810	270	140	1545	270
Future Volume (vph)	170	280	180	315	290	125	130	1810	270	140	1545	270
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	6.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	*0.80		1.00	*0.80	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1625	3539	1562	1742	3610	1564	1745	4383		1745	4334	
Flt Permitted	0.57	1.00	1.00	0.46	1.00	1.00	0.08	1.00		0.08	1.00	
Satd. Flow (perm)	982	3539	1562	842	3610	1564	138	4383		138	4334	
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)	170	280	180	315	290	125	130	1810	270	140	1545	270
RTOR Reduction (vph)	0	0	108	0	0	86	0	12	0	0	16	0
Lane Group Flow (vph)	170	280	72	315	290	39	130	2068	0	140	1799	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	7%	2%	0%	0%	0%	0%	0%	2%	0%	0%	3%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	23.7	23.7	23.7	34.7	34.7	34.7	60.2	53.2		60.2	53.2	
Effective Green, g (s)	23.7	23.7	23.7	34.7	34.7	34.7	60.2	53.2		60.2	53.2	
Actuated g/C Ratio	0.21	0.21	0.21	0.31	0.31	0.31	0.54	0.48		0.54	0.48	
Clearance Time (s)	6.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	209	756	333	320	1129	489	176	2102		176	2079	
v/s Ratio Prot		0.08		c0.06	0.08		0.05	c0.47		c0.05	0.42	
v/s Ratio Perm	0.17		0.05	c0.25		0.03	0.35			0.38		
v/c Ratio	0.81	0.37	0.22	0.98	0.26	0.08	0.74	0.98		0.80	0.87	
Uniform Delay, d1	41.5	37.2	35.9	37.2	28.5	26.9	20.9	28.4		24.4	25.7	
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	20.9	0.3	0.3	45.7	0.1	0.1	14.9	15.9		21.5	4.4	
Delay (s)	62.4	37.5	36.3	83.0	28.6	26.9	35.8	44.4		45.9	30.1	
Level of Service	E	D	D	F	C	C	D	D		D	C	
Approach Delay (s)		43.9			51.8			43.8			31.2	
Approach LOS		D			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	40.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	110.9	Sum of lost time (s)	20.0
Intersection Capacity Utilization	94.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	NBL	NBT	SBT
Lane Group Flow (vph)	75	25	2160	2040
v/c Ratio	0.29	0.33	0.61	0.59
Control Delay	35.3	23.0	8.1	7.7
Queue Delay	0.0	0.0	0.0	0.1
Total Delay	35.3	23.0	8.1	7.9
Queue Length 50th (m)	12.2	1.2	62.0	56.2
Queue Length 95th (m)	23.9	#16.9	174.4	158.7
Internal Link Dist (m)	170.8		238.4	202.3
Turn Bay Length (m)	40.0	30.0		
Base Capacity (vph)	606	76	3543	3485
Starvation Cap Reductn	0	0	0	387
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.12	0.33	0.61	0.66

Intersection Summary

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



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	50	25	25	2160	1960	80
Future Volume (vph)	50	25	25	2160	1960	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.5	3.3	3.6	3.6	3.5
Total Lost time (s)	6.0		6.0	6.0	6.0	
Lane Util. Factor	1.00		1.00	*0.80	*0.80	
Frpb, ped/bikes	0.99		1.00	1.00	1.00	
Flpb, ped/bikes	1.00		1.00	1.00	1.00	
Frt	0.95		1.00	1.00	0.99	
Flt Protected	0.97		0.95	1.00	1.00	
Satd. Flow (prot)	1645		1710	4471	4397	
Flt Permitted	0.97		0.05	1.00	1.00	
Satd. Flow (perm)	1645		97	4471	4397	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	50	25	25	2160	1960	80
RTOR Reduction (vph)	13	0	0	0	2	0
Lane Group Flow (vph)	62	0	25	2160	2038	0
Confl. Peds. (#/hr)	5	5	5			5
Confl. Bikes (#/hr)		5				5
Heavy Vehicles (%)	2%	2%	2%	2%	3%	2%
Turn Type	Perm		Perm	NA	NA	
Protected Phases				2	6	
Permitted Phases	4		2			
Actuated Green, G (s)	11.1		74.4	74.4	74.4	
Effective Green, g (s)	11.1		74.4	74.4	74.4	
Actuated g/C Ratio	0.11		0.76	0.76	0.76	
Clearance Time (s)	6.0		6.0	6.0	6.0	
Vehicle Extension (s)	3.0		5.0	5.0	5.0	
Lane Grp Cap (vph)	187		74	3411	3355	
v/s Ratio Prot				c0.48	0.46	
v/s Ratio Perm	c0.04		0.26			
v/c Ratio	0.33		0.34	0.63	0.61	
Uniform Delay, d1	39.8		3.7	5.3	5.1	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	1.0		5.6	0.5	0.5	
Delay (s)	40.8		9.3	5.8	5.6	
Level of Service	D		A	A	A	
Approach Delay (s)	40.8			5.9	5.6	
Approach LOS	D			A	A	

Intersection Summary			
HCM 2000 Control Delay	6.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	97.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	63.0%	ICU Level of Service	B
Analysis Period (min)	15		

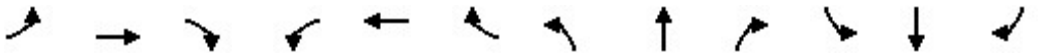
c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	85	75	140	65	150	200	2025	100	170	1700	115
v/c Ratio	0.49	0.25	0.38	0.32	0.48	0.72	0.80	0.11	0.67	0.69	0.13
Control Delay	46.6	37.2	8.8	39.8	31.0	37.7	21.8	6.5	33.8	19.4	7.3
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	46.6	37.2	8.8	39.8	31.0	37.7	21.8	6.5	33.8	19.4	7.3
Queue Length 50th (m)	16.0	13.6	0.0	11.9	19.8	19.5	112.2	2.7	15.3	90.7	4.2
Queue Length 95th (m)	30.4	25.8	15.0	23.8	37.8	#72.4	#253.7	15.4	48.0	175.9	18.2
Internal Link Dist (m)		188.1			109.9		464.0			238.4	
Turn Bay Length (m)	60.0		40.0	60.0		90.0		40.0	70.0		30.0
Base Capacity (vph)	401	692	658	471	661	305	2542	884	322	2515	883
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	0.21	0.11	0.21	0.14	0.23	0.66	0.80	0.11	0.53	0.68	0.13

Intersection Summary

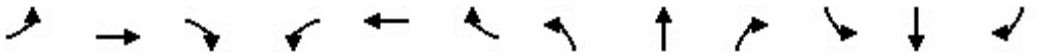
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	85	75	140	65	75	75	200	2025	100	170	1700	115
Future Volume (vph)	85	75	140	65	75	75	200	2025	100	170	1700	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0		4.0	6.0	6.0	4.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	*0.80	1.00	1.00	*0.80	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	0.99		1.00	1.00	0.97	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.93		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1705	1863	1530	1704	1703		1711	4471	1512	1711	4427	1512
Flt Permitted	0.60	1.00	1.00	0.71	1.00		0.07	1.00	1.00	0.07	1.00	1.00
Satd. Flow (perm)	1079	1863	1530	1271	1703		129	4471	1512	132	4427	1512
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)	85	75	140	65	75	75	200	2025	100	170	1700	115
RTOR Reduction (vph)	0	0	117	0	36	0	0	0	28	0	0	28
Lane Group Flow (vph)	85	75	23	65	114	0	200	2025	72	170	1700	87
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		6
Actuated Green, G (s)	15.9	15.9	15.9	15.9	15.9		67.2	55.8	55.8	64.8	54.6	54.6
Effective Green, g (s)	15.9	15.9	15.9	15.9	15.9		67.2	55.8	55.8	64.8	54.6	54.6
Actuated g/C Ratio	0.16	0.16	0.16	0.16	0.16		0.69	0.57	0.57	0.66	0.56	0.56
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		4.0	6.0	6.0	4.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	175	302	248	206	276		272	2548	861	251	2468	843
v/s Ratio Prot		0.04			0.07		c0.09	c0.45		0.07	0.38	
v/s Ratio Perm	c0.08		0.01	0.05			0.42		0.05	0.38		0.06
v/c Ratio	0.49	0.25	0.09	0.32	0.41		0.74	0.79	0.08	0.68	0.69	0.10
Uniform Delay, d1	37.3	35.8	34.9	36.2	36.8		22.7	16.5	9.5	20.8	15.5	10.2
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.1	0.4	0.2	0.9	1.0		9.9	2.1	0.1	7.1	1.1	0.1
Delay (s)	39.4	36.2	35.0	37.1	37.8		32.5	18.6	9.6	27.8	16.6	10.3
Level of Service	D	D	D	D	D		C	B	A	C	B	B
Approach Delay (s)		36.6			37.6			19.4			17.2	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	20.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	97.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	87.3%	ICU Level of Service	E
Analysis Period (min)	15		

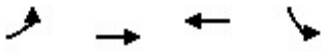
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	140	85	120	5	85	50	35	20	15	20	20	95
Future Volume (Veh/h)	140	85	120	5	85	50	35	20	15	20	20	95
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)	140	85	120	5	85	50	35	20	15	20	20	95
Pedestrians		5			5			5			5	
Lane Width (m)		3.5			3.5			3.5			3.6	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		134										
pX, platoon unblocked												
vC, conflicting volume	140			210			635	580	155	520	615	120
vC1, stage 1 conf vol							430	430		125	125	
vC2, stage 2 conf vol							205	150		395	490	
vCu, unblocked vol	140			210			635	580	155	520	615	120
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	90			100			92	96	98	96	96	90
cM capacity (veh/h)	1437			1355			456	487	884	511	469	924

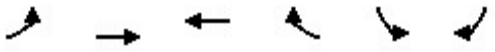
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1
Volume Total	140	205	5	135	35	35	135
Volume Left	140	0	5	0	35	0	20
Volume Right	0	120	0	50	0	15	95
cSH	1437	1700	1355	1700	456	603	731
Volume to Capacity	0.10	0.12	0.00	0.08	0.08	0.06	0.18
Queue Length 95th (m)	2.6	0.0	0.1	0.0	2.0	1.5	5.4
Control Delay (s)	7.8	0.0	7.7	0.0	13.5	11.3	11.0
Lane LOS	A		A		B	B	B
Approach Delay (s)	3.2		0.3		12.4		11.0
Approach LOS					B		B

Intersection Summary				
Average Delay	5.1			
Intersection Capacity Utilization	41.4%	ICU Level of Service		A
Analysis Period (min)	15			



Lane Group	EBL	EBT	WBT	SBL
Lane Group Flow (vph)	30	780	575	30
v/c Ratio	0.05	0.27	0.20	0.07
Control Delay	6.9	5.3	5.0	10.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	6.9	5.3	5.0	10.4
Queue Length 50th (m)	0.0	0.0	0.0	0.6
Queue Length 95th (m)	6.7	50.3	35.8	5.9
Internal Link Dist (m)		313.0	126.7	127.4
Turn Bay Length (m)	30.0			35.0
Base Capacity (vph)	780	3574	3534	1005
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.04	0.22	0.16	0.03

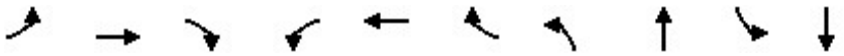
Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	30	780	570	5	10	20
Future Volume (vph)	30	780	570	5	10	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.5	3.3	3.5
Total Lost time (s)	6.0	6.0	6.0		6.0	
Lane Util. Factor	1.00	0.95	0.95		1.00	
Frpb, ped/bikes	1.00	1.00	1.00		0.98	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	1.00		0.91	
Flt Protected	0.95	1.00	1.00		0.98	
Satd. Flow (prot)	1705	3574	3534		1582	
Flt Permitted	0.44	1.00	1.00		0.98	
Satd. Flow (perm)	782	3574	3534		1582	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	30	780	570	5	10	20
RTOR Reduction (vph)	0	0	0	0	18	0
Lane Group Flow (vph)	30	780	575	0	12	0
Confl. Peds. (#/hr)	5			5	5	5
Confl. Bikes (#/hr)				5		5
Heavy Vehicles (%)	2%	1%	2%	2%	2%	2%
Turn Type	Perm	NA	NA		Perm	
Protected Phases		4	8			
Permitted Phases	4				6	
Actuated Green, G (s)	36.4	36.4	36.4		5.3	
Effective Green, g (s)	36.4	36.4	36.4		5.3	
Actuated g/C Ratio	0.68	0.68	0.68		0.10	
Clearance Time (s)	6.0	6.0	6.0		6.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	530	2422	2395		156	
v/s Ratio Prot		c0.22	0.16			
v/s Ratio Perm	0.04				c0.01	
v/c Ratio	0.06	0.32	0.24		0.08	
Uniform Delay, d1	2.9	3.6	3.3		22.0	
Progression Factor	1.00	1.00	1.00		1.00	
Incremental Delay, d2	0.0	0.1	0.1		0.2	
Delay (s)	2.9	3.6	3.4		22.2	
Level of Service	A	A	A		C	
Approach Delay (s)		3.6	3.4		22.2	
Approach LOS		A	A		C	

Intersection Summary			
HCM 2000 Control Delay	3.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	53.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	45.2%	ICU Level of Service	A
Analysis Period (min)	15		

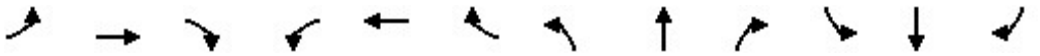
c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	215	340	130	220	250	130	230	2265	110	1620
v/c Ratio	0.70	0.58	0.35	0.84	0.44	0.35	0.83	1.02	0.58	0.82
Control Delay	44.4	43.7	8.2	59.3	41.2	8.1	50.5	49.3	28.5	30.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.4	43.7	8.2	59.3	41.2	8.1	50.5	49.3	28.5	30.1
Queue Length 50th (m)	37.1	35.6	0.0	38.1	25.5	0.0	30.6	184.4	7.8	115.6
Queue Length 95th (m)	57.4	49.3	14.0	59.0	37.3	14.0	#93.1	#312.1	#35.4	#197.9
Internal Link Dist (m)		334.1			313.0			202.3		436.5
Turn Bay Length (m)	50.0		30.0	50.0		30.0	100.0		100.0	
Base Capacity (vph)	308	1131	582	263	1078	587	276	2231	190	1985
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	0.70	0.30	0.22	0.84	0.23	0.22	0.83	1.02	0.58	0.82

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	215	340	130	220	250	130	230	1905	360	110	1535	85
Future Volume (vph)	215	340	130	220	250	130	230	1905	360	110	1535	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	*0.80		1.00	*0.80	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1742	3574	1544	1743	3406	1560	1662	4357		1745	4395	
Flt Permitted	0.57	1.00	1.00	0.43	1.00	1.00	0.08	1.00		0.08	1.00	
Satd. Flow (perm)	1038	3574	1544	793	3406	1560	137	4357		156	4395	
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)	215	340	130	220	250	130	230	1905	360	110	1535	85
RTOR Reduction (vph)	0	0	108	0	0	108	0	16	0	0	4	0
Lane Group Flow (vph)	215	340	22	220	250	22	230	2249	0	110	1616	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	0%	1%	1%	0%	6%	0%	5%	2%	1%	0%	3%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	24.3	17.3	17.3	24.3	17.3	17.3	64.3	53.3		54.2	47.2	
Effective Green, g (s)	24.3	17.3	17.3	24.3	17.3	17.3	64.3	53.3		54.2	47.2	
Actuated g/C Ratio	0.23	0.17	0.17	0.23	0.17	0.17	0.61	0.51		0.52	0.45	
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	288	591	255	247	563	258	275	2220		187	1983	
v/s Ratio Prot	0.05	0.10		c0.06	0.07		c0.10	c0.52		0.04	0.37	
v/s Ratio Perm	0.12		0.01	c0.15		0.01	0.41			0.27		
v/c Ratio	0.75	0.58	0.08	0.89	0.44	0.08	0.84	1.01		0.59	0.82	
Uniform Delay, d1	36.0	40.3	36.9	37.4	39.3	36.9	28.4	25.6		22.4	24.9	
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	10.1	1.4	0.1	30.3	0.6	0.1	19.3	22.4		4.7	3.1	
Delay (s)	46.0	41.6	37.1	67.7	39.9	37.1	47.7	48.0		27.1	28.0	
Level of Service	D	D	D	E	D	D	D	D		C	C	
Approach Delay (s)		42.1			49.5			48.0			27.9	
Approach LOS		D			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	41.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	104.6	Sum of lost time (s)	20.0
Intersection Capacity Utilization	92.0%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	NBL	NBT	SBT
Lane Group Flow (vph)	100	25	2415	1885
v/c Ratio	0.41	0.28	0.73	0.57
Control Delay	40.5	17.6	10.7	8.0
Queue Delay	0.0	0.0	0.1	0.1
Total Delay	40.5	17.6	10.8	8.1
Queue Length 50th (m)	17.1	1.2	80.8	50.6
Queue Length 95th (m)	32.1	11.6	219.0	137.6
Internal Link Dist (m)	170.8		238.4	202.3
Turn Bay Length (m)	40.0	30.0		
Base Capacity (vph)	534	88	3331	3291
Starvation Cap Reductn	0	0	92	326
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.19	0.28	0.75	0.64

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	80	20	25	2415	1855	30
Future Volume (vph)	80	20	25	2415	1855	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.5	3.3	3.6	3.6	3.5
Total Lost time (s)	6.0		6.0	6.0	6.0	
Lane Util. Factor	1.00		1.00	*0.80	*0.80	
Frpb, ped/bikes	1.00		1.00	1.00	1.00	
Flpb, ped/bikes	1.00		1.00	1.00	1.00	
Frt	0.97		1.00	1.00	1.00	
Flt Protected	0.96		0.95	1.00	1.00	
Satd. Flow (prot)	1670		1710	4471	4415	
Flt Permitted	0.96		0.07	1.00	1.00	
Satd. Flow (perm)	1670		118	4471	4415	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	80	20	25	2415	1855	30
RTOR Reduction (vph)	9	0	0	0	1	0
Lane Group Flow (vph)	91	0	25	2415	1884	0
Confl. Peds. (#/hr)	5	5	5			5
Confl. Bikes (#/hr)		5				5
Heavy Vehicles (%)	2%	2%	2%	2%	3%	2%
Turn Type	Perm		Perm	NA	NA	
Protected Phases				2	6	
Permitted Phases	4		2			
Actuated Green, G (s)	14.7		78.3	78.3	78.3	
Effective Green, g (s)	14.7		78.3	78.3	78.3	
Actuated g/C Ratio	0.14		0.75	0.75	0.75	
Clearance Time (s)	6.0		6.0	6.0	6.0	
Vehicle Extension (s)	3.0		5.0	5.0	5.0	
Lane Grp Cap (vph)	233		87	3334	3292	
v/s Ratio Prot				c0.54	0.43	
v/s Ratio Perm	c0.05		0.21			
v/c Ratio	0.39		0.29	0.72	0.57	
Uniform Delay, d1	41.1		4.3	7.4	5.9	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	1.1		3.8	1.0	0.4	
Delay (s)	42.2		8.1	8.4	6.3	
Level of Service	D		A	A	A	
Approach Delay (s)	42.2			8.4	6.3	
Approach LOS	D			A	A	

Intersection Summary			
HCM 2000 Control Delay	8.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	67.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

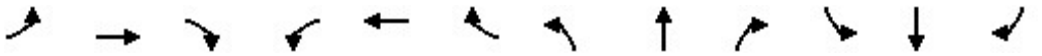


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	155	50	195	125	185	90	2175	35	65	1690	120
v/c Ratio	0.69	0.14	0.43	0.32	0.33	0.48	0.99	0.04	0.35	0.77	0.15
Control Delay	54.2	34.2	8.3	27.4	17.8	22.1	43.7	0.1	16.0	26.4	5.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.2	34.2	8.3	27.4	17.8	22.1	43.7	0.1	16.0	26.4	5.9
Queue Length 50th (m)	31.1	8.9	0.9	19.5	18.1	7.2	~184.5	0.0	5.1	118.7	2.1
Queue Length 95th (m)	52.6	18.9	18.3	33.3	35.4	23.3	#301.8	0.0	15.2	#190.7	14.7
Internal Link Dist (m)		188.1			109.9		464.0			238.4	
Turn Bay Length (m)	60.0		40.0	60.0		90.0		40.0	70.0		30.0
Base Capacity (vph)	409	662	668	395	817	188	2208	795	188	2187	795
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	0.38	0.08	0.29	0.32	0.23	0.48	0.99	0.04	0.35	0.77	0.15

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

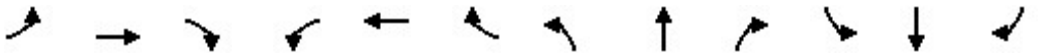
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	155	50	195	125	75	110	90	2175	35	65	1690	120
Future Volume (vph)	155	50	195	125	75	110	90	2175	35	65	1690	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	6.0	6.0	6.0	4.0	6.0		4.0	6.0	6.0	4.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	*0.80	1.00	1.00	*0.80	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	0.99		1.00	1.00	0.96	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	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.91		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1705	1863	1531	1707	1677		1711	4471	1511	1711	4427	1511
Flt Permitted	0.64	1.00	1.00	0.60	1.00		0.08	1.00	1.00	0.08	1.00	1.00
Satd. Flow (perm)	1150	1863	1531	1086	1677		142	4471	1511	142	4427	1511
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	155	50	195	125	75	110	90	2175	35	65	1690	120
RTOR Reduction (vph)	0	0	153	0	50	0	0	0	18	0	0	51
Lane Group Flow (vph)	155	50	42	125	135	0	90	2175	17	65	1690	69
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%
Turn Type	Perm	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		6
Actuated Green, G (s)	20.2	20.2	20.2	31.3	31.3		56.1	50.7	50.7	56.1	50.7	50.7
Effective Green, g (s)	20.2	20.2	20.2	31.3	31.3		56.1	50.7	50.7	56.1	50.7	50.7
Actuated g/C Ratio	0.20	0.20	0.20	0.30	0.30		0.54	0.49	0.49	0.54	0.49	0.49
Clearance Time (s)	6.0	6.0	6.0	4.0	6.0		4.0	6.0	6.0	4.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	224	363	299	371	507		158	2192	740	158	2170	740
v/s Ratio Prot		0.03		c0.02	0.08		c0.03	c0.49		0.02	0.38	
v/s Ratio Perm	c0.13		0.03	0.08			0.28		0.01	0.20		0.05
v/c Ratio	0.69	0.14	0.14	0.34	0.27		0.57	0.99	0.02	0.41	0.78	0.09
Uniform Delay, d1	38.7	34.4	34.4	27.2	27.3		16.7	26.2	13.6	22.2	21.7	14.1
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	8.9	0.2	0.2	0.5	0.3		4.7	17.4	0.0	1.7	2.1	0.1
Delay (s)	47.6	34.6	34.6	27.8	27.6		21.3	43.5	13.6	23.9	23.9	14.2
Level of Service	D	C	C	C	C		C	D	B	C	C	B
Approach Delay (s)		39.7			27.7			42.2			23.3	
Approach LOS		D			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	33.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	103.4	Sum of lost time (s)	20.0
Intersection Capacity Utilization	88.7%	ICU Level of Service	E
Analysis Period (min)	15		

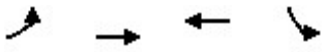
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	55	45	5	125	15	45	10	25	40	25	140
Future Volume (Veh/h)	50	55	45	5	125	15	45	10	25	40	25	140
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)	50	55	45	5	125	15	45	10	25	40	25	140
Pedestrians		5			5			5			5	
Lane Width (m)		3.5			3.5			3.5			3.6	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		134										
pX, platoon unblocked												
vC, conflicting volume	145			105			475	338	88	338	352	142
vC1, stage 1 conf vol							182	182		148	148	
vC2, stage 2 conf vol							292	155		190	205	
vCu, unblocked vol	145			105			475	338	88	338	352	142
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100			91	98	97	94	96	84
cM capacity (veh/h)	1431			1480			506	647	963	693	650	898

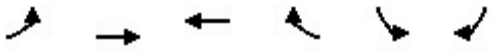
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1
Volume Total	50	100	5	140	45	35	205
Volume Left	50	0	5	0	45	0	40
Volume Right	0	45	0	15	0	25	140
cSH	1431	1700	1480	1700	506	845	813
Volume to Capacity	0.03	0.06	0.00	0.08	0.09	0.04	0.25
Queue Length 95th (m)	0.9	0.0	0.1	0.0	2.3	1.0	8.0
Control Delay (s)	7.6	0.0	7.4	0.0	12.8	9.4	10.9
Lane LOS	A		A		B	A	B
Approach Delay (s)	2.5		0.3		11.3		10.9
Approach LOS					B		B

Intersection Summary				
Average Delay	6.1			
Intersection Capacity Utilization	40.9%	ICU Level of Service		A
Analysis Period (min)	15			



Lane Group	EBL	EBT	WBT	SBL
Lane Group Flow (vph)	55	650	725	30
v/c Ratio	0.10	0.22	0.25	0.07
Control Delay	7.3	5.3	5.4	10.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	7.3	5.3	5.4	10.0
Queue Length 50th (m)	0.0	0.0	0.0	0.6
Queue Length 95th (m)	11.1	41.1	46.3	5.6
Internal Link Dist (m)		313.0	126.7	127.4
Turn Bay Length (m)	30.0			35.0
Base Capacity (vph)	674	3574	3605	1076
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.08	0.18	0.20	0.03

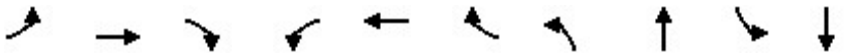
Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	55	650	720	5	10	20
Future Volume (vph)	55	650	720	5	10	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.5	3.3	3.5
Total Lost time (s)	6.0	6.0	6.0		6.0	
Lane Util. Factor	1.00	0.95	0.95		1.00	
Frpb, ped/bikes	1.00	1.00	1.00		0.98	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	1.00		0.91	
Flt Protected	0.95	1.00	1.00		0.98	
Satd. Flow (prot)	1706	3574	3605		1582	
Flt Permitted	0.38	1.00	1.00		0.98	
Satd. Flow (perm)	675	3574	3605		1582	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	55	650	720	5	10	20
RTOR Reduction (vph)	0	0	0	0	18	0
Lane Group Flow (vph)	55	650	725	0	12	0
Confl. Peds. (#/hr)	5			5	5	5
Confl. Bikes (#/hr)				5		5
Heavy Vehicles (%)	2%	1%	0%	2%	2%	2%
Turn Type	Perm	NA	NA		Perm	
Protected Phases		4	8			
Permitted Phases	4				6	
Actuated Green, G (s)	35.9	35.9	35.9		5.4	
Effective Green, g (s)	35.9	35.9	35.9		5.4	
Actuated g/C Ratio	0.67	0.67	0.67		0.10	
Clearance Time (s)	6.0	6.0	6.0		6.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	454	2407	2428		160	
v/s Ratio Prot		0.18	c0.20			
v/s Ratio Perm	0.08				c0.01	
v/c Ratio	0.12	0.27	0.30		0.08	
Uniform Delay, d1	3.1	3.5	3.6		21.7	
Progression Factor	1.00	1.00	1.00		1.00	
Incremental Delay, d2	0.1	0.1	0.1		0.2	
Delay (s)	3.2	3.5	3.6		21.9	
Level of Service	A	A	A		C	
Approach Delay (s)		3.5	3.6		21.9	
Approach LOS		A	A		C	

Intersection Summary			
HCM 2000 Control Delay	3.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.27		
Actuated Cycle Length (s)	53.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	62.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

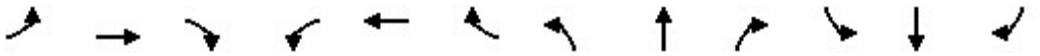


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	170	295	180	315	305	125	130	2220	140	1910
v/c Ratio	0.82	0.39	0.41	0.96	0.27	0.22	0.73	1.05	0.79	0.91
Control Delay	70.7	38.3	13.4	74.8	28.7	5.4	42.9	64.2	50.1	35.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.7	38.3	13.4	74.8	28.7	5.4	42.9	64.2	50.1	35.6
Queue Length 50th (m)	37.1	30.5	8.4	58.1	27.3	0.0	12.5	~232.4	15.0	163.2
Queue Length 95th (m)	63.3	43.3	27.5	#105.8	38.4	12.8	#49.3	#302.2	#55.6	#236.9
Internal Link Dist (m)		334.1			313.0			202.3		436.5
Turn Bay Length (m)	50.0		30.0	50.0		30.0	100.0		100.0	
Base Capacity (vph)	288	1054	560	328	1433	696	178	2111	178	2090
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	0.59	0.28	0.32	0.96	0.21	0.18	0.73	1.05	0.79	0.91

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	170	295	180	315	305	125	130	1950	270	140	1640	270
Future Volume (vph)	170	295	180	315	305	125	130	1950	270	140	1640	270
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	6.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	*0.80		1.00	*0.80	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1625	3539	1562	1743	3610	1564	1745	4389		1745	4339	
Flt Permitted	0.57	1.00	1.00	0.44	1.00	1.00	0.08	1.00		0.08	1.00	
Satd. Flow (perm)	968	3539	1562	814	3610	1564	138	4389		138	4339	
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)	170	295	180	315	305	125	130	1950	270	140	1640	270
RTOR Reduction (vph)	0	0	106	0	0	86	0	11	0	0	15	0
Lane Group Flow (vph)	170	295	74	315	305	39	130	2209	0	140	1895	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	7%	2%	0%	0%	0%	0%	0%	2%	0%	0%	3%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	23.9	23.9	23.9	34.9	34.9	34.9	60.2	53.2		60.2	53.2	
Effective Green, g (s)	23.9	23.9	23.9	34.9	34.9	34.9	60.2	53.2		60.2	53.2	
Actuated g/C Ratio	0.22	0.22	0.22	0.31	0.31	0.31	0.54	0.48		0.54	0.48	
Clearance Time (s)	6.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	208	761	336	314	1134	491	176	2101		176	2077	
v/s Ratio Prot		0.08		c0.06	0.08		0.05	c0.50		c0.05	0.44	
v/s Ratio Perm	0.18		0.05	c0.25		0.03	0.35			0.38		
v/c Ratio	0.82	0.39	0.22	1.00	0.27	0.08	0.74	1.05		0.80	0.91	
Uniform Delay, d1	41.5	37.3	35.9	37.5	28.5	26.8	22.0	28.9		24.8	26.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	21.4	0.3	0.3	51.6	0.1	0.1	14.9	34.7		21.5	7.0	
Delay (s)	62.9	37.7	36.3	89.1	28.7	26.9	36.9	63.7		46.3	33.8	
Level of Service	E	D	D	F	C	C	D	E		D	C	
Approach Delay (s)		43.9			53.9			62.2			34.6	
Approach LOS		D			D			E			C	

Intersection Summary			
HCM 2000 Control Delay	49.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	111.1	Sum of lost time (s)	20.0
Intersection Capacity Utilization	96.9%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	NBL	NBT	SBT
Lane Group Flow (vph)	75	25	2300	2135
v/c Ratio	0.30	0.34	0.65	0.61
Control Delay	37.6	25.2	8.7	8.0
Queue Delay	0.0	0.0	0.1	0.1
Total Delay	37.6	25.2	8.7	8.2
Queue Length 50th (m)	12.8	1.2	70.3	61.2
Queue Length 95th (m)	24.6	#17.7	197.5	173.0
Internal Link Dist (m)	170.8		238.4	202.3
Turn Bay Length (m)	40.0	30.0		
Base Capacity (vph)	574	73	3563	3505
Starvation Cap Reductn	0	0	189	371
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.13	0.34	0.68	0.68

Intersection Summary

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



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	50	25	25	2300	2055	80
Future Volume (vph)	50	25	25	2300	2055	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.5	3.3	3.6	3.6	3.5
Total Lost time (s)	6.0		6.0	6.0	6.0	
Lane Util. Factor	1.00		1.00	*0.80	*0.80	
Frpb, ped/bikes	0.99		1.00	1.00	1.00	
Flpb, ped/bikes	1.00		1.00	1.00	1.00	
Frt	0.95		1.00	1.00	0.99	
Flt Protected	0.97		0.95	1.00	1.00	
Satd. Flow (prot)	1644		1710	4471	4398	
Flt Permitted	0.97		0.05	1.00	1.00	
Satd. Flow (perm)	1644		92	4471	4398	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	50	25	25	2300	2055	80
RTOR Reduction (vph)	11	0	0	0	2	0
Lane Group Flow (vph)	64	0	25	2300	2133	0
Confl. Peds. (#/hr)	5	5	5			5
Confl. Bikes (#/hr)		5				5
Heavy Vehicles (%)	2%	2%	2%	2%	3%	2%
Turn Type	Perm		Perm	NA	NA	
Protected Phases				2	6	
Permitted Phases	4		2			
Actuated Green, G (s)	11.4		77.9	77.9	77.9	
Effective Green, g (s)	11.4		77.9	77.9	77.9	
Actuated g/C Ratio	0.11		0.77	0.77	0.77	
Clearance Time (s)	6.0		6.0	6.0	6.0	
Vehicle Extension (s)	3.0		5.0	5.0	5.0	
Lane Grp Cap (vph)	185		70	3438	3382	
v/s Ratio Prot				c0.51	0.49	
v/s Ratio Perm	c0.04		0.27			
v/c Ratio	0.35		0.36	0.67	0.63	
Uniform Delay, d1	41.5		3.7	5.6	5.2	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	1.1		6.4	0.7	0.5	
Delay (s)	42.7		10.2	6.2	5.8	
Level of Service	D		B	A	A	
Approach Delay (s)	42.7			6.3	5.8	
Approach LOS	D			A	A	

Intersection Summary			
HCM 2000 Control Delay	6.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	101.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	65.7%	ICU Level of Service	C
Analysis Period (min)	15		

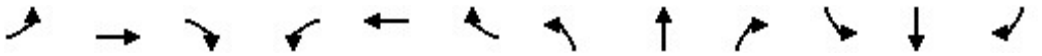
c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	85	75	140	65	150	200	2165	100	170	1795	115
v/c Ratio	0.49	0.25	0.38	0.32	0.48	0.73	0.85	0.11	0.67	0.73	0.13
Control Delay	47.2	37.4	8.8	40.1	31.2	38.5	23.7	6.5	34.2	20.2	7.3
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	47.2	37.4	8.8	40.1	31.2	38.5	23.7	6.5	34.2	20.2	7.3
Queue Length 50th (m)	16.0	13.6	0.0	11.9	19.8	19.7	127.4	2.7	15.4	99.3	4.2
Queue Length 95th (m)	30.5	25.8	15.0	23.8	37.8	#72.9	#283.7	15.4	48.1	192.0	18.2
Internal Link Dist (m)		188.1			109.9		464.0			238.4	
Turn Bay Length (m)	60.0		40.0	60.0		90.0		40.0	70.0		30.0
Base Capacity (vph)	395	687	654	468	655	302	2555	888	320	2494	877
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	0.22	0.11	0.21	0.14	0.23	0.66	0.85	0.11	0.53	0.72	0.13

Intersection Summary

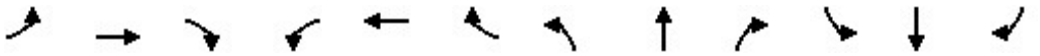
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	85	75	140	65	75	75	200	2165	100	170	1795	115
Future Volume (vph)	85	75	140	65	75	75	200	2165	100	170	1795	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0		4.0	6.0	6.0	4.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	*0.80	1.00	1.00	*0.80	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	0.99		1.00	1.00	0.97	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.93		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1705	1863	1530	1704	1703		1711	4471	1512	1711	4427	1512
Flt Permitted	0.60	1.00	1.00	0.71	1.00		0.07	1.00	1.00	0.07	1.00	1.00
Satd. Flow (perm)	1074	1863	1530	1270	1703		127	4471	1512	130	4427	1512
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)	85	75	140	65	75	75	200	2165	100	170	1795	115
RTOR Reduction (vph)	0	0	117	0	36	0	0	0	27	0	0	28
Lane Group Flow (vph)	85	75	23	65	114	0	200	2165	73	170	1795	87
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		6
Actuated Green, G (s)	15.9	15.9	15.9	15.9	15.9		68.0	56.5	56.5	65.4	55.2	55.2
Effective Green, g (s)	15.9	15.9	15.9	15.9	15.9		68.0	56.5	56.5	65.4	55.2	55.2
Actuated g/C Ratio	0.16	0.16	0.16	0.16	0.16		0.69	0.57	0.57	0.66	0.56	0.56
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		4.0	6.0	6.0	4.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	173	300	246	204	274		272	2561	866	249	2478	846
v/s Ratio Prot		0.04			0.07		c0.09	c0.48		0.07	0.41	
v/s Ratio Perm	c0.08		0.01	0.05			0.42		0.05	0.38		0.06
v/c Ratio	0.49	0.25	0.09	0.32	0.42		0.74	0.85	0.08	0.68	0.72	0.10
Uniform Delay, d1	37.7	36.1	35.2	36.6	37.2		23.5	17.4	9.4	22.2	16.1	10.1
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.2	0.4	0.2	0.9	1.0		9.9	3.0	0.1	7.5	1.3	0.1
Delay (s)	39.9	36.6	35.4	37.5	38.2		33.4	20.5	9.5	29.7	17.4	10.2
Level of Service	D	D	D	D	D		C	C	A	C	B	B
Approach Delay (s)		36.9			38.0			21.1			18.0	
Approach LOS		D			D			C			B	

Intersection Summary			
HCM 2000 Control Delay	21.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	98.6	Sum of lost time (s)	16.0
Intersection Capacity Utilization	90.0%	ICU Level of Service	E
Analysis Period (min)	15		

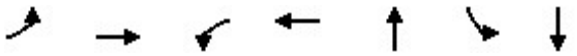
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	140	85	120	5	85	50	35	20	15	20	20	95
Future Volume (Veh/h)	140	85	120	5	85	50	35	20	15	20	20	95
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)	140	85	120	5	85	50	35	20	15	20	20	95
Pedestrians		5			5			5			5	
Lane Width (m)		3.5			3.5			3.5			3.6	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		134										
pX, platoon unblocked												
vC, conflicting volume	140			210			635	580	155	520	615	120
vC1, stage 1 conf vol							430	430		125	125	
vC2, stage 2 conf vol							205	150		395	490	
vCu, unblocked vol	140			210			635	580	155	520	615	120
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	90			100			92	96	98	96	96	90
cM capacity (veh/h)	1437			1355			456	487	884	511	469	924

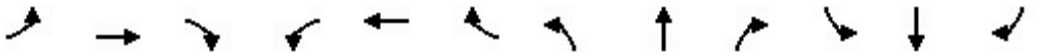
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1
Volume Total	140	205	5	135	35	35	135
Volume Left	140	0	5	0	35	0	20
Volume Right	0	120	0	50	0	15	95
cSH	1437	1700	1355	1700	456	603	731
Volume to Capacity	0.10	0.12	0.00	0.08	0.08	0.06	0.18
Queue Length 95th (m)	2.6	0.0	0.1	0.0	2.0	1.5	5.4
Control Delay (s)	7.8	0.0	7.7	0.0	13.5	11.3	11.0
Lane LOS	A		A		B	B	B
Approach Delay (s)	3.2		0.3		12.4		11.0
Approach LOS					B		B

Intersection Summary				
Average Delay	5.1			
Intersection Capacity Utilization	41.4%	ICU Level of Service		A
Analysis Period (min)	15			



Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	30	735	20	545	90	10	75
v/c Ratio	0.06	0.31	0.05	0.23	0.16	0.03	0.14
Control Delay	9.6	8.2	9.8	7.7	8.4	11.1	9.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.6	8.2	9.8	7.7	8.4	11.1	9.8
Queue Length 50th (m)	1.1	17.3	0.7	12.0	3.2	0.6	3.5
Queue Length 95th (m)	7.1	48.8	5.4	35.2	10.3	2.9	10.0
Internal Link Dist (m)		177.9		126.7	56.9		127.4
Turn Bay Length (m)	30.0		30.0			35.0	
Base Capacity (vph)	803	3574	667	3534	1627	1181	1680
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	0.04	0.21	0.03	0.15	0.06	0.01	0.04

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	735	0	20	540	5	0	50	40	10	55	20
Future Volume (vph)	30	735	0	20	540	5	0	50	40	10	55	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	6.0	6.0		6.0	6.0			6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00			0.93		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)	1706	3574		1707	3533			1722		1707	1778	
Flt Permitted	0.45	1.00		0.37	1.00			1.00		0.70	1.00	
Satd. Flow (perm)	805	3574		669	3533			1722		1255	1778	
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)	30	735	0	20	540	5	0	50	40	10	55	20
RTOR Reduction (vph)	0	0	0	0	0	0	0	31	0	0	14	0
Lane Group Flow (vph)	30	735	0	20	545	0	0	59	0	10	61	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	2%	1%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	24.7	24.7		24.7	24.7			7.6		7.6	7.6	
Effective Green, g (s)	24.7	24.7		24.7	24.7			7.6		7.6	7.6	
Actuated g/C Ratio	0.56	0.56		0.56	0.56			0.17		0.17	0.17	
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	448	1992		373	1969			295		215	305	
v/s Ratio Prot		c0.21			0.15			c0.03			0.03	
v/s Ratio Perm	0.04			0.03						0.01		
v/c Ratio	0.07	0.37		0.05	0.28			0.20		0.05	0.20	
Uniform Delay, d1	4.5	5.5		4.5	5.1			15.7		15.3	15.7	
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.1		0.1	0.1			0.3		0.1	0.3	
Delay (s)	4.6	5.6		4.5	5.2			16.1		15.4	16.1	
Level of Service	A	A		A	A			B		B	B	
Approach Delay (s)		5.5			5.2			16.1			16.0	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	6.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	44.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	45.2%	ICU Level of Service	A
Analysis Period (min)	15		

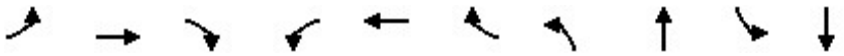
c Critical Lane Group



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	680	0	0	555	0	85
Future Volume (Veh/h)	680	0	0	555	0	85
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	680	0	0	555	0	85
Pedestrians	5			5	5	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	135			202		
pX, platoon unblocked			0.93		0.93	0.93
vC, conflicting volume			685		968	350
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			498		804	136
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	90
cM capacity (veh/h)			979		294	814

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	453	227	278	278	85
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	85
cSH	1700	1700	1700	1700	814
Volume to Capacity	0.27	0.13	0.16	0.16	0.10
Queue Length 95th (m)	0.0	0.0	0.0	0.0	2.8
Control Delay (s)	0.0	0.0	0.0	0.0	9.9
Lane LOS					A
Approach Delay (s)	0.0		0.0		9.9
Approach LOS					A

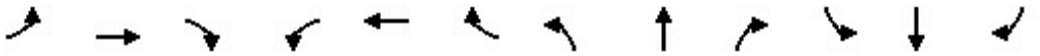
Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	32.4%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	220	315	135	205	230	135	230	2135	110	1540
v/c Ratio	0.70	0.55	0.37	0.76	0.42	0.37	0.79	0.95	0.58	0.79
Control Delay	44.5	43.4	9.0	50.2	41.0	8.9	43.9	35.2	30.5	30.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.5	43.4	9.0	50.2	41.0	8.9	43.9	35.2	30.5	30.0
Queue Length 50th (m)	38.1	32.7	0.0	35.1	23.3	0.0	29.5	160.2	7.6	108.1
Queue Length 95th (m)	59.0	46.1	15.2	55.0	34.6	15.2	#77.2	#283.9	#38.5	#200.8
Internal Link Dist (m)		334.1			111.1			202.3		436.5
Turn Bay Length (m)	50.0		30.0	50.0		30.0	100.0		100.0	
Base Capacity (vph)	314	1138	585	270	1084	590	352	2253	191	1960
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	0.70	0.28	0.23	0.76	0.21	0.23	0.65	0.95	0.58	0.79

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	220	315	135	205	230	135	230	1880	255	110	1450	90
Future Volume (vph)	220	315	135	205	230	135	230	1880	255	110	1450	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	*0.80		1.00	*0.80	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1741	3574	1544	1743	3406	1560	1662	4385		1745	4391	
Flt Permitted	0.60	1.00	1.00	0.46	1.00	1.00	0.08	1.00		0.09	1.00	
Satd. Flow (perm)	1096	3574	1544	852	3406	1560	139	4385		158	4391	
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)	220	315	135	205	230	135	230	1880	255	110	1450	90
RTOR Reduction (vph)	0	0	113	0	0	113	0	11	0	0	4	0
Lane Group Flow (vph)	220	315	22	205	230	22	230	2124	0	110	1536	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	0%	1%	1%	0%	6%	0%	5%	2%	1%	0%	3%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	23.7	16.7	16.7	23.7	16.7	16.7	64.3	53.3		53.4	46.4	
Effective Green, g (s)	23.7	16.7	16.7	23.7	16.7	16.7	64.3	53.3		53.4	46.4	
Actuated g/C Ratio	0.23	0.16	0.16	0.23	0.16	0.16	0.62	0.51		0.51	0.45	
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	293	573	247	254	546	250	289	2247		187	1959	
v/s Ratio Prot	0.05	0.09		c0.05	0.07		c0.11	c0.48		0.04	0.35	
v/s Ratio Perm	0.12		0.01	c0.13		0.01	0.39			0.26		
v/c Ratio	0.75	0.55	0.09	0.81	0.42	0.09	0.80	0.95		0.59	0.78	
Uniform Delay, d1	36.1	40.2	37.2	36.6	39.3	37.2	27.2	24.0		20.7	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	10.3	1.1	0.2	16.9	0.5	0.2	14.0	9.4		4.7	2.5	
Delay (s)	46.4	41.3	37.3	53.4	39.8	37.3	41.2	33.4		25.4	27.0	
Level of Service	D	D	D	D	D	D	D	C		C	C	
Approach Delay (s)		42.2			44.1			34.2			26.9	
Approach LOS		D			D			C			C	

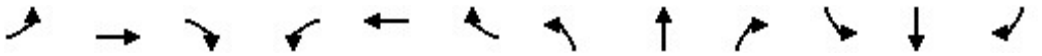
Intersection Summary			
HCM 2000 Control Delay	34.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	104.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	88.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	NBL	NBT	SBT
Lane Group Flow (vph)	80	20	25	2285	1790
v/c Ratio	0.36	0.04	0.11	0.68	0.57
Control Delay	36.3	0.2	6.6	10.4	11.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	36.3	0.2	6.6	10.4	11.9
Queue Length 50th (m)	11.2	0.0	0.8	71.2	45.7
Queue Length 95th (m)	26.0	0.0	5.6	198.2	164.7
Internal Link Dist (m)		170.8		238.4	202.3
Turn Bay Length (m)	40.0		30.0		
Base Capacity (vph)	529	746	218	3357	3114
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	0.15	0.03	0.11	0.68	0.57

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	0	20	0	0	0	25	2285	0	0	1760	30
Future Volume (vph)	80	0	20	0	0	0	25	2285	0	0	1760	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	6.0	6.0					4.0	6.0			6.0	
Lane Util. Factor	1.00	1.00					1.00	*0.80			*0.80	
Frpb, ped/bikes	1.00	0.98					1.00	1.00			1.00	
Flpb, ped/bikes	1.00	1.00					1.00	1.00			1.00	
Frt	1.00	0.85					1.00	1.00			1.00	
Flt Protected	0.95	1.00					0.95	1.00			1.00	
Satd. Flow (prot)	1704	1545					1711	4471			4414	
Flt Permitted	0.76	1.00					0.06	1.00			1.00	
Satd. Flow (perm)	1358	1545					114	4471			4414	
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)	80	0	20	0	0	0	25	2285	0	0	1760	30
RTOR Reduction (vph)	0	17	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	80	3	0	0	0	0	25	2285	0	0	1789	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%
Turn Type	Perm	NA		pm+pt			pm+pt	NA		pm+pt	NA	
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	12.0	12.0					65.9	65.9			59.4	
Effective Green, g (s)	12.0	12.0					65.9	65.9			59.4	
Actuated g/C Ratio	0.13	0.13					0.73	0.73			0.66	
Clearance Time (s)	6.0	6.0					4.0	6.0			6.0	
Vehicle Extension (s)	3.0	3.0					3.0	5.0			5.0	
Lane Grp Cap (vph)	181	206					127	3277			2916	
v/s Ratio Prot		0.00					0.01	c0.51			0.41	
v/s Ratio Perm	c0.06						0.14					
v/c Ratio	0.44	0.01					0.20	0.70			0.61	
Uniform Delay, d1	35.9	33.8					5.8	6.6			8.7	
Progression Factor	1.00	1.00					1.00	1.00			1.00	
Incremental Delay, d2	1.7	0.0					0.8	0.8			0.6	
Delay (s)	37.6	33.8					6.5	7.4			9.3	
Level of Service	D	C					A	A			A	
Approach Delay (s)		36.8			0.0			7.4			9.3	
Approach LOS		D			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	8.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	89.9	Sum of lost time (s)	20.0
Intersection Capacity Utilization	67.8%	ICU Level of Service	C
Analysis Period (min)	15		

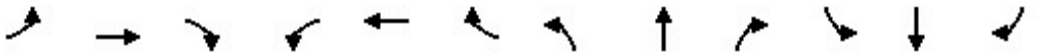
c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	155	90	195	85	145	90	2095	120	100	1560	120
v/c Ratio	0.68	0.25	0.43	0.24	0.29	0.47	0.94	0.15	0.53	0.67	0.14
Control Delay	53.5	36.2	7.8	26.5	21.6	22.0	36.4	5.9	25.6	23.2	5.9
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	53.5	36.2	7.8	26.5	21.6	22.0	36.4	5.9	25.6	23.2	5.9
Queue Length 50th (m)	30.9	16.4	0.0	12.9	17.5	7.1	169.6	2.1	7.9	103.5	2.1
Queue Length 95th (m)	52.1	30.0	17.4	23.9	32.6	23.7	#284.6	14.7	#31.9	167.3	14.7
Internal Link Dist (m)		188.1			109.9		464.0			238.4	
Turn Bay Length (m)	60.0		40.0	60.0		90.0		40.0	70.0		30.0
Base Capacity (vph)	426	666	673	352	828	190	2221	799	190	2317	836
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	0.36	0.14	0.29	0.24	0.18	0.47	0.94	0.15	0.53	0.67	0.14

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	155	90	195	85	85	60	90	2095	120	100	1560	120
Future Volume (vph)	155	90	195	85	85	60	90	2095	120	100	1560	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	6.0	6.0	6.0	4.0	6.0		4.0	6.0	6.0	4.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	*0.80	1.00	1.00	*0.80	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	0.99		1.00	1.00	0.96	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	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.94		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1705	1863	1531	1707	1733		1711	4471	1511	1711	4427	1511
Flt Permitted	0.66	1.00	1.00	0.58	1.00		0.08	1.00	1.00	0.07	1.00	1.00
Satd. Flow (perm)	1193	1863	1531	1043	1733		139	4471	1511	135	4427	1511
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	155	90	195	85	85	60	90	2095	120	100	1560	120
RTOR Reduction (vph)	0	0	158	0	25	0	0	0	50	0	0	49
Lane Group Flow (vph)	155	90	37	85	120	0	90	2095	70	100	1560	71
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%
Turn Type	Perm	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		6
Actuated Green, G (s)	19.6	19.6	19.6	29.0	29.0		57.1	51.7	51.7	60.5	53.4	53.4
Effective Green, g (s)	19.6	19.6	19.6	29.0	29.0		57.1	51.7	51.7	60.5	53.4	53.4
Actuated g/C Ratio	0.19	0.19	0.19	0.28	0.28		0.55	0.50	0.50	0.58	0.51	0.51
Clearance Time (s)	6.0	6.0	6.0	4.0	6.0		4.0	6.0	6.0	4.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	225	351	289	325	484		158	2226	752	186	2277	777
v/s Ratio Prot		0.05		0.01	c0.07		0.03	c0.47		c0.04	0.35	
v/s Ratio Perm	c0.13		0.02	0.06			0.28		0.05	0.28		0.05
v/c Ratio	0.69	0.26	0.13	0.26	0.25		0.57	0.94	0.09	0.54	0.69	0.09
Uniform Delay, d1	39.3	35.9	35.0	28.4	29.0		14.5	24.6	13.7	20.6	18.9	12.8
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	8.5	0.4	0.2	0.4	0.3		4.7	9.1	0.1	3.0	1.1	0.1
Delay (s)	47.7	36.3	35.2	28.9	29.2		19.1	33.7	13.8	23.5	20.0	13.0
Level of Service	D	D	D	C	C		B	C	B	C	C	B
Approach Delay (s)		39.8			29.1			32.1			19.7	
Approach LOS		D			C			C			B	

Intersection Summary			
HCM 2000 Control Delay	28.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	103.8	Sum of lost time (s)	20.0
Intersection Capacity Utilization	84.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	NBT	SBT
Lane Group Flow (vph)	90	75
v/c Ratio	0.05	0.04
Control Delay	3.1	3.2
Queue Delay	0.0	0.0
Total Delay	3.1	3.2
Queue Length 50th (m)	0.0	0.0
Queue Length 95th (m)	11.0	9.5
Internal Link Dist (m)	51.4	61.3
Turn Bay Length (m)		
Base Capacity (vph)	1691	1691
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.05	0.04

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	90	75	0
Future Volume (vph)	0	0	0	90	75	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.3	3.6	3.6	3.6
Total Lost time (s)				6.0	6.0	
Lane Util. Factor				1.00	1.00	
Frpb, ped/bikes				1.00	1.00	
Flpb, ped/bikes				1.00	1.00	
Frt				1.00	1.00	
Flt Protected				1.00	1.00	
Satd. Flow (prot)				1863	1863	
Flt Permitted				1.00	1.00	
Satd. Flow (perm)				1863	1863	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	90	75	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	90	75	0
Confl. Peds. (#/hr)	5	5	5			5
Confl. Bikes (#/hr)		5				5
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases			2			
Actuated Green, G (s)				36.2	36.2	
Effective Green, g (s)				36.2	36.2	
Actuated g/C Ratio				0.71	0.71	
Clearance Time (s)				6.0	6.0	
Vehicle Extension (s)				3.0	3.0	
Lane Grp Cap (vph)				1330	1330	
v/s Ratio Prot				c0.05	0.04	
v/s Ratio Perm						
v/c Ratio				0.07	0.06	
Uniform Delay, d1				2.2	2.2	
Progression Factor				1.00	1.00	
Incremental Delay, d2				0.0	0.0	
Delay (s)				2.2	2.2	
Level of Service				A	A	
Approach Delay (s)	0.0			2.2	2.2	
Approach LOS	A			A	A	

Intersection Summary			
HCM 2000 Control Delay	2.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.06		
Actuated Cycle Length (s)	50.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	36.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	NBT	SBT
Lane Group Flow (vph)	90	75
v/c Ratio	0.05	0.04
Control Delay	3.1	3.2
Queue Delay	0.0	0.0
Total Delay	3.1	3.2
Queue Length 50th (m)	0.0	0.0
Queue Length 95th (m)	11.0	9.5
Internal Link Dist (m)	34.1	29.1
Turn Bay Length (m)		
Base Capacity (vph)	1691	1691
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.05	0.04

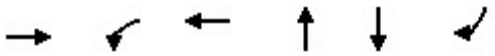
Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	90	75	0
Future Volume (vph)	0	0	0	90	75	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.0	6.0	
Lane Util. Factor				1.00	1.00	
Frpb, ped/bikes				1.00	1.00	
Flpb, ped/bikes				1.00	1.00	
Frt				1.00	1.00	
Flt Protected				1.00	1.00	
Satd. Flow (prot)				1863	1863	
Flt Permitted				1.00	1.00	
Satd. Flow (perm)				1863	1863	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	90	75	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	90	75	0
Confl. Peds. (#/hr)	5	5	5			5
Confl. Bikes (#/hr)		5				5
Turn Type	Prot			NA	NA	
Protected Phases	4			2	6	
Permitted Phases			2			
Actuated Green, G (s)				36.2	36.2	
Effective Green, g (s)				36.2	36.2	
Actuated g/C Ratio				0.71	0.71	
Clearance Time (s)				6.0	6.0	
Vehicle Extension (s)				3.0	3.0	
Lane Grp Cap (vph)				1330	1330	
v/s Ratio Prot				c0.05	0.04	
v/s Ratio Perm						
v/c Ratio				0.07	0.06	
Uniform Delay, d1				2.2	2.2	
Progression Factor				1.00	1.00	
Incremental Delay, d2				0.0	0.0	
Delay (s)				2.2	2.2	
Level of Service				A	A	
Approach Delay (s)	0.0			2.2	2.2	
Approach LOS	A			A	A	

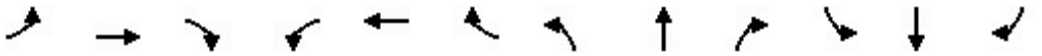
Intersection Summary			
HCM 2000 Control Delay	2.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.06		
Actuated Cycle Length (s)	50.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	36.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



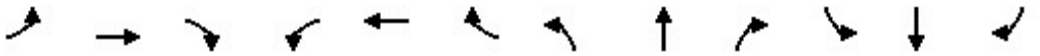
Lane Group	EBT	WBL	WBT	NBT	SBT	SBR
Lane Group Flow (vph)	315	10	220	105	65	10
v/c Ratio	0.25	0.01	0.18	0.23	0.14	0.02
Control Delay	7.8	7.9	6.8	10.5	12.4	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.8	7.9	6.8	10.5	12.4	0.1
Queue Length 50th (m)	13.4	0.4	7.8	4.6	3.9	0.0
Queue Length 95th (m)	37.0	2.8	23.9	12.8	10.3	0.0
Internal Link Dist (m)	95.3		62.1	101.3	47.0	
Turn Bay Length (m)		60.0				
Base Capacity (vph)	1342	738	1306	940	985	934
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.01	0.17	0.11	0.07	0.01

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	305	10	10	175	45	30	45	30	15	50	10
Future Volume (vph)	0	305	10	10	175	45	30	45	30	15	50	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.3	3.6	3.6	3.6	3.6	3.6	3.3	3.6	3.6
Total Lost time (s)		6.0		6.0	6.0			6.0			6.0	6.0
Lane Util. Factor		1.00		1.00	1.00			1.00			1.00	1.00
Frpb, ped/bikes		1.00		1.00	0.99			0.99			1.00	0.96
Flpb, ped/bikes		1.00		1.00	1.00			1.00			1.00	1.00
Frt		1.00		1.00	0.97			0.96			1.00	0.85
Flt Protected		1.00		0.95	1.00			0.99			0.99	1.00
Satd. Flow (prot)		1852		1704	1795			1744			1839	1524
Flt Permitted		1.00		0.57	1.00			0.88			0.89	1.00
Satd. Flow (perm)		1852		1021	1795			1558			1655	1524
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)	0	305	10	10	175	45	30	45	30	15	50	10
RTOR Reduction (vph)	0	1	0	0	11	0	0	25	0	0	0	8
Lane Group Flow (vph)	0	314	0	10	209	0	0	80	0	0	65	2
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		24.9		24.9	24.9			6.9			6.9	6.9
Effective Green, g (s)		24.9		24.9	24.9			6.9			6.9	6.9
Actuated g/C Ratio		0.57		0.57	0.57			0.16			0.16	0.16
Clearance Time (s)		6.0		6.0	6.0			6.0			6.0	6.0
Vehicle Extension (s)		3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)		1052		580	1020			245			260	240
v/s Ratio Prot		c0.17			0.12							
v/s Ratio Perm				0.01				c0.05			0.04	0.00
v/c Ratio		0.30		0.02	0.20			0.33			0.25	0.01
Uniform Delay, d1		4.9		4.1	4.6			16.4			16.2	15.6
Progression Factor		1.00		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2		0.2		0.0	0.1			0.8			0.5	0.0
Delay (s)		5.1		4.1	4.7			17.2			16.7	15.6
Level of Service		A		A	A			B			B	B
Approach Delay (s)		5.1			4.7			17.2			16.5	
Approach LOS		A			A			B			B	

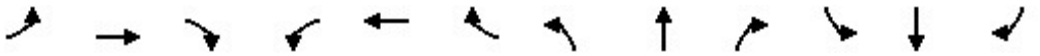
Intersection Summary			
HCM 2000 Control Delay	7.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	43.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	50.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	0	0	0	0	0	0	0	85	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0	0	85	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)	0	0	0	0	0	0	0	85	0	0	0	0

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	0	0	85	0
Volume Left (vph)	0	0	0	0
Volume Right (vph)	0	0	0	0
Hadj (s)	0.00	0.00	0.03	0.00
Departure Headway (s)	4.1	4.1	3.9	4.0
Degree Utilization, x	0.00	0.00	0.09	0.00
Capacity (veh/h)	873	873	902	900
Control Delay (s)	7.1	7.1	7.3	7.0
Approach Delay (s)	0.0	0.0	7.3	0.0
Approach LOS	A	A	A	A

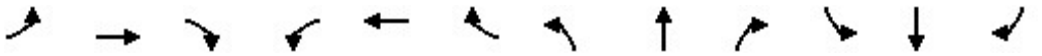
Intersection Summary				
Delay	7.3			
Level of Service	A			
Intersection Capacity Utilization	17.4%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	0	0	0	0	85	0	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	0	0	85	0	0	0	0
Sign Control		Stop			Stop			Free			Free	
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)	0	0	0	0	0	0	0	85	0	0	0	0
Pedestrians		5			5			5			5	
Lane Width (m)		3.6			3.6			3.6			3.6	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	95	95	10	95	95	95	5			90		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	95	95	10	95	95	95	5			90		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	100	100	100			100		
cM capacity (veh/h)	875	788	1062	875	788	954	1610			1499		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	0	0	85	0
Volume Left	0	0	0	0
Volume Right	0	0	0	0
cSH	1700	1700	1610	1700
Volume to Capacity	0.17	0.09	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0
Lane LOS	A	A		
Approach Delay (s)	0.0	0.0	0.0	0.0
Approach LOS	A	A		

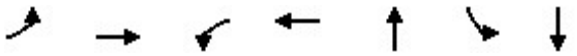
Intersection Summary				
Average Delay	0.0			
Intersection Capacity Utilization	17.4%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	265	45	20	195	0	35	85	50	0	0	0
Future Volume (Veh/h)	0	265	45	20	195	0	35	85	50	0	0	0
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)	0	265	45	20	195	0	35	85	50	0	0	0
Pedestrians		5			5			5			5	
Lane Width (m)		3.5			3.5			3.5			3.6	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		134			119							
pX, platoon unblocked				0.98			0.98	0.98	0.98	0.98	0.98	
vC, conflicting volume	200			315			532	532	298	602	555	205
vC1, stage 1 conf vol							292	292		240	240	
vC2, stage 2 conf vol							240	240		362	315	
vCu, unblocked vol	200			290			512	512	272	584	535	205
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			94	86	93	100	100	100
cM capacity (veh/h)	1366			1241			624	588	745	484	570	829

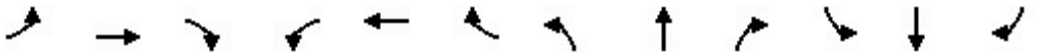
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1
Volume Total	0	310	20	195	35	135	0
Volume Left	0	0	20	0	35	0	0
Volume Right	0	45	0	0	0	50	0
cSH	1700	1700	1241	1700	624	638	1700
Volume to Capacity	0.00	0.18	0.02	0.11	0.06	0.21	0.56
Queue Length 95th (m)	0.0	0.0	0.4	0.0	1.4	6.4	0.0
Control Delay (s)	0.0	0.0	7.9	0.0	11.1	12.2	0.0
Lane LOS			A		B	B	A
Approach Delay (s)	0.0		0.7		11.9		0.0
Approach LOS					B		A

Intersection Summary			
Average Delay	3.1		
Intersection Capacity Utilization	32.0%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	55	620	50	680	70	10	80
v/c Ratio	0.12	0.27	0.08	0.27	0.14	0.03	0.16
Control Delay	14.3	11.1	6.6	6.8	12.1	15.6	13.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.3	11.1	6.6	6.8	12.1	15.6	13.8
Queue Length 50th (m)	2.1	14.1	1.6	15.6	2.8	0.6	4.0
Queue Length 95th (m)	15.0	53.2	8.4	42.7	12.0	3.8	14.4
Internal Link Dist (m)		177.9		126.7	56.9		127.4
Turn Bay Length (m)	30.0		30.0			35.0	
Base Capacity (vph)	646	3284	1052	3605	1323	958	1346
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	0.09	0.19	0.05	0.19	0.05	0.01	0.06

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	620	0	50	675	5	0	45	25	10	60	20
Future Volume (vph)	55	620	0	50	675	5	0	45	25	10	60	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	6.0	6.0		4.0	6.0			6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00			0.95		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)	1706	3574		1709	3605			1749		1706	1783	
Flt Permitted	0.39	1.00		0.36	1.00			1.00		0.71	1.00	
Satd. Flow (perm)	706	3574		649	3605			1749		1277	1783	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	55	620	0	50	675	5	0	45	25	10	60	20
RTOR Reduction (vph)	0	0	0	0	0	0	0	20	0	0	12	0
Lane Group Flow (vph)	55	620	0	50	680	0	0	50	0	10	68	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	2%	1%	2%	2%	0%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	25.8	25.8		32.0	32.0			7.3		7.3	7.3	
Effective Green, g (s)	25.8	25.8		32.0	32.0			7.3		7.3	7.3	
Actuated g/C Ratio	0.50	0.50		0.62	0.62			0.14		0.14	0.14	
Clearance Time (s)	6.0	6.0		4.0	6.0			6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	355	1797		450	2248			248		181	253	
v/s Ratio Prot		c0.17		0.00	c0.19			0.03			c0.04	
v/s Ratio Perm	0.08			0.06						0.01		
v/c Ratio	0.15	0.35		0.11	0.30			0.20		0.06	0.27	
Uniform Delay, d1	6.9	7.7		3.9	4.5			19.4		19.0	19.6	
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.1		0.1	0.1			0.4		0.1	0.6	
Delay (s)	7.1	7.8		4.0	4.6			19.8		19.1	20.2	
Level of Service	A	A		A	A			B		B	C	
Approach Delay (s)		7.7			4.5			19.8			20.1	
Approach LOS		A			A			B			C	

Intersection Summary			
HCM 2000 Control Delay	7.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	51.3	Sum of lost time (s)	16.0
Intersection Capacity Utilization	60.7%	ICU Level of Service	B
Analysis Period (min)	15		

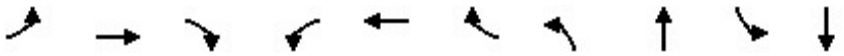
c Critical Lane Group



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	610	0	0	690	0	65
Future Volume (Veh/h)	610	0	0	690	0	65
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	610	0	0	690	0	65
Pedestrians	5			5	5	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	135			202		
pX, platoon unblocked			0.94		0.95	0.94
vC, conflicting volume			615		965	315
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			451		693	131
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	92
cM capacity (veh/h)			1030		357	830

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	407	203	345	345	65
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	65
cSH	1700	1700	1700	1700	830
Volume to Capacity	0.24	0.12	0.20	0.20	0.08
Queue Length 95th (m)	0.0	0.0	0.0	0.0	2.0
Control Delay (s)	0.0	0.0	0.0	0.0	9.7
Lane LOS					A
Approach Delay (s)	0.0		0.0		9.7
Approach LOS					A

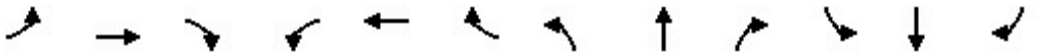
Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	30.6%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	170	280	180	280	295	125	135	2000	145	1855
v/c Ratio	0.56	0.51	0.48	0.84	0.52	0.36	0.70	0.96	0.67	0.88
Control Delay	34.7	42.7	12.5	53.5	42.7	9.2	38.1	40.2	32.8	30.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.7	42.7	12.5	53.5	42.7	9.2	38.1	40.2	32.8	30.4
Queue Length 50th (m)	27.4	28.7	4.0	48.2	30.4	0.0	10.2	156.2	11.4	131.2
Queue Length 95th (m)	44.3	41.3	22.1	72.1	43.2	14.8	#52.6	#275.0	#50.7	#236.9
Internal Link Dist (m)		334.1			111.1			202.3		436.5
Turn Bay Length (m)	50.0		30.0	50.0		30.0	100.0		100.0	
Base Capacity (vph)	309	1133	607	333	1156	585	192	2080	226	2117
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	0.55	0.25	0.30	0.84	0.26	0.21	0.70	0.96	0.64	0.88

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	170	280	180	280	295	125	135	1815	185	145	1585	270
Future Volume (vph)	170	280	180	280	295	125	135	1815	185	145	1585	270
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	*0.80		1.00	*0.80	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1628	3539	1559	1742	3610	1559	1745	4409		1745	4337	
Flt Permitted	0.50	1.00	1.00	0.51	1.00	1.00	0.08	1.00		0.08	1.00	
Satd. Flow (perm)	863	3539	1559	928	3610	1559	151	4409		146	4337	
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)	170	280	180	280	295	125	135	1815	185	145	1585	270
RTOR Reduction (vph)	0	0	133	0	0	105	0	7	0	0	14	0
Lane Group Flow (vph)	170	280	47	280	295	20	135	1993	0	145	1841	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	7%	2%	0%	0%	0%	0%	0%	2%	0%	0%	3%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	26.0	16.2	16.2	26.6	16.5	16.5	55.7	48.7		58.9	50.3	
Effective Green, g (s)	26.0	16.2	16.2	26.6	16.5	16.5	55.7	48.7		58.9	50.3	
Actuated g/C Ratio	0.25	0.16	0.16	0.26	0.16	0.16	0.54	0.47		0.57	0.49	
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	288	553	243	317	574	248	188	2072		215	2105	
v/s Ratio Prot	0.06	0.08		c0.09	0.08		0.05	c0.45		c0.06	0.42	
v/s Ratio Perm	0.09		0.03	c0.14		0.01	0.34			0.33		
v/c Ratio	0.59	0.51	0.19	0.88	0.51	0.08	0.72	0.96		0.67	0.87	
Uniform Delay, d1	32.5	40.0	38.0	35.3	39.9	37.1	19.3	26.5		20.9	23.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.2	0.7	0.4	23.9	0.8	0.1	12.3	12.2		8.1	4.7	
Delay (s)	35.7	40.8	38.4	59.1	40.7	37.2	31.6	38.8		29.0	28.6	
Level of Service	D	D	D	E	D	D	C	D		C	C	
Approach Delay (s)		38.7			47.4			38.3			28.6	
Approach LOS		D			D			D			C	

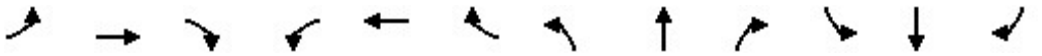
Intersection Summary			
HCM 2000 Control Delay	36.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	103.6	Sum of lost time (s)	20.0
Intersection Capacity Utilization	90.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	NBL	NBT	SBT
Lane Group Flow (vph)	50	25	25	2085	2045
v/c Ratio	0.24	0.07	0.12	0.60	0.63
Control Delay	39.4	0.4	5.9	8.1	11.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	39.4	0.4	5.9	8.1	11.9
Queue Length 50th (m)	8.1	0.0	0.8	58.0	56.5
Queue Length 95th (m)	20.1	0.0	5.4	163.1	204.7
Internal Link Dist (m)		170.8		238.4	202.3
Turn Bay Length (m)	40.0		30.0		
Base Capacity (vph)	522	666	212	3494	3256
Starvation Cap Reductn	0	0	0	0	62
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.10	0.04	0.12	0.60	0.64

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	0	25	0	0	0	25	2085	0	0	1965	80
Future Volume (vph)	50	0	25	0	0	0	25	2085	0	0	1965	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	6.0	6.0					4.0	6.0			6.0	
Lane Util. Factor	1.00	1.00					1.00	*0.80			*0.80	
Frpb, ped/bikes	1.00	0.97					1.00	1.00			1.00	
Flpb, ped/bikes	1.00	1.00					1.00	1.00			1.00	
Frt	1.00	0.85					1.00	1.00			0.99	
Flt Protected	0.95	1.00					0.95	1.00			1.00	
Satd. Flow (prot)	1703	1543					1711	4471			4397	
Flt Permitted	0.76	1.00					0.06	1.00			1.00	
Satd. Flow (perm)	1358	1543					104	4471			4397	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	50	0	25	0	0	0	25	2085	0	0	1965	80
RTOR Reduction (vph)	0	22	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	50	3	0	0	0	0	25	2085	0	0	2043	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%
Turn Type	Perm	NA		Perm			pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	11.0	11.0					71.9	71.9			65.5	
Effective Green, g (s)	11.0	11.0					71.9	71.9			65.5	
Actuated g/C Ratio	0.12	0.12					0.76	0.76			0.69	
Clearance Time (s)	6.0	6.0					4.0	6.0			6.0	
Vehicle Extension (s)	3.0	3.0					3.0	5.0			5.0	
Lane Grp Cap (vph)	157	178					119	3387			3034	
v/s Ratio Prot		0.00					0.01	c0.47			c0.46	
v/s Ratio Perm	c0.04						0.15					
v/c Ratio	0.32	0.02					0.21	0.62			0.67	
Uniform Delay, d1	38.5	37.2					6.6	5.2			8.5	
Progression Factor	1.00	1.00					1.00	1.00			1.00	
Incremental Delay, d2	1.2	0.0					0.9	0.5			0.8	
Delay (s)	39.7	37.2					7.4	5.7			9.3	
Level of Service	D	D					A	A			A	
Approach Delay (s)		38.9			0.0			5.7			9.3	
Approach LOS		D			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	8.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	94.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	62.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	85	70	140	45	105	200	1995	25	145	1730	115
v/c Ratio	0.43	0.23	0.38	0.15	0.25	0.78	0.84	0.03	0.71	0.78	0.14
Control Delay	43.0	36.7	8.9	26.4	23.9	42.6	25.7	0.1	37.9	25.4	5.8
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	43.0	36.7	8.9	26.4	23.9	42.6	25.7	0.1	37.9	25.4	5.8
Queue Length 50th (m)	15.9	12.6	0.0	6.7	13.3	21.8	132.9	0.0	10.9	112.7	1.4
Queue Length 95th (m)	29.9	24.4	15.0	14.5	25.7	#83.8	#263.3	0.0	#60.1	#220.9	14.4
Internal Link Dist (m)		188.1			109.9		464.0			238.4	
Turn Bay Length (m)	60.0		40.0	60.0		90.0		40.0	70.0		30.0
Base Capacity (vph)	471	711	672	301	894	258	2372	846	205	2207	801
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	0.10	0.21	0.15	0.12	0.78	0.84	0.03	0.71	0.78	0.14

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	85	70	140	45	75	30	200	1995	25	145	1730	115
Future Volume (vph)	85	70	140	45	75	30	200	1995	25	145	1730	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	6.0	6.0	6.0	4.0	6.0		4.0	6.0	6.0	4.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	*0.80	1.00	1.00	*0.80	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	0.99		1.00	1.00	0.97	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1705	1863	1530	1707	1772		1711	4471	1512	1711	4427	1512
Flt Permitted	0.69	1.00	1.00	0.57	1.00		0.08	1.00	1.00	0.08	1.00	1.00
Satd. Flow (perm)	1237	1863	1530	1016	1772		141	4471	1512	150	4427	1512
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)	85	70	140	45	75	30	200	1995	25	145	1730	115
RTOR Reduction (vph)	0	0	118	0	15	0	0	0	12	0	0	51
Lane Group Flow (vph)	85	70	22	45	90	0	200	1995	13	145	1730	64
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%
Turn Type	Perm	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		6
Actuated Green, G (s)	15.5	15.5	15.5	23.4	23.4		61.2	51.0	51.0	55.0	47.9	47.9
Effective Green, g (s)	15.5	15.5	15.5	23.4	23.4		61.2	51.0	51.0	55.0	47.9	47.9
Actuated g/C Ratio	0.16	0.16	0.16	0.24	0.24		0.63	0.52	0.52	0.56	0.49	0.49
Clearance Time (s)	6.0	6.0	6.0	4.0	6.0		4.0	6.0	6.0	4.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	196	296	243	271	425		252	2338	790	198	2174	742
v/s Ratio Prot		0.04		0.01	c0.05		c0.08	c0.45		0.05	0.39	
v/s Ratio Perm	c0.07		0.01	0.03			0.41		0.01	0.36		0.04
v/c Ratio	0.43	0.24	0.09	0.17	0.21		0.79	0.85	0.02	0.73	0.80	0.09
Uniform Delay, d1	37.0	35.8	35.0	29.0	29.7		23.6	20.0	11.2	17.5	20.7	13.2
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.5	0.4	0.2	0.3	0.2		15.7	3.6	0.0	13.1	2.4	0.1
Delay (s)	38.6	36.2	35.2	29.3	29.9		39.3	23.6	11.2	30.6	23.1	13.3
Level of Service	D	D	D	C	C		D	C	B	C	C	B
Approach Delay (s)		36.4			29.7			24.9			23.1	
Approach LOS		D			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	25.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	97.5	Sum of lost time (s)	20.0
Intersection Capacity Utilization	74.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	NBT	SBT
Lane Group Flow (vph)	70	110
v/c Ratio	0.04	0.07
Control Delay	3.2	3.1
Queue Delay	0.0	0.0
Total Delay	3.2	3.1
Queue Length 50th (m)	0.0	0.0
Queue Length 95th (m)	9.1	12.9
Internal Link Dist (m)	51.4	61.3
Turn Bay Length (m)		
Base Capacity (vph)	1691	1691
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.04	0.07

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	70	110	0
Future Volume (vph)	0	0	0	70	110	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.3	3.6	3.6	3.6
Total Lost time (s)				6.0	6.0	
Lane Util. Factor				1.00	1.00	
Frpb, ped/bikes				1.00	1.00	
Flpb, ped/bikes				1.00	1.00	
Frt				1.00	1.00	
Flt Protected				1.00	1.00	
Satd. Flow (prot)				1863	1863	
Flt Permitted				1.00	1.00	
Satd. Flow (perm)				1863	1863	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	70	110	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	70	110	0
Confl. Peds. (#/hr)	5	5	5			5
Confl. Bikes (#/hr)		5				5
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases			2			
Actuated Green, G (s)				36.2	36.2	
Effective Green, g (s)				36.2	36.2	
Actuated g/C Ratio				0.71	0.71	
Clearance Time (s)				6.0	6.0	
Vehicle Extension (s)				3.0	3.0	
Lane Grp Cap (vph)				1330	1330	
v/s Ratio Prot				0.04	c0.06	
v/s Ratio Perm						
v/c Ratio				0.05	0.08	
Uniform Delay, d1				2.2	2.2	
Progression Factor				1.00	1.00	
Incremental Delay, d2				0.0	0.0	
Delay (s)				2.2	2.2	
Level of Service				A	A	
Approach Delay (s)	0.0			2.2	2.2	
Approach LOS	A			A	A	

Intersection Summary			
HCM 2000 Control Delay	2.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.08		
Actuated Cycle Length (s)	50.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	36.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	NBT	SBT
Lane Group Flow (vph)	70	110
v/c Ratio	0.04	0.07
Control Delay	3.2	3.1
Queue Delay	0.0	0.0
Total Delay	3.2	3.1
Queue Length 50th (m)	0.0	0.0
Queue Length 95th (m)	9.1	12.9
Internal Link Dist (m)	34.1	29.1
Turn Bay Length (m)		
Base Capacity (vph)	1691	1691
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.04	0.07

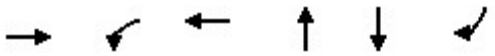
Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	70	110	0
Future Volume (vph)	0	0	0	70	110	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.0	6.0	
Lane Util. Factor				1.00	1.00	
Frpb, ped/bikes				1.00	1.00	
Flpb, ped/bikes				1.00	1.00	
Frt				1.00	1.00	
Flt Protected				1.00	1.00	
Satd. Flow (prot)				1863	1863	
Flt Permitted				1.00	1.00	
Satd. Flow (perm)				1863	1863	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	70	110	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	70	110	0
Confl. Peds. (#/hr)	5	5	5			5
Confl. Bikes (#/hr)		5				5
Turn Type	Prot			NA	NA	
Protected Phases	4			2	6	
Permitted Phases			2			
Actuated Green, G (s)				36.2	36.2	
Effective Green, g (s)				36.2	36.2	
Actuated g/C Ratio				0.71	0.71	
Clearance Time (s)				6.0	6.0	
Vehicle Extension (s)				3.0	3.0	
Lane Grp Cap (vph)				1330	1330	
v/s Ratio Prot				0.04	c0.06	
v/s Ratio Perm						
v/c Ratio				0.05	0.08	
Uniform Delay, d1				2.2	2.2	
Progression Factor				1.00	1.00	
Incremental Delay, d2				0.0	0.0	
Delay (s)				2.2	2.2	
Level of Service				A	A	
Approach Delay (s)	0.0			2.2	2.2	
Approach LOS	A			A	A	

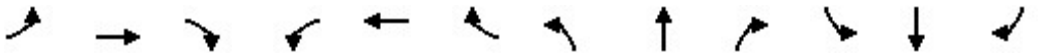
Intersection Summary			
HCM 2000 Control Delay	2.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.08		
Actuated Cycle Length (s)	50.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	36.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



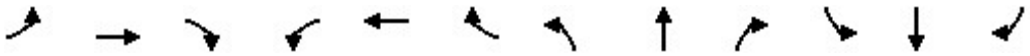
Lane Group	EBT	WBL	WBT	NBT	SBT	SBR
Lane Group Flow (vph)	145	30	120	80	75	35
v/c Ratio	0.12	0.04	0.10	0.17	0.14	0.07
Control Delay	6.3	7.8	6.4	10.4	12.3	3.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.3	7.8	6.4	10.4	12.3	3.1
Queue Length 50th (m)	4.3	1.1	3.6	3.6	4.5	0.0
Queue Length 95th (m)	15.5	5.5	13.5	10.6	11.2	3.1
Internal Link Dist (m)	95.3		62.1	101.3	47.0	
Turn Bay Length (m)		60.0				
Base Capacity (vph)	1299	861	1306	979	1108	933
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.03	0.09	0.08	0.07	0.04

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	110	35	30	95	25	15	45	20	0	75	35
Future Volume (vph)	0	110	35	30	95	25	15	45	20	0	75	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.3	3.6	3.6	3.6	3.6	3.6	3.3	3.6	3.6
Total Lost time (s)		6.0		6.0	6.0			6.0			6.0	6.0
Lane Util. Factor		1.00		1.00	1.00			1.00			1.00	1.00
Frpb, ped/bikes		0.99		1.00	0.99			0.99			1.00	0.96
Flpb, ped/bikes		1.00		1.00	1.00			1.00			1.00	1.00
Frt		0.96		1.00	0.97			0.97			1.00	0.85
Flt Protected		1.00		0.95	1.00			0.99			1.00	1.00
Satd. Flow (prot)		1783		1702	1794			1765			1863	1524
Flt Permitted		1.00		0.66	1.00			0.92			1.00	1.00
Satd. Flow (perm)		1783		1191	1794			1631			1863	1524
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)	0	110	35	30	95	25	15	45	20	0	75	35
RTOR Reduction (vph)	0	14	0	0	11	0	0	17	0	0	0	29
Lane Group Flow (vph)	0	131	0	30	109	0	0	63	0	0	75	6
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Perm	NA		Perm	NA		Perm	NA			NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		24.9		24.9	24.9			6.9			6.9	6.9
Effective Green, g (s)		24.9		24.9	24.9			6.9			6.9	6.9
Actuated g/C Ratio		0.57		0.57	0.57			0.16			0.16	0.16
Clearance Time (s)		6.0		6.0	6.0			6.0			6.0	6.0
Vehicle Extension (s)		3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)		1013		677	1019			256			293	240
v/s Ratio Prot		c0.07			0.06						c0.04	
v/s Ratio Perm				0.03				0.04				0.00
v/c Ratio		0.13		0.04	0.11			0.25			0.26	0.02
Uniform Delay, d1		4.4		4.2	4.3			16.2			16.2	15.6
Progression Factor		1.00		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2		0.1		0.0	0.0			0.5			0.5	0.0
Delay (s)		4.5		4.2	4.4			16.7			16.7	15.6
Level of Service		A		A	A			B			B	B
Approach Delay (s)		4.5			4.4			16.7			16.3	
Approach LOS		A			A			B			B	

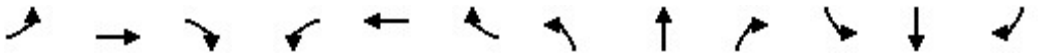
Intersection Summary			
HCM 2000 Control Delay	9.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.16		
Actuated Cycle Length (s)	43.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	50.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	0	0	0	0	0	0	0	65	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0	0	65	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)	0	0	0	0	0	0	0	65	0	0	0	0

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	0	0	65	0
Volume Left (vph)	0	0	0	0
Volume Right (vph)	0	0	0	0
Hadj (s)	0.00	0.00	0.03	0.00
Departure Headway (s)	4.0	4.0	3.9	4.0
Degree Utilization, x	0.00	0.00	0.07	0.00
Capacity (veh/h)	883	883	902	900
Control Delay (s)	7.0	7.0	7.2	7.0
Approach Delay (s)	0.0	0.0	7.2	0.0
Approach LOS	A	A	A	A

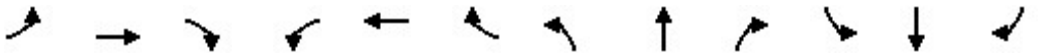
Intersection Summary				
Delay	7.2			
Level of Service	A			
Intersection Capacity Utilization	16.5%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	0	0	0	0	65	0	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	0	0	65	0	0	0	0
Sign Control		Stop			Stop			Free			Free	
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)	0	0	0	0	0	0	0	65	0	0	0	0
Pedestrians		5			5			5			5	
Lane Width (m)		3.6			3.6			3.6			3.6	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	75	75	10	75	75	75	5			70		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	75	75	10	75	75	75	5			70		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	100	100	100			100		
cM capacity (veh/h)	902	809	1062	902	809	978	1610			1524		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	0	0	65	0
Volume Left	0	0	0	0
Volume Right	0	0	0	0
cSH	1700	1700	1610	1700
Volume to Capacity	0.00	0.00	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0
Lane LOS	A	A		
Approach Delay (s)	0.0	0.0	0.0	0.0
Approach LOS	A	A		

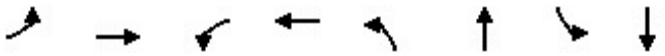
Intersection Summary				
Average Delay	0.0			
Intersection Capacity Utilization	16.5%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	130	110	20	125	0	25	65	15	0	0	0
Future Volume (Veh/h)	0	130	110	20	125	0	25	65	15	0	0	0
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)	0	130	110	20	125	0	25	65	15	0	0	0
Pedestrians		5			5			5			5	
Lane Width (m)		3.5			3.5			3.5			3.6	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		134			119							
pX, platoon unblocked				0.98			0.98	0.98	0.98	0.98	0.98	
vC, conflicting volume	130			245			360	360	195	352	415	135
vC1, stage 1 conf vol							190	190		170	170	
vC2, stage 2 conf vol							170	170		182	245	
vCu, unblocked vol	130			216			334	334	165	326	390	135
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			97	90	98	100	100	100
cM capacity (veh/h)	1449			1318			725	667	853	669	630	906

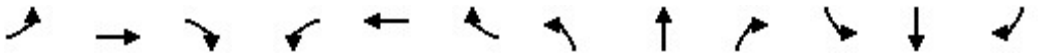
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1
Volume Total	0	240	20	125	25	80	0
Volume Left	0	0	20	0	25	0	0
Volume Right	0	110	0	0	0	15	0
cSH	1700	1700	1318	1700	725	695	1700
Volume to Capacity	0.00	0.14	0.02	0.07	0.03	0.12	0.00
Queue Length 95th (m)	0.0	0.0	0.4	0.0	0.9	3.1	0.0
Control Delay (s)	0.0	0.0	7.8	0.0	10.1	10.9	0.0
Lane LOS			A		B	B	A
Approach Delay (s)	0.0		1.1		10.7		0.0
Approach LOS					B		A

Intersection Summary			
Average Delay	2.6		
Intersection Capacity Utilization	29.1%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	50	795	80	545	10	180	10	90
v/c Ratio	0.14	0.49	0.30	0.34	0.03	0.36	0.03	0.18
Control Delay	10.2	10.8	13.5	9.6	11.5	10.6	11.5	11.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.2	10.8	13.5	9.6	11.5	10.6	11.5	11.5
Queue Length 50th (m)	1.9	19.1	3.3	12.0	0.6	7.2	0.6	4.7
Queue Length 95th (m)	10.3	53.1	17.2	35.0	3.0	18.8	3.0	12.5
Internal Link Dist (m)		177.9		126.7		56.9		127.4
Turn Bay Length (m)	30.0		30.0		40.0		35.0	
Base Capacity (vph)	803	3570	586	3534	1177	1581	1085	1686
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	0.06	0.22	0.14	0.15	0.01	0.11	0.01	0.05

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	790	5	80	540	5	10	75	105	10	70	20
Future Volume (vph)	50	790	5	80	540	5	10	75	105	10	70	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00		1.00	0.91		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1706	3570		1707	3533		1707	1681		1707	1793	
Flt Permitted	0.45	1.00		0.33	1.00		0.70	1.00		0.64	1.00	
Satd. Flow (perm)	805	3570		588	3533		1255	1681		1157	1793	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	50	790	5	80	540	5	10	75	105	10	70	20
RTOR Reduction (vph)	0	1	0	0	1	0	0	47	0	0	9	0
Lane Group Flow (vph)	50	794	0	80	544	0	10	133	0	10	81	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	2%	1%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	20.8	20.8		20.8	20.8		12.5	12.5		12.5	12.5	
Effective Green, g (s)	20.8	20.8		20.8	20.8		12.5	12.5		12.5	12.5	
Actuated g/C Ratio	0.46	0.46		0.46	0.46		0.28	0.28		0.28	0.28	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	369	1639		269	1622		346	463		319	494	
v/s Ratio Prot		c0.22			0.15			c0.08			0.04	
v/s Ratio Perm	0.06			0.14			0.01			0.01		
v/c Ratio	0.14	0.48		0.30	0.34		0.03	0.29		0.03	0.16	
Uniform Delay, d1	7.1	8.5		7.7	7.8		12.0	12.9		12.0	12.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.2		0.6	0.1		0.0	0.3		0.0	0.2	
Delay (s)	7.2	8.7		8.3	8.0		12.0	13.2		12.0	12.6	
Level of Service	A	A		A	A		B	B		B	B	
Approach Delay (s)		8.7			8.0			13.2			12.5	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	9.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	45.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	65.9%	ICU Level of Service	C
Analysis Period (min)	15		

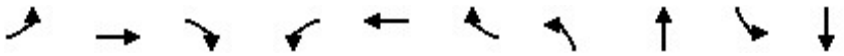
c Critical Lane Group



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	685	25	0	565	0	160
Future Volume (Veh/h)	685	25	0	565	0	160
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	685	25	0	565	0	160
Pedestrians	5			5	5	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	135			202		
pX, platoon unblocked			0.92		0.94	0.92
vC, conflicting volume			715		990	365
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			523		699	144
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	80
cM capacity (veh/h)			955		348	803

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	457	253	282	282	160
Volume Left	0	0	0	0	0
Volume Right	0	25	0	0	160
cSH	1700	1700	1700	1700	803
Volume to Capacity	0.27	0.15	0.17	0.17	0.20
Queue Length 95th (m)	0.0	0.0	0.0	0.0	5.9
Control Delay (s)	0.0	0.0	0.0	0.0	10.6
Lane LOS					B
Approach Delay (s)	0.0		0.0		10.6
Approach LOS					B

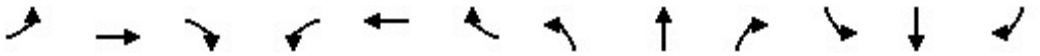
Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	37.3%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	220	325	135	205	240	135	265	2180	130	1550
v/c Ratio	0.71	0.56	0.37	0.77	0.43	0.37	0.83	0.97	0.68	0.83
Control Delay	45.1	43.5	8.9	51.2	41.1	8.9	46.9	38.8	38.6	32.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.1	43.5	8.9	51.2	41.1	8.9	46.9	38.8	38.6	32.7
Queue Length 50th (m)	38.1	33.8	0.0	35.1	24.4	0.0	36.1	168.3	10.0	117.9
Queue Length 95th (m)	59.0	47.3	15.2	55.0	36.0	15.2	#97.6	#293.8	#50.8	#203.1
Internal Link Dist (m)		334.1			111.1			202.3		436.5
Turn Bay Length (m)	50.0		30.0	50.0		30.0	100.0		100.0	
Base Capacity (vph)	310	1135	584	267	1082	589	354	2248	191	1874
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	0.71	0.29	0.23	0.77	0.22	0.23	0.75	0.97	0.68	0.83

Intersection Summary

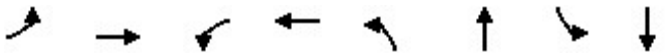
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	220	325	135	205	240	135	265	1925	255	130	1460	90
Future Volume (vph)	220	325	135	205	240	135	265	1925	255	130	1460	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	*0.80		1.00	*0.80	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1742	3574	1544	1743	3406	1560	1662	4387		1745	4391	
Flt Permitted	0.58	1.00	1.00	0.45	1.00	1.00	0.08	1.00		0.09	1.00	
Satd. Flow (perm)	1066	3574	1544	828	3406	1560	144	4387		165	4391	
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)	220	325	135	205	240	135	265	1925	255	130	1460	90
RTOR Reduction (vph)	0	0	113	0	0	113	0	10	0	0	4	0
Lane Group Flow (vph)	220	325	22	205	240	22	265	2170	0	130	1546	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	0%	1%	1%	0%	6%	0%	5%	2%	1%	0%	3%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	23.9	16.9	16.9	23.9	16.9	16.9	64.3	53.3		51.5	44.5	
Effective Green, g (s)	23.9	16.9	16.9	23.9	16.9	16.9	64.3	53.3		51.5	44.5	
Actuated g/C Ratio	0.23	0.16	0.16	0.23	0.16	0.16	0.62	0.51		0.49	0.43	
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	289	579	250	251	552	253	319	2244		187	1875	
v/s Ratio Prot	0.05	0.09		c0.05	0.07		c0.13	c0.49		0.05	0.35	
v/s Ratio Perm	0.12		0.01	c0.13		0.01	0.39			0.30		
v/c Ratio	0.76	0.56	0.09	0.82	0.43	0.09	0.83	0.97		0.70	0.82	
Uniform Delay, d1	36.1	40.2	37.1	36.6	39.3	37.1	28.7	24.6		22.0	26.4	
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	11.2	1.2	0.2	18.2	0.6	0.1	16.6	12.3		10.7	3.5	
Delay (s)	47.4	41.5	37.2	54.8	39.9	37.2	45.3	36.9		32.7	29.9	
Level of Service	D	D	D	D	D	D	D	D		C	C	
Approach Delay (s)		42.5			44.6			37.8			30.1	
Approach LOS		D			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	36.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	104.2	Sum of lost time (s)	20.0
Intersection Capacity Utilization	90.3%	ICU Level of Service	E
Analysis Period (min)	15		

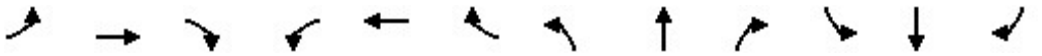
c Critical Lane Group



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	80	20	215	95	25	2305	10	1790
v/c Ratio	0.41	0.05	0.64	0.21	0.12	0.86	0.05	0.70
Control Delay	43.1	0.2	38.0	10.4	10.3	22.4	9.9	19.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.1	0.2	38.0	10.4	10.3	22.4	9.9	19.2
Queue Length 50th (m)	13.3	0.0	31.2	2.7	1.5	126.2	0.6	79.7
Queue Length 95th (m)	29.6	0.0	57.7	14.8	7.0	#319.2	3.7	#198.9
Internal Link Dist (m)		170.8		112.7		238.4		202.3
Turn Bay Length (m)	40.0		60.0		30.0		30.0	
Base Capacity (vph)	448	657	336	816	202	2683	202	2555
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	0.18	0.03	0.64	0.12	0.12	0.86	0.05	0.70

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	0	20	215	20	75	25	2290	15	10	1760	30
Future Volume (vph)	80	0	20	215	20	75	25	2290	15	10	1760	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	6.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	*0.80		1.00	*0.80	
Frpb, ped/bikes	1.00	0.97		1.00	0.98		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.85		1.00	0.88		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1704	1544		1707	1615		1711	4465		1711	4414	
Flt Permitted	0.70	1.00		0.56	1.00		0.07	1.00		0.07	1.00	
Satd. Flow (perm)	1247	1544		1011	1615		128	4465		131	4414	
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)	80	0	20	215	20	75	25	2290	15	10	1760	30
RTOR Reduction (vph)	0	17	0	0	56	0	0	0	0	0	1	0
Lane Group Flow (vph)	80	3	0	215	39	0	25	2305	0	10	1789	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%
Turn Type	Perm	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	12.4	12.4		24.8	24.8		58.8	56.4		56.2	55.1	
Effective Green, g (s)	12.4	12.4		24.8	24.8		58.8	56.4		56.2	55.1	
Actuated g/C Ratio	0.13	0.13		0.25	0.25		0.60	0.57		0.57	0.56	
Clearance Time (s)	6.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	157	194		314	407		115	2561		92	2474	
v/s Ratio Prot		0.00		c0.06	0.02		c0.01	c0.52		0.00	0.41	
v/s Ratio Perm	0.06			c0.11			0.12			0.06		
v/c Ratio	0.51	0.01		0.68	0.10		0.22	0.90		0.11	0.72	
Uniform Delay, d1	40.1	37.6		32.3	28.2		11.9	18.5		17.6	16.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.6	0.0		6.1	0.1		1.0	5.0		0.5	1.3	
Delay (s)	42.7	37.6		38.4	28.3		12.8	23.5		18.2	17.3	
Level of Service	D	D		D	C		B	C		B	B	
Approach Delay (s)		41.7			35.3			23.4			17.3	
Approach LOS		D			D			C			B	

Intersection Summary			
HCM 2000 Control Delay	22.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	98.3	Sum of lost time (s)	20.0
Intersection Capacity Utilization	74.5%	ICU Level of Service	D
Analysis Period (min)	15		

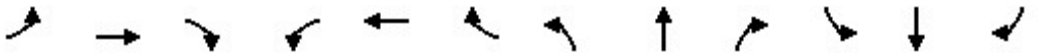
c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	155	90	195	270	170	90	2110	285	100	1775	120
v/c Ratio	0.70	0.25	0.47	0.72	0.31	0.49	0.98	0.37	0.54	0.80	0.15
Control Delay	55.1	36.3	13.0	41.2	23.8	22.7	43.6	13.7	26.2	27.1	5.9
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	55.1	36.3	13.0	41.2	23.8	22.7	43.6	13.7	26.2	27.1	5.9
Queue Length 50th (m)	31.0	16.4	7.3	46.4	22.5	7.1	172.7	22.0	8.0	128.1	2.1
Queue Length 95th (m)	52.4	30.0	26.3	69.6	39.2	23.6	#288.0	54.6	#31.4	#218.7	14.7
Internal Link Dist (m)		188.1			109.9		464.0			238.4	
Turn Bay Length (m)	60.0		40.0	60.0		90.0		40.0	70.0		30.0
Base Capacity (vph)	403	645	631	376	804	185	2150	776	184	2231	809
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	0.38	0.14	0.31	0.72	0.21	0.49	0.98	0.37	0.54	0.80	0.15

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	155	90	195	270	105	65	90	2110	285	100	1775	120
Future Volume (vph)	155	90	195	270	105	65	90	2110	285	100	1775	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	6.0	6.0	6.0	4.0	6.0		4.0	6.0	6.0	4.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	*0.80	1.00	1.00	*0.80	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	0.99		1.00	1.00	0.96	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	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.94		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1705	1863	1531	1707	1742		1711	4471	1510	1711	4427	1510
Flt Permitted	0.65	1.00	1.00	0.58	1.00		0.08	1.00	1.00	0.08	1.00	1.00
Satd. Flow (perm)	1166	1863	1531	1048	1742		141	4471	1510	137	4427	1510
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	155	90	195	270	105	65	90	2110	285	100	1775	120
RTOR Reduction (vph)	0	0	124	0	22	0	0	0	51	0	0	50
Lane Group Flow (vph)	155	90	71	270	148	0	90	2110	234	100	1775	70
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%
Turn Type	Perm	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		6
Actuated Green, G (s)	20.2	20.2	20.2	31.2	31.2		56.7	51.2	51.2	59.7	52.7	52.7
Effective Green, g (s)	20.2	20.2	20.2	31.2	31.2		56.7	51.2	51.2	59.7	52.7	52.7
Actuated g/C Ratio	0.19	0.19	0.19	0.30	0.30		0.54	0.49	0.49	0.57	0.50	0.50
Clearance Time (s)	6.0	6.0	6.0	4.0	6.0		4.0	6.0	6.0	4.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	223	357	293	353	515		157	2171	733	182	2213	755
v/s Ratio Prot		0.05		c0.05	0.09		0.03	c0.47		c0.04	0.40	
v/s Ratio Perm	0.13		0.05	c0.18			0.28		0.15	0.28		0.05
v/c Ratio	0.70	0.25	0.24	0.76	0.29		0.57	0.97	0.32	0.55	0.80	0.09
Uniform Delay, d1	39.7	36.2	36.1	33.5	28.5		17.5	26.4	16.5	22.0	22.0	13.8
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	9.0	0.4	0.4	9.5	0.3		5.0	13.5	0.5	3.4	2.5	0.1
Delay (s)	48.8	36.6	36.5	43.0	28.9		22.5	39.9	17.0	25.3	24.5	13.9
Level of Service	D	D	D	D	C		C	D	B	C	C	B
Approach Delay (s)		40.8			37.5			36.6			23.9	
Approach LOS		D			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	32.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	105.4	Sum of lost time (s)	20.0
Intersection Capacity Utilization	89.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	NBL	NBT	SBT
Lane Group Flow (vph)	25	5	145	215
v/c Ratio	0.05	0.01	0.09	0.14
Control Delay	13.2	4.6	3.6	3.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	13.2	4.6	3.6	3.0
Queue Length 50th (m)	1.4	0.0	0.0	0.0
Queue Length 95th (m)	6.2	1.7	17.1	20.3
Internal Link Dist (m)	180.6		51.4	61.3
Turn Bay Length (m)		25.0		
Base Capacity (vph)	815	1003	1674	1588
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.03	0.00	0.09	0.14

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	25	0	5	145	145	70
Future Volume (vph)	25	0	5	145	145	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.3	3.6	3.6	3.6
Total Lost time (s)	6.0		6.0	6.0	6.0	
Lane Util. Factor	1.00		1.00	1.00	1.00	
Frpb, ped/bikes	1.00		1.00	1.00	0.99	
Flpb, ped/bikes	1.00		0.99	1.00	1.00	
Frt	1.00		1.00	1.00	0.96	
Flt Protected	0.95		0.95	1.00	1.00	
Satd. Flow (prot)	1770		1702	1863	1764	
Flt Permitted	0.95		0.62	1.00	1.00	
Satd. Flow (perm)	1770		1117	1863	1764	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	25	0	5	145	145	70
RTOR Reduction (vph)	0	0	0	0	16	0
Lane Group Flow (vph)	25	0	5	145	199	0
Confl. Peds. (#/hr)	5	5	5			5
Confl. Bikes (#/hr)		5				5
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases			2			
Actuated Green, G (s)	2.8		34.3	34.3	34.3	
Effective Green, g (s)	2.8		34.3	34.3	34.3	
Actuated g/C Ratio	0.06		0.70	0.70	0.70	
Clearance Time (s)	6.0		6.0	6.0	6.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	100		780	1301	1232	
v/s Ratio Prot	c0.01			0.08	c0.11	
v/s Ratio Perm			0.00			
v/c Ratio	0.25		0.01	0.11	0.16	
Uniform Delay, d1	22.1		2.2	2.4	2.5	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	1.3		0.0	0.0	0.1	
Delay (s)	23.5		2.2	2.5	2.6	
Level of Service	C		A	A	A	
Approach Delay (s)	23.5			2.4	2.6	
Approach LOS	C			A	A	

Intersection Summary			
HCM 2000 Control Delay	3.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.17		
Actuated Cycle Length (s)	49.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	36.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	NBT	SBT
Lane Group Flow (vph)	30	145	165
v/c Ratio	0.07	0.10	0.11
Control Delay	9.5	5.3	5.2
Queue Delay	0.0	0.0	0.0
Total Delay	9.5	5.3	5.2
Queue Length 50th (m)	0.6	0.0	0.0
Queue Length 95th (m)	5.0	17.4	19.2
Internal Link Dist (m)	16.7	34.1	29.1
Turn Bay Length (m)			
Base Capacity (vph)	725	1515	1535
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.04	0.10	0.11

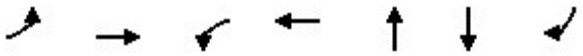
Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	10	20	10	135	160	5
Future Volume (vph)	10	20	10	135	160	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0			6.0	6.0	
Lane Util. Factor	1.00			1.00	1.00	
Frpb, ped/bikes	0.97			1.00	1.00	
Flpb, ped/bikes	1.00			1.00	1.00	
Frt	0.91			1.00	1.00	
Flt Protected	0.98			1.00	1.00	
Satd. Flow (prot)	1616			1856	1853	
Flt Permitted	0.98			0.98	1.00	
Satd. Flow (perm)	1616			1831	1853	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	10	20	10	135	160	5
RTOR Reduction (vph)	18	0	0	0	1	0
Lane Group Flow (vph)	12	0	0	145	164	0
Confl. Peds. (#/hr)	5	5	5			5
Confl. Bikes (#/hr)		5				5
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases			2			
Actuated Green, G (s)	4.8			33.7	33.7	
Effective Green, g (s)	4.8			33.7	33.7	
Actuated g/C Ratio	0.10			0.67	0.67	
Clearance Time (s)	6.0			6.0	6.0	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	153			1221	1236	
v/s Ratio Prot	c0.01				c0.09	
v/s Ratio Perm				0.08		
v/c Ratio	0.08			0.12	0.13	
Uniform Delay, d1	20.8			3.0	3.1	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	0.2			0.0	0.0	
Delay (s)	21.1			3.1	3.1	
Level of Service	C			A	A	
Approach Delay (s)	21.1			3.1	3.1	
Approach LOS	C			A	A	

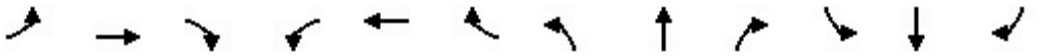
Intersection Summary			
HCM 2000 Control Delay	4.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.13		
Actuated Cycle Length (s)	50.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	36.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



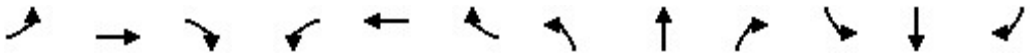
Lane Group	EBL	EBT	WBL	WBT	NBT	SBT	SBR
Lane Group Flow (vph)	20	355	10	265	165	175	25
v/c Ratio	0.03	0.34	0.02	0.26	0.41	0.38	0.05
Control Delay	8.1	9.4	8.0	8.2	14.8	15.6	1.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.1	9.4	8.0	8.2	14.8	15.6	1.8
Queue Length 50th (m)	0.7	15.5	0.4	9.9	9.2	11.3	0.0
Queue Length 95th (m)	4.3	42.1	2.8	29.3	20.9	23.2	1.9
Internal Link Dist (m)		95.3		62.1	101.3	47.0	
Turn Bay Length (m)	45.0		60.0				
Base Capacity (vph)	679	1181	626	1153	815	958	898
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	0.03	0.30	0.02	0.23	0.20	0.18	0.03

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	345	10	10	215	50	70	65	30	35	140	25
Future Volume (vph)	20	345	10	10	215	50	70	65	30	35	140	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.3	3.6	3.6	3.6	3.6	3.6	3.3	3.6	3.6
Total Lost time (s)	6.0	6.0		6.0	6.0			6.0			6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.99			0.99			1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Frt	1.00	1.00		1.00	0.97			0.98			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.99	1.00
Satd. Flow (prot)	1703	1853		1704	1800			1764			1843	1529
Flt Permitted	0.60	1.00		0.55	1.00			0.78			0.90	1.00
Satd. Flow (perm)	1068	1853		984	1800			1410			1679	1529
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	345	10	10	215	50	70	65	30	35	140	25
RTOR Reduction (vph)	0	1	0	0	11	0	0	17	0	0	0	20
Lane Group Flow (vph)	20	354	0	10	254	0	0	148	0	0	175	5
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	22.5	22.5		22.5	22.5			9.3			9.3	9.3
Effective Green, g (s)	22.5	22.5		22.5	22.5			9.3			9.3	9.3
Actuated g/C Ratio	0.51	0.51		0.51	0.51			0.21			0.21	0.21
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0			6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	548	951		505	924			299			356	324
v/s Ratio Prot		c0.19			0.14							
v/s Ratio Perm	0.02			0.01				c0.10			0.10	0.00
v/c Ratio	0.04	0.37		0.02	0.27			0.49			0.49	0.02
Uniform Delay, d1	5.3	6.4		5.2	6.0			15.2			15.2	13.6
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	0.0	0.2		0.0	0.2			1.3			1.1	0.0
Delay (s)	5.3	6.6		5.2	6.2			16.5			16.2	13.7
Level of Service	A	A		A	A			B			B	B
Approach Delay (s)		6.6			6.2			16.5			15.9	
Approach LOS		A			A			B			B	

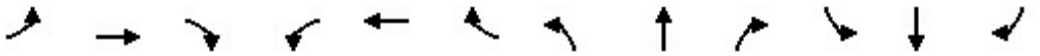
Intersection Summary			
HCM 2000 Control Delay	9.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	43.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	10	5	10	10	30	35	50	225	20	0	70	230
Future Volume (vph)	10	5	10	10	30	35	50	225	20	0	70	230
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	5	10	10	30	35	50	225	20	0	70	230

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	25	75	295	300
Volume Left (vph)	10	10	50	0
Volume Right (vph)	10	35	20	230
Hadj (s)	-0.13	-0.22	0.03	-0.43
Departure Headway (s)	5.2	5.0	4.5	4.1
Degree Utilization, x	0.04	0.10	0.37	0.34
Capacity (veh/h)	606	637	775	850
Control Delay (s)	8.4	8.6	10.1	9.1
Approach Delay (s)	8.4	8.6	10.1	9.1
Approach LOS	A	A	B	A

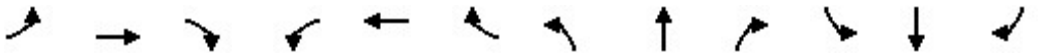
Intersection Summary				
Delay	9.5			
Level of Service	A			
Intersection Capacity Utilization	50.2%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	0	80	35	0	10	30	240	15	5	70	15
Future Volume (Veh/h)	45	0	80	35	0	10	30	240	15	5	70	15
Sign Control		Stop			Stop			Free			Free	
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)	45	0	80	35	0	10	30	240	15	5	70	15
Pedestrians		5			5			5			5	
Lane Width (m)		3.6			3.6			3.6			3.6	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	415	412	88	485	412	258	90			260		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	415	412	88	485	412	258	90			260		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	91	100	92	92	100	99	98			100		
cM capacity (veh/h)	523	513	963	437	513	775	1499			1299		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	125	45	285	90
Volume Left	45	35	30	5
Volume Right	80	10	15	15
cSH	739	484	1499	1299
Volume to Capacity	0.17	0.09	0.02	0.00
Queue Length 95th (m)	4.8	2.4	0.5	0.1
Control Delay (s)	10.9	13.2	0.9	0.5
Lane LOS	B	B	A	A
Approach Delay (s)	10.9	13.2	0.9	0.5
Approach LOS	B	B		

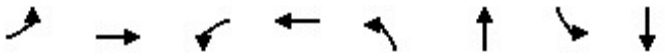
Intersection Summary				
Average Delay	4.1			
Intersection Capacity Utilization	37.0%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	140	290	45	40	250	20	50	120	60	25	90	140
Future Volume (Veh/h)	140	290	45	40	250	20	50	120	60	25	90	140
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)	140	290	45	40	250	20	50	120	60	25	90	140
Pedestrians		5			5			5			5	
Lane Width (m)		3.5			3.5			3.5			3.6	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		134			119							
pX, platoon unblocked												
vC, conflicting volume	275			340			1118	952	322	1040	965	270
vC1, stage 1 conf vol							598	598		345	345	
vC2, stage 2 conf vol							520	355		695	620	
vCu, unblocked vol	275			340			1118	952	322	1040	965	270
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	89			97			76	67	92	88	75	82
cM capacity (veh/h)	1283			1214			207	365	713	208	358	762

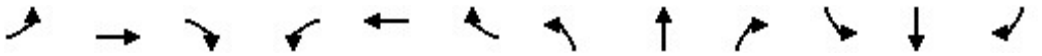
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1
Volume Total	140	335	40	270	50	180	255
Volume Left	140	0	40	0	50	0	25
Volume Right	0	45	0	20	0	60	140
cSH	1283	1700	1214	1700	207	436	459
Volume to Capacity	0.11	0.20	0.03	0.16	0.24	0.41	0.56
Queue Length 95th (m)	2.9	0.0	0.8	0.0	7.3	15.9	26.5
Control Delay (s)	8.2	0.0	8.1	0.0	27.8	19.0	22.2
Lane LOS	A		A		D	C	C
Approach Delay (s)	2.4		1.0		20.9		22.2
Approach LOS					C		C

Intersection Summary			
Average Delay	9.4		
Intersection Capacity Utilization	61.1%	ICU Level of Service	B
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	65	695	190	670	5	125	10	130
v/c Ratio	0.23	0.49	0.36	0.28	0.02	0.29	0.04	0.31
Control Delay	18.3	16.6	7.8	6.9	18.8	13.1	19.0	20.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.3	16.6	7.8	6.9	18.8	13.1	19.0	20.9
Queue Length 50th (m)	4.5	28.1	6.7	15.3	0.4	5.4	0.9	11.0
Queue Length 95th (m)	18.3	65.5	24.3	41.0	3.0	19.1	4.6	27.2
Internal Link Dist (m)		177.9		126.7		56.9		127.4
Turn Bay Length (m)	30.0		30.0		40.0		35.0	
Base Capacity (vph)	605	3032	842	3557	779	1102	783	1174
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	0.11	0.23	0.23	0.19	0.01	0.11	0.01	0.11

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	675	20	190	665	5	5	50	75	10	110	20
Future Volume (vph)	65	675	20	190	665	5	5	50	75	10	110	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	6.0	6.0		4.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00		1.00	0.91		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)	1705	3554		1710	3605		1706	1673		1706	1814	
Flt Permitted	0.40	1.00		0.29	1.00		0.67	1.00		0.68	1.00	
Satd. Flow (perm)	713	3554		516	3605		1210	1673		1215	1814	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	65	675	20	190	665	5	5	50	75	10	110	20
RTOR Reduction (vph)	0	2	0	0	0	0	0	52	0	0	7	0
Lane Group Flow (vph)	65	693	0	190	670	0	5	73	0	10	123	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	2%	1%	2%	2%	0%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	22.2	22.2		35.0	35.0		9.8	9.8		9.8	9.8	
Effective Green, g (s)	22.2	22.2		35.0	35.0		9.8	9.8		9.8	9.8	
Actuated g/C Ratio	0.39	0.39		0.62	0.62		0.17	0.17		0.17	0.17	
Clearance Time (s)	6.0	6.0		4.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	278	1389		502	2221		208	288		209	312	
v/s Ratio Prot		c0.20		c0.06	0.19			0.04			c0.07	
v/s Ratio Perm	0.09			0.17			0.00			0.01		
v/c Ratio	0.23	0.50		0.38	0.30		0.02	0.25		0.05	0.40	
Uniform Delay, d1	11.6	13.1		5.3	5.1		19.5	20.3		19.6	20.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	0.3		0.5	0.1		0.0	0.5		0.1	0.8	
Delay (s)	12.0	13.4		5.7	5.2		19.6	20.8		19.7	21.7	
Level of Service	B	B		A	A		B	C		B	C	
Approach Delay (s)		13.3			5.3			20.8			21.6	
Approach LOS		B			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	10.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	56.8	Sum of lost time (s)	16.0
Intersection Capacity Utilization	60.5%	ICU Level of Service	B
Analysis Period (min)	15		

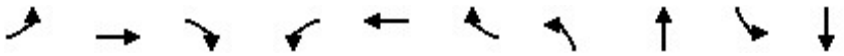
c Critical Lane Group



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	625	110	0	685	0	135
Future Volume (Veh/h)	625	110	0	685	0	135
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	625	110	0	685	0	135
Pedestrians	5			5	5	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	135			202		
pX, platoon unblocked			0.92		0.94	0.92
vC, conflicting volume			740		1032	378
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			534		679	138
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	83
cM capacity (veh/h)			940		359	804

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	417	318	342	342	135
Volume Left	0	0	0	0	0
Volume Right	0	110	0	0	135
cSH	1700	1700	1700	1700	804
Volume to Capacity	0.25	0.19	0.20	0.20	0.17
Queue Length 95th (m)	0.0	0.0	0.0	0.0	4.8
Control Delay (s)	0.0	0.0	0.0	0.0	10.4
Lane LOS					B
Approach Delay (s)	0.0		0.0		10.4
Approach LOS					B

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	37.1%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	170	345	185	280	290	125	175	2040	205	1880
v/c Ratio	0.54	0.59	0.48	0.90	0.48	0.34	0.93	1.00	0.92	0.90
Control Delay	33.6	43.9	13.8	63.2	41.5	8.9	72.0	49.8	67.7	32.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.6	43.9	13.8	63.2	41.5	8.9	72.0	49.8	67.7	32.7
Queue Length 50th (m)	27.4	36.2	6.3	48.2	29.8	0.0	19.7	167.8	25.7	139.4
Queue Length 95th (m)	44.3	50.2	25.1	#78.0	42.5	14.8	#78.1	#283.5	#89.0	#242.5
Internal Link Dist (m)		334.1			111.1			202.3		436.5
Turn Bay Length (m)	50.0		30.0	50.0		30.0	100.0		100.0	
Base Capacity (vph)	320	1118	597	311	1141	579	189	2034	223	2090
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	0.53	0.31	0.31	0.90	0.25	0.22	0.93	1.00	0.92	0.90

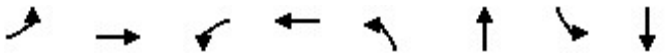
Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	170	345	185	280	290	125	175	1855	185	205	1610	270
Future Volume (vph)	170	345	185	280	290	125	175	1855	185	205	1610	270
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	*0.80		1.00	*0.80	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1628	3539	1560	1743	3610	1560	1745	4410		1745	4338	
Flt Permitted	0.52	1.00	1.00	0.42	1.00	1.00	0.08	1.00		0.08	1.00	
Satd. Flow (perm)	885	3539	1560	769	3610	1560	152	4410		146	4338	
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)	170	345	185	280	290	125	175	1855	185	205	1610	270
RTOR Reduction (vph)	0	0	126	0	0	104	0	8	0	0	14	0
Lane Group Flow (vph)	170	345	59	280	290	21	175	2032	0	205	1866	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	7%	2%	0%	0%	0%	0%	0%	2%	0%	0%	3%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	27.3	17.5	17.5	27.9	17.8	17.8	55.3	48.3		59.3	50.3	
Effective Green, g (s)	27.3	17.5	17.5	27.9	17.8	17.8	55.3	48.3		59.3	50.3	
Actuated g/C Ratio	0.26	0.17	0.17	0.27	0.17	0.17	0.53	0.46		0.57	0.48	
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	299	590	260	298	612	264	186	2030		219	2080	
v/s Ratio Prot	0.05	0.10		c0.09	0.08		0.06	c0.46		c0.08	0.43	
v/s Ratio Perm	0.09		0.04	c0.16		0.01	0.43			0.45		
v/c Ratio	0.57	0.58	0.23	0.94	0.47	0.08	0.94	1.00		0.94	0.90	
Uniform Delay, d1	32.1	40.3	37.8	35.7	39.3	36.7	24.6	28.3		29.9	24.9	
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	2.5	1.5	0.4	35.9	0.6	0.1	49.0	20.3		42.9	5.9	
Delay (s)	34.5	41.8	38.3	71.6	39.9	36.8	73.6	48.6		72.8	30.9	
Level of Service	C	D	D	E	D	D	E	D		E	C	
Approach Delay (s)		39.1			52.1			50.5			35.0	
Approach LOS		D			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	43.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	104.9	Sum of lost time (s)	20.0
Intersection Capacity Utilization	95.8%	ICU Level of Service	F
Analysis Period (min)	15		

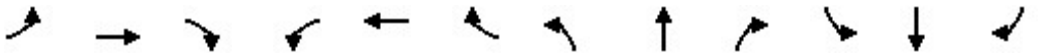
c Critical Lane Group



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	50	60	160	140	25	2225	45	2030
v/c Ratio	0.24	0.17	0.67	0.36	0.13	0.80	0.24	0.71
Control Delay	38.4	23.9	52.6	13.2	7.5	19.2	9.0	15.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Total Delay	38.4	23.9	52.6	13.2	7.5	19.2	9.0	15.7
Queue Length 50th (m)	9.4	6.5	32.9	5.1	1.3	145.7	2.3	84.2
Queue Length 95th (m)	20.4	17.5	55.0	21.3	5.4	#246.6	8.3	201.8
Internal Link Dist (m)		170.8		112.7		238.4		202.3
Turn Bay Length (m)	40.0		60.0		30.0		30.0	
Base Capacity (vph)	376	594	429	603	190	2857	190	2941
Starvation Cap Reductn	0	0	0	0	0	0	0	218
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	0.10	0.37	0.23	0.13	0.78	0.24	0.75

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	35	25	160	15	125	25	2040	185	45	1950	80
Future Volume (vph)	50	35	25	160	15	125	25	2040	185	45	1950	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	6.0	6.0		6.0	6.0		4.0	6.0		4.0	6.0	
Lane Util. Factor	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	0.98		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.94		1.00	0.87		1.00	0.99		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)	1704	1730		1703	1581		1711	4401		1711	4396	
Flt Permitted	0.63	1.00		0.72	1.00		0.06	1.00		0.06	1.00	
Satd. Flow (perm)	1127	1730		1287	1581		112	4401		109	4396	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	50	35	25	160	15	125	25	2040	185	45	1950	80
RTOR Reduction (vph)	0	20	0	0	91	0	0	6	0	0	3	0
Lane Group Flow (vph)	50	40	0	160	49	0	25	2219	0	45	2027	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	18.9	18.9		18.9	18.9		67.0	64.5		69.6	65.8	
Effective Green, g (s)	18.9	18.9		18.9	18.9		67.0	64.5		69.6	65.8	
Actuated g/C Ratio	0.18	0.18		0.18	0.18		0.65	0.62		0.67	0.64	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	206	316		235	289		111	2750		132	2802	
v/s Ratio Prot		0.02			0.03		0.01	c0.50		c0.01	0.46	
v/s Ratio Perm	0.04			c0.12			0.14			0.22		
v/c Ratio	0.24	0.13		0.68	0.17		0.23	0.81		0.34	0.72	
Uniform Delay, d1	36.0	35.2		39.3	35.5		10.2	14.6		13.5	12.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	0.2		7.9	0.3		1.0	2.1		1.5	1.2	
Delay (s)	36.6	35.4		47.2	35.8		11.2	16.7		15.0	13.7	
Level of Service	D	D		D	D		B	B		B	B	
Approach Delay (s)		36.0			41.9			16.7			13.8	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	17.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	103.2	Sum of lost time (s)	16.0
Intersection Capacity Utilization	78.7%	ICU Level of Service	D
Analysis Period (min)	15		

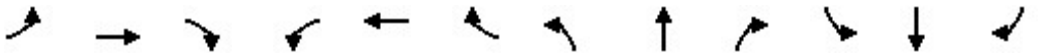
c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	85	100	140	215	130	200	2130	305	150	1870	115
v/c Ratio	0.45	0.34	0.39	0.64	0.27	0.81	0.95	0.38	0.77	0.90	0.15
Control Delay	44.9	39.7	9.0	38.6	25.3	47.8	35.5	12.6	45.6	32.3	5.7
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	44.9	39.7	9.0	38.6	25.3	47.8	35.5	12.6	45.6	32.3	5.7
Queue Length 50th (m)	15.9	18.3	0.0	35.5	17.8	21.7	150.7	20.4	11.9	129.0	1.4
Queue Length 95th (m)	29.9	32.6	15.0	55.2	32.2	#83.4	#292.1	59.0	#63.3	#250.8	14.4
Internal Link Dist (m)		188.1			109.9		464.0			238.4	
Turn Bay Length (m)	60.0		40.0	60.0		90.0		40.0	70.0		30.0
Base Capacity (vph)	437	673	643	334	848	246	2244	809	194	2088	763
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	0.19	0.15	0.22	0.64	0.15	0.81	0.95	0.38	0.77	0.90	0.15

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	85	100	140	215	95	35	200	2130	305	150	1870	115
Future Volume (vph)	85	100	140	215	95	35	200	2130	305	150	1870	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	6.0	6.0	6.0	4.0	6.0		4.0	6.0	6.0	4.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	*0.80	1.00	1.00	*0.80	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	0.99		1.00	1.00	0.97	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	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1705	1863	1530	1708	1778		1711	4471	1511	1711	4427	1511
Flt Permitted	0.67	1.00	1.00	0.55	1.00		0.08	1.00	1.00	0.08	1.00	1.00
Satd. Flow (perm)	1209	1863	1530	992	1778		143	4471	1511	152	4427	1511
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)	85	100	140	215	95	35	200	2130	305	150	1870	115
RTOR Reduction (vph)	0	0	118	0	13	0	0	0	53	0	0	53
Lane Group Flow (vph)	85	100	22	215	117	0	200	2130	252	150	1870	62
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%
Turn Type	Perm	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		6
Actuated Green, G (s)	15.7	15.7	15.7	26.8	26.8		60.5	50.4	50.4	54.5	47.4	47.4
Effective Green, g (s)	15.7	15.7	15.7	26.8	26.8		60.5	50.4	50.4	54.5	47.4	47.4
Actuated g/C Ratio	0.16	0.16	0.16	0.27	0.27		0.60	0.50	0.50	0.54	0.47	0.47
Clearance Time (s)	6.0	6.0	6.0	4.0	6.0		4.0	6.0	6.0	4.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	189	291	239	315	475		244	2246	759	192	2092	714
v/s Ratio Prot		0.05		c0.05	0.07		c0.08	c0.48		0.06	0.42	
v/s Ratio Perm	0.07		0.01	c0.13			0.41		0.17	0.37		0.04
v/c Ratio	0.45	0.34	0.09	0.68	0.25		0.82	0.95	0.33	0.78	0.89	0.09
Uniform Delay, d1	38.4	37.7	36.2	32.3	28.8		25.9	23.7	14.9	20.8	24.2	14.5
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.7	0.7	0.2	6.0	0.3		18.9	9.7	0.5	18.4	5.7	0.1
Delay (s)	40.1	38.4	36.4	38.3	29.1		44.8	33.5	15.4	39.2	29.9	14.7
Level of Service	D	D	D	D	C		D	C	B	D	C	B
Approach Delay (s)		38.0			34.8			32.2			29.7	
Approach LOS		D			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	31.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	100.3	Sum of lost time (s)	20.0
Intersection Capacity Utilization	89.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	NBL	NBT	SBT
Lane Group Flow (vph)	55	5	145	330
v/c Ratio	0.12	0.01	0.10	0.24
Control Delay	11.1	7.2	6.0	5.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	11.1	7.2	6.0	5.2
Queue Length 50th (m)	2.6	0.0	0.0	0.0
Queue Length 95th (m)	8.3	1.8	17.8	32.4
Internal Link Dist (m)	180.6		51.4	61.3
Turn Bay Length (m)		25.0		
Base Capacity (vph)	806	840	1558	1463
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.07	0.01	0.09	0.23

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	45	10	5	145	190	140
Future Volume (vph)	45	10	5	145	190	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.3	3.6	3.6	3.6
Total Lost time (s)	6.0		6.0	6.0	6.0	
Lane Util. Factor	1.00		1.00	1.00	1.00	
Frpb, ped/bikes	0.99		1.00	1.00	0.99	
Flpb, ped/bikes	1.00		1.00	1.00	1.00	
Frt	0.98		1.00	1.00	0.94	
Flt Protected	0.96		0.95	1.00	1.00	
Satd. Flow (prot)	1732		1703	1863	1734	
Flt Permitted	0.96		0.56	1.00	1.00	
Satd. Flow (perm)	1732		1007	1863	1734	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	45	10	5	145	190	140
RTOR Reduction (vph)	9	0	0	0	30	0
Lane Group Flow (vph)	46	0	5	145	300	0
Confl. Peds. (#/hr)	5	5	5			5
Confl. Bikes (#/hr)		5				5
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases			2			
Actuated Green, G (s)	5.1		30.3	30.3	30.3	
Effective Green, g (s)	5.1		30.3	30.3	30.3	
Actuated g/C Ratio	0.11		0.64	0.64	0.64	
Clearance Time (s)	6.0		6.0	6.0	6.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	186		643	1190	1108	
v/s Ratio Prot	c0.03			0.08	c0.17	
v/s Ratio Perm			0.00			
v/c Ratio	0.25		0.01	0.12	0.27	
Uniform Delay, d1	19.4		3.1	3.3	3.7	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	0.7		0.0	0.0	0.1	
Delay (s)	20.1		3.1	3.4	3.9	
Level of Service	C		A	A	A	
Approach Delay (s)	20.1			3.4	3.9	
Approach LOS	C			A	A	

Intersection Summary			
HCM 2000 Control Delay	5.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.27		
Actuated Cycle Length (s)	47.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	38.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	NBT	SBT
Lane Group Flow (vph)	25	170	205
v/c Ratio	0.06	0.10	0.12
Control Delay	9.4	3.6	3.4
Queue Delay	0.0	0.0	0.0
Total Delay	9.4	3.6	3.4
Queue Length 50th (m)	0.6	0.0	0.0
Queue Length 95th (m)	5.0	19.8	22.3
Internal Link Dist (m)	16.7	34.1	29.1
Turn Bay Length (m)			
Base Capacity (vph)	727	1635	1654
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.03	0.10	0.12

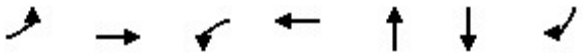
Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	10	15	15	155	185	20
Future Volume (vph)	10	15	15	155	185	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0			6.0	6.0	
Lane Util. Factor	1.00			1.00	1.00	
Frpb, ped/bikes	0.96			1.00	1.00	
Flpb, ped/bikes	1.00			1.00	1.00	
Frt	0.92			1.00	0.99	
Flt Protected	0.98			1.00	1.00	
Satd. Flow (prot)	1619			1854	1833	
Flt Permitted	0.98			0.97	1.00	
Satd. Flow (perm)	1619			1813	1833	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	10	15	15	155	185	20
RTOR Reduction (vph)	14	0	0	0	4	0
Lane Group Flow (vph)	11	0	0	170	201	0
Confl. Peds. (#/hr)	5	5	5			5
Confl. Bikes (#/hr)		5				5
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases			2			
Actuated Green, G (s)	2.8			34.3	34.3	
Effective Green, g (s)	2.8			34.3	34.3	
Actuated g/C Ratio	0.06			0.70	0.70	
Clearance Time (s)	6.0			6.0	6.0	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	92			1266	1280	
v/s Ratio Prot	c0.01				c0.11	
v/s Ratio Perm				0.09		
v/c Ratio	0.12			0.13	0.16	
Uniform Delay, d1	22.0			2.5	2.5	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	0.6			0.0	0.1	
Delay (s)	22.6			2.5	2.6	
Level of Service	C			A	A	
Approach Delay (s)	22.6			2.5	2.6	
Approach LOS	C			A	A	

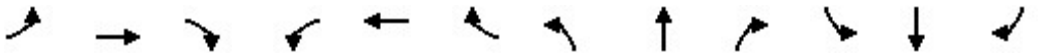
Intersection Summary			
HCM 2000 Control Delay	3.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.15		
Actuated Cycle Length (s)	49.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	40.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



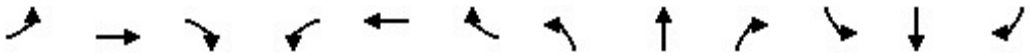
Lane Group	EBL	EBT	WBL	WBT	NBT	SBT	SBR
Lane Group Flow (vph)	55	185	30	225	145	130	60
v/c Ratio	0.09	0.18	0.05	0.22	0.32	0.27	0.13
Control Delay	8.3	7.5	8.0	7.8	13.2	14.1	4.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.3	7.5	8.0	7.8	13.2	14.1	4.9
Queue Length 50th (m)	2.1	6.4	1.1	8.0	7.8	8.1	0.0
Queue Length 95th (m)	8.8	20.3	5.5	24.6	18.0	17.6	5.6
Internal Link Dist (m)		95.3		62.1	101.3	47.0	
Turn Bay Length (m)	45.0		60.0				
Base Capacity (vph)	706	1157	732	1155	925	1016	877
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	0.08	0.16	0.04	0.19	0.16	0.13	0.07

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	150	35	30	180	45	25	95	25	5	125	60
Future Volume (vph)	55	150	35	30	180	45	25	95	25	5	125	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.3	3.6	3.6	3.6	3.6	3.6	3.3	3.6	3.6
Total Lost time (s)	6.0	6.0		6.0	6.0			6.0			6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.99			0.99			1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Frt	1.00	0.97		1.00	0.97			0.98			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.99			1.00	1.00
Satd. Flow (prot)	1703	1800		1702	1796			1791			1859	1528
Flt Permitted	0.62	1.00		0.64	1.00			0.91			0.98	1.00
Satd. Flow (perm)	1108	1800		1148	1796			1646			1829	1528
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	55	150	35	30	180	45	25	95	25	5	125	60
RTOR Reduction (vph)	0	11	0	0	12	0	0	17	0	0	0	47
Lane Group Flow (vph)	55	174	0	30	213	0	0	128	0	0	130	13
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	23.3	23.3		23.3	23.3			9.3			9.3	9.3
Effective Green, g (s)	23.3	23.3		23.3	23.3			9.3			9.3	9.3
Actuated g/C Ratio	0.52	0.52		0.52	0.52			0.21			0.21	0.21
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0			6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	578	940		599	938			343			381	318
v/s Ratio Prot		0.10			c0.12							
v/s Ratio Perm	0.05			0.03				c0.08			0.07	0.01
v/c Ratio	0.10	0.19		0.05	0.23			0.37			0.34	0.04
Uniform Delay, d1	5.4	5.6		5.2	5.8			15.2			15.0	14.1
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	0.1	0.1		0.0	0.1			0.7			0.5	0.1
Delay (s)	5.4	5.7		5.3	5.9			15.8			15.6	14.1
Level of Service	A	A		A	A			B			B	B
Approach Delay (s)		5.7			5.8			15.8			15.1	
Approach LOS		A			A			B			B	

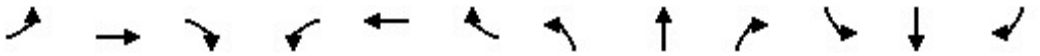
Intersection Summary			
HCM 2000 Control Delay	9.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.27		
Actuated Cycle Length (s)	44.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	72.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	185	25	55	40	15	90	45	290	10	20	145	240
Future Volume (vph)	185	25	55	40	15	90	45	290	10	20	145	240
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)	185	25	55	40	15	90	45	290	10	20	145	240

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	265	145	345	405
Volume Left (vph)	185	40	45	20
Volume Right (vph)	55	90	10	240
Hadj (s)	0.05	-0.28	0.04	-0.31
Departure Headway (s)	6.5	6.5	6.1	5.7
Degree Utilization, x	0.48	0.26	0.58	0.64
Capacity (veh/h)	495	454	552	593
Control Delay (s)	15.4	11.9	17.3	18.1
Approach Delay (s)	15.4	11.9	17.3	18.1
Approach LOS	C	B	C	C

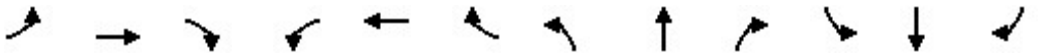
Intersection Summary				
Delay	16.5			
Level of Service	C			
Intersection Capacity Utilization	60.8%	ICU Level of Service	B	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	0	60	35	5	25	90	280	45	25	150	65
Future Volume (Veh/h)	40	0	60	35	5	25	90	280	45	25	150	65
Sign Control		Stop			Stop			Free			Free	
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)	40	0	60	35	5	25	90	280	45	25	150	65
Pedestrians		5			5			5			5	
Lane Width (m)		3.6			3.6			3.6			3.6	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	752	748	192	785	758	312	220			330		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	752	748	192	785	758	312	220			330		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	86	100	93	87	98	97	93			98		
cM capacity (veh/h)	286	309	842	265	305	722	1344			1224		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	100	65	415	240
Volume Left	40	35	90	25
Volume Right	60	25	45	65
cSH	474	355	1344	1224
Volume to Capacity	0.21	0.18	0.07	0.02
Queue Length 95th (m)	6.3	5.3	1.7	0.5
Control Delay (s)	14.6	17.4	2.2	1.0
Lane LOS	B	C	A	A
Approach Delay (s)	14.6	17.4	2.2	1.0
Approach LOS	B	C		

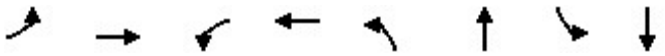
Intersection Summary				
Average Delay	4.6			
Intersection Capacity Utilization	53.8%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	245	185	125	30	165	70	30	155	30	25	95	150
Future Volume (Veh/h)	245	185	125	30	165	70	30	155	30	25	95	150
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)	245	185	125	30	165	70	30	155	30	25	95	150
Pedestrians		5			5			5			5	
Lane Width (m)		3.5			3.5			3.5			3.6	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		134			119							
pX, platoon unblocked												
vC, conflicting volume	240			315			1170	1042	258	1052	1070	210
vC1, stage 1 conf vol							742	742		265	265	
vC2, stage 2 conf vol							428	300		788	805	
vCu, unblocked vol	240			315			1170	1042	258	1052	1070	210
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	81			98			81	48	96	81	66	82
cM capacity (veh/h)	1321			1240			158	297	775	131	279	823

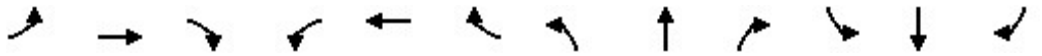
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1
Volume Total	245	310	30	235	30	185	270
Volume Left	245	0	30	0	30	0	25
Volume Right	0	125	0	70	0	30	150
cSH	1321	1700	1240	1700	158	330	378
Volume to Capacity	0.19	0.18	0.02	0.14	0.19	0.56	0.71
Queue Length 95th (m)	5.4	0.0	0.6	0.0	5.4	26.0	42.9
Control Delay (s)	8.3	0.0	8.0	0.0	33.1	28.9	35.0
Lane LOS	A		A		D	D	D
Approach Delay (s)	3.7		0.9		29.5		35.0
Approach LOS					D		D

Intersection Summary				
Average Delay	13.9			
Intersection Capacity Utilization	66.5%	ICU Level of Service	C	
Analysis Period (min)	15			



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	50	845	80	575	10	180	10	90
v/c Ratio	0.14	0.51	0.32	0.35	0.03	0.36	0.03	0.18
Control Delay	10.1	10.9	14.0	9.5	12.0	11.0	12.0	11.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.1	10.9	14.0	9.5	12.0	11.0	12.0	11.9
Queue Length 50th (m)	1.9	20.7	3.4	12.8	0.6	7.2	0.6	4.7
Queue Length 95th (m)	10.3	56.8	17.5	36.7	3.2	20.1	3.2	13.3
Internal Link Dist (m)		177.9		126.7		56.9		127.4
Turn Bay Length (m)	30.0		30.0		40.0		35.0	
Base Capacity (vph)	780	3570	542	3534	1142	1537	1053	1637
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	0.06	0.24	0.15	0.16	0.01	0.12	0.01	0.05

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	840	5	80	570	5	10	75	105	10	70	20
Future Volume (vph)	50	840	5	80	570	5	10	75	105	10	70	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00		1.00	0.91		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1706	3570		1707	3534		1706	1681		1707	1793	
Flt Permitted	0.44	1.00		0.30	1.00		0.70	1.00		0.64	1.00	
Satd. Flow (perm)	782	3570		543	3534		1255	1681		1157	1793	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	50	840	5	80	570	5	10	75	105	10	70	20
RTOR Reduction (vph)	0	1	0	0	1	0	0	46	0	0	9	0
Lane Group Flow (vph)	50	844	0	80	574	0	10	134	0	10	81	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	2%	1%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	21.2	21.2		21.2	21.2		12.5	12.5		12.5	12.5	
Effective Green, g (s)	21.2	21.2		21.2	21.2		12.5	12.5		12.5	12.5	
Actuated g/C Ratio	0.46	0.46		0.46	0.46		0.27	0.27		0.27	0.27	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	362	1656		251	1639		343	459		316	490	
v/s Ratio Prot		c0.24			0.16			c0.08			0.04	
v/s Ratio Perm	0.06			0.15			0.01			0.01		
v/c Ratio	0.14	0.51		0.32	0.35		0.03	0.29		0.03	0.16	
Uniform Delay, d1	7.0	8.6		7.7	7.8		12.2	13.1		12.2	12.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.2		0.7	0.1		0.0	0.4		0.0	0.2	
Delay (s)	7.2	8.9		8.4	8.0		12.2	13.5		12.2	12.8	
Level of Service	A	A		A	A		B	B		B	B	
Approach Delay (s)		8.8			8.0			13.4			12.7	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	9.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	45.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	67.3%	ICU Level of Service	C
Analysis Period (min)	15		

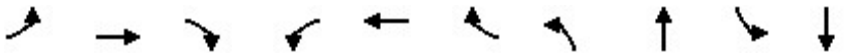
c Critical Lane Group



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	735	25	0	595	0	160
Future Volume (Veh/h)	735	25	0	595	0	160
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	735	25	0	595	0	160
Pedestrians	5			5	5	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	135			202		
pX, platoon unblocked			0.91		0.93	0.91
vC, conflicting volume			765		1055	390
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			539		694	126
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	80
cM capacity (veh/h)			928		348	812

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	490	270	298	298	160
Volume Left	0	0	0	0	0
Volume Right	0	25	0	0	160
cSH	1700	1700	1700	1700	812
Volume to Capacity	0.29	0.16	0.17	0.17	0.20
Queue Length 95th (m)	0.0	0.0	0.0	0.0	5.8
Control Delay (s)	0.0	0.0	0.0	0.0	10.5
Lane LOS					B
Approach Delay (s)	0.0		0.0		10.5
Approach LOS					B

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	38.7%	ICU Level of Service	A
Analysis Period (min)	15		

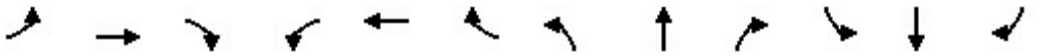


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	220	375	135	205	270	135	265	2320	130	1725
v/c Ratio	0.73	0.61	0.36	0.81	0.46	0.35	0.83	1.04	0.69	0.93
Control Delay	46.2	44.3	8.6	56.8	41.3	8.6	47.6	58.0	39.8	40.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.2	44.3	8.6	56.8	41.3	8.6	47.6	58.0	39.8	40.7
Queue Length 50th (m)	38.1	39.6	0.0	35.1	27.7	0.0	36.9	~216.2	10.5	143.9
Queue Length 95th (m)	59.0	54.3	15.2	55.0	40.0	15.2	#97.2	#323.8	#50.8	#241.0
Internal Link Dist (m)		334.1			111.1			202.3		436.5
Turn Bay Length (m)	50.0		30.0	50.0		30.0	100.0		100.0	
Base Capacity (vph)	303	1122	579	252	1069	584	351	2226	189	1851
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	0.73	0.33	0.23	0.81	0.25	0.23	0.75	1.04	0.69	0.93

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

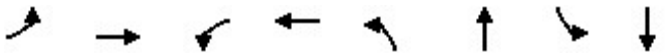
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	220	375	135	205	270	135	265	2065	255	130	1635	90
Future Volume (vph)	220	375	135	205	270	135	265	2065	255	130	1635	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	*0.80		1.00	*0.80	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1742	3574	1545	1743	3406	1560	1662	4392		1745	4395	
Flt Permitted	0.54	1.00	1.00	0.39	1.00	1.00	0.08	1.00		0.09	1.00	
Satd. Flow (perm)	986	3574	1545	716	3406	1560	145	4392		165	4395	
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)	220	375	135	205	270	135	265	2065	255	130	1635	90
RTOR Reduction (vph)	0	0	112	0	0	112	0	9	0	0	4	0
Lane Group Flow (vph)	220	375	23	205	270	23	265	2311	0	130	1721	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	0%	1%	1%	0%	6%	0%	5%	2%	1%	0%	3%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	25.1	18.1	18.1	25.1	18.1	18.1	64.3	53.3		51.4	44.4	
Effective Green, g (s)	25.1	18.1	18.1	25.1	18.1	18.1	64.3	53.3		51.4	44.4	
Actuated g/C Ratio	0.24	0.17	0.17	0.24	0.17	0.17	0.61	0.51		0.49	0.42	
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	285	613	265	238	584	267	317	2221		185	1851	
v/s Ratio Prot	0.05	0.10		c0.06	0.08		c0.13	c0.53		0.05	0.39	
v/s Ratio Perm	0.13		0.02	c0.15		0.01	0.38			0.29		
v/c Ratio	0.77	0.61	0.09	0.86	0.46	0.09	0.84	1.04		0.70	0.93	
Uniform Delay, d1	36.1	40.4	36.7	36.9	39.3	36.7	30.1	26.1		23.3	29.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	12.2	1.8	0.1	25.8	0.6	0.1	17.1	30.6		11.4	9.2	
Delay (s)	48.3	42.2	36.8	62.7	39.9	36.8	47.2	56.6		34.7	38.2	
Level of Service	D	D	D	E	D	D	D	E		C	D	
Approach Delay (s)		43.1			46.9			55.6			37.9	
Approach LOS		D			D			E			D	

Intersection Summary			
HCM 2000 Control Delay	47.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	105.4	Sum of lost time (s)	20.0
Intersection Capacity Utilization	93.9%	ICU Level of Service	F
Analysis Period (min)	15		

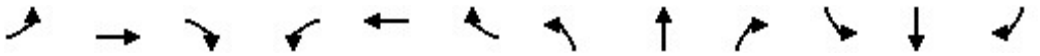
c Critical Lane Group



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	80	20	215	95	25	2445	10	1965
v/c Ratio	0.41	0.05	0.64	0.21	0.12	0.91	0.05	0.77
Control Delay	43.1	0.2	38.0	10.4	10.3	25.4	9.9	21.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.1	0.2	38.0	10.4	10.3	25.4	9.9	21.0
Queue Length 50th (m)	13.3	0.0	31.2	2.7	1.5	143.1	0.6	93.7
Queue Length 95th (m)	29.6	0.0	57.7	14.8	7.0	#349.4	3.7	#248.1
Internal Link Dist (m)		170.8		112.7		238.4		202.3
Turn Bay Length (m)	40.0		60.0		30.0		30.0	
Base Capacity (vph)	448	656	336	816	202	2683	202	2558
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	0.18	0.03	0.64	0.12	0.12	0.91	0.05	0.77

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	0	20	215	20	75	25	2430	15	10	1935	30
Future Volume (vph)	80	0	20	215	20	75	25	2430	15	10	1935	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	6.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	*0.80		1.00	*0.80	
Frpb, ped/bikes	1.00	0.97		1.00	0.98		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.85		1.00	0.88		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1704	1544		1707	1615		1711	4465		1711	4415	
Flt Permitted	0.70	1.00		0.56	1.00		0.07	1.00		0.07	1.00	
Satd. Flow (perm)	1247	1544		1011	1615		128	4465		131	4415	
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)	80	0	20	215	20	75	25	2430	15	10	1935	30
RTOR Reduction (vph)	0	17	0	0	56	0	0	0	0	0	1	0
Lane Group Flow (vph)	80	3	0	215	39	0	25	2445	0	10	1964	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%
Turn Type	Perm	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	12.4	12.4		24.8	24.8		58.8	56.4		56.2	55.1	
Effective Green, g (s)	12.4	12.4		24.8	24.8		58.8	56.4		56.2	55.1	
Actuated g/C Ratio	0.13	0.13		0.25	0.25		0.60	0.57		0.57	0.56	
Clearance Time (s)	6.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	157	194		314	407		115	2561		92	2474	
v/s Ratio Prot		0.00		c0.06	0.02		c0.01	c0.55		0.00	0.44	
v/s Ratio Perm	0.06			c0.11			0.12			0.06		
v/c Ratio	0.51	0.01		0.68	0.10		0.22	0.95		0.11	0.79	
Uniform Delay, d1	40.1	37.6		32.3	28.2		13.5	19.7		20.6	17.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.6	0.0		6.1	0.1		1.0	9.6		0.5	2.1	
Delay (s)	42.7	37.6		38.4	28.3		14.5	29.3		21.1	19.2	
Level of Service	D	D		D	C		B	C		C	B	
Approach Delay (s)		41.7			35.3			29.1			19.2	
Approach LOS		D			D			C			B	

Intersection Summary			
HCM 2000 Control Delay	25.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	98.3	Sum of lost time (s)	20.0
Intersection Capacity Utilization	77.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

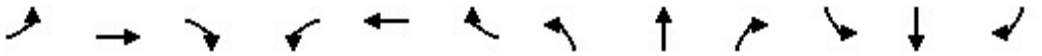


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	155	90	195	270	170	90	2250	285	100	1950	120
v/c Ratio	0.70	0.25	0.47	0.72	0.31	0.49	1.05	0.37	0.54	0.87	0.15
Control Delay	55.1	36.3	13.1	41.2	23.8	22.7	61.1	13.7	26.2	30.7	5.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.1	36.3	13.1	41.2	23.8	22.7	61.1	13.7	26.2	30.7	5.9
Queue Length 50th (m)	31.0	16.4	7.5	46.4	22.5	7.1	~212.4	22.0	8.0	150.8	2.1
Queue Length 95th (m)	52.4	30.0	26.5	69.6	39.2	23.6	#317.5	54.6	#31.4	#255.9	14.7
Internal Link Dist (m)		188.1			109.9		464.0			238.4	
Turn Bay Length (m)	60.0		40.0	60.0		90.0		40.0	70.0		30.0
Base Capacity (vph)	403	645	631	376	804	185	2150	776	184	2231	809
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	0.38	0.14	0.31	0.72	0.21	0.49	1.05	0.37	0.54	0.87	0.15

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	155	90	195	270	105	65	90	2250	285	100	1950	120
Future Volume (vph)	155	90	195	270	105	65	90	2250	285	100	1950	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	6.0	6.0	6.0	4.0	6.0		4.0	6.0	6.0	4.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	*0.80	1.00	1.00	*0.80	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	0.99		1.00	1.00	0.96	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	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.94		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1705	1863	1531	1707	1742		1711	4471	1510	1711	4427	1510
Flt Permitted	0.65	1.00	1.00	0.58	1.00		0.08	1.00	1.00	0.08	1.00	1.00
Satd. Flow (perm)	1166	1863	1531	1048	1742		141	4471	1510	137	4427	1510
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	155	90	195	270	105	65	90	2250	285	100	1950	120
RTOR Reduction (vph)	0	0	124	0	22	0	0	0	51	0	0	50
Lane Group Flow (vph)	155	90	71	270	148	0	90	2250	234	100	1950	70
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%
Turn Type	Perm	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		6
Actuated Green, G (s)	20.2	20.2	20.2	31.2	31.2		56.7	51.2	51.2	59.7	52.7	52.7
Effective Green, g (s)	20.2	20.2	20.2	31.2	31.2		56.7	51.2	51.2	59.7	52.7	52.7
Actuated g/C Ratio	0.19	0.19	0.19	0.30	0.30		0.54	0.49	0.49	0.57	0.50	0.50
Clearance Time (s)	6.0	6.0	6.0	4.0	6.0		4.0	6.0	6.0	4.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	223	357	293	353	515		157	2171	733	182	2213	755
v/s Ratio Prot		0.05		c0.05	0.09		0.03	c0.50		c0.04	0.44	
v/s Ratio Perm	0.13		0.05	c0.18			0.28		0.15	0.28		0.05
v/c Ratio	0.70	0.25	0.24	0.76	0.29		0.57	1.04	0.32	0.55	0.88	0.09
Uniform Delay, d1	39.7	36.2	36.1	33.5	28.5		19.4	27.1	16.5	22.4	23.6	13.8
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	9.0	0.4	0.4	9.5	0.3		5.0	29.5	0.5	3.4	4.8	0.1
Delay (s)	48.8	36.6	36.6	43.0	28.9		24.4	56.6	17.0	25.8	28.4	13.9
Level of Service	D	D	D	D	C		C	E	B	C	C	B
Approach Delay (s)		40.9			37.5			51.2			27.5	
Approach LOS		D			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	40.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	105.4	Sum of lost time (s)	20.0
Intersection Capacity Utilization	92.6%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	NBL	NBT	SBT
Lane Group Flow (vph)	25	5	145	215
v/c Ratio	0.05	0.01	0.09	0.14
Control Delay	13.2	4.6	3.6	3.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	13.2	4.6	3.6	3.0
Queue Length 50th (m)	1.4	0.0	0.0	0.0
Queue Length 95th (m)	6.2	1.7	17.1	20.3
Internal Link Dist (m)	180.6		51.4	61.3
Turn Bay Length (m)		25.0		
Base Capacity (vph)	815	1003	1674	1588
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.03	0.00	0.09	0.14

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	25	0	5	145	145	70
Future Volume (vph)	25	0	5	145	145	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.3	3.6	3.6	3.6
Total Lost time (s)	6.0		6.0	6.0	6.0	
Lane Util. Factor	1.00		1.00	1.00	1.00	
Frpb, ped/bikes	1.00		1.00	1.00	0.99	
Flpb, ped/bikes	1.00		0.99	1.00	1.00	
Frt	1.00		1.00	1.00	0.96	
Flt Protected	0.95		0.95	1.00	1.00	
Satd. Flow (prot)	1770		1702	1863	1764	
Flt Permitted	0.95		0.62	1.00	1.00	
Satd. Flow (perm)	1770		1117	1863	1764	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	25	0	5	145	145	70
RTOR Reduction (vph)	0	0	0	0	16	0
Lane Group Flow (vph)	25	0	5	145	199	0
Confl. Peds. (#/hr)	5	5	5			5
Confl. Bikes (#/hr)		5				5
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases			2			
Actuated Green, G (s)	2.8		34.3	34.3	34.3	
Effective Green, g (s)	2.8		34.3	34.3	34.3	
Actuated g/C Ratio	0.06		0.70	0.70	0.70	
Clearance Time (s)	6.0		6.0	6.0	6.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	100		780	1301	1232	
v/s Ratio Prot	c0.01			0.08	c0.11	
v/s Ratio Perm			0.00			
v/c Ratio	0.25		0.01	0.11	0.16	
Uniform Delay, d1	22.1		2.2	2.4	2.5	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	1.3		0.0	0.0	0.1	
Delay (s)	23.5		2.2	2.5	2.6	
Level of Service	C		A	A	A	
Approach Delay (s)	23.5			2.4	2.6	
Approach LOS	C			A	A	

Intersection Summary			
HCM 2000 Control Delay	3.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.17		
Actuated Cycle Length (s)	49.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	36.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	NBT	SBT
Lane Group Flow (vph)	30	145	165
v/c Ratio	0.07	0.10	0.11
Control Delay	9.5	5.3	5.2
Queue Delay	0.0	0.0	0.0
Total Delay	9.5	5.3	5.2
Queue Length 50th (m)	0.6	0.0	0.0
Queue Length 95th (m)	5.0	17.4	19.2
Internal Link Dist (m)	16.7	34.1	29.1
Turn Bay Length (m)			
Base Capacity (vph)	725	1515	1535
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.04	0.10	0.11

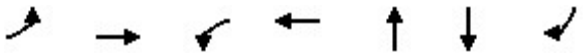
Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	10	20	10	135	160	5
Future Volume (vph)	10	20	10	135	160	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0			6.0	6.0	
Lane Util. Factor	1.00			1.00	1.00	
Frpb, ped/bikes	0.97			1.00	1.00	
Flpb, ped/bikes	1.00			1.00	1.00	
Frt	0.91			1.00	1.00	
Flt Protected	0.98			1.00	1.00	
Satd. Flow (prot)	1616			1856	1853	
Flt Permitted	0.98			0.98	1.00	
Satd. Flow (perm)	1616			1831	1853	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	10	20	10	135	160	5
RTOR Reduction (vph)	18	0	0	0	1	0
Lane Group Flow (vph)	12	0	0	145	164	0
Confl. Peds. (#/hr)	5	5	5			5
Confl. Bikes (#/hr)		5				5
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases			2			
Actuated Green, G (s)	4.8			33.7	33.7	
Effective Green, g (s)	4.8			33.7	33.7	
Actuated g/C Ratio	0.10			0.67	0.67	
Clearance Time (s)	6.0			6.0	6.0	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	153			1221	1236	
v/s Ratio Prot	c0.01				c0.09	
v/s Ratio Perm				0.08		
v/c Ratio	0.08			0.12	0.13	
Uniform Delay, d1	20.8			3.0	3.1	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	0.2			0.0	0.0	
Delay (s)	21.1			3.1	3.1	
Level of Service	C			A	A	
Approach Delay (s)	21.1			3.1	3.1	
Approach LOS	C			A	A	

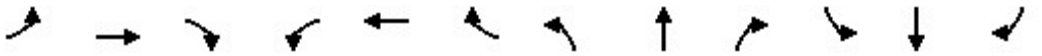
Intersection Summary			
HCM 2000 Control Delay	4.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.13		
Actuated Cycle Length (s)	50.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	36.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



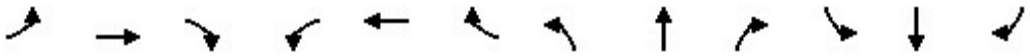
Lane Group	EBL	EBT	WBL	WBT	NBT	SBT	SBR
Lane Group Flow (vph)	20	355	10	265	165	175	25
v/c Ratio	0.03	0.34	0.02	0.26	0.41	0.38	0.05
Control Delay	8.1	9.4	8.0	8.2	14.8	15.6	1.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.1	9.4	8.0	8.2	14.8	15.6	1.8
Queue Length 50th (m)	0.7	15.5	0.4	9.9	9.2	11.3	0.0
Queue Length 95th (m)	4.3	42.1	2.8	29.3	20.9	23.2	1.9
Internal Link Dist (m)		95.3		62.1	101.3	47.0	
Turn Bay Length (m)	45.0		60.0				
Base Capacity (vph)	679	1181	626	1153	815	958	898
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	0.03	0.30	0.02	0.23	0.20	0.18	0.03

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	345	10	10	215	50	70	65	30	35	140	25
Future Volume (vph)	20	345	10	10	215	50	70	65	30	35	140	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.3	3.6	3.6	3.6	3.6	3.6	3.3	3.6	3.6
Total Lost time (s)	6.0	6.0		6.0	6.0			6.0			6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.99			0.99			1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Frt	1.00	1.00		1.00	0.97			0.98			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.99	1.00
Satd. Flow (prot)	1703	1853		1704	1800			1764			1843	1529
Flt Permitted	0.60	1.00		0.55	1.00			0.78			0.90	1.00
Satd. Flow (perm)	1068	1853		984	1800			1410			1679	1529
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	345	10	10	215	50	70	65	30	35	140	25
RTOR Reduction (vph)	0	1	0	0	11	0	0	17	0	0	0	20
Lane Group Flow (vph)	20	354	0	10	254	0	0	148	0	0	175	5
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	22.5	22.5		22.5	22.5			9.3			9.3	9.3
Effective Green, g (s)	22.5	22.5		22.5	22.5			9.3			9.3	9.3
Actuated g/C Ratio	0.51	0.51		0.51	0.51			0.21			0.21	0.21
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0			6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	548	951		505	924			299			356	324
v/s Ratio Prot		c0.19			0.14							
v/s Ratio Perm	0.02			0.01				c0.10			0.10	0.00
v/c Ratio	0.04	0.37		0.02	0.27			0.49			0.49	0.02
Uniform Delay, d1	5.3	6.4		5.2	6.0			15.2			15.2	13.6
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	0.0	0.2		0.0	0.2			1.3			1.1	0.0
Delay (s)	5.3	6.6		5.2	6.2			16.5			16.2	13.7
Level of Service	A	A		A	A			B			B	B
Approach Delay (s)		6.6			6.2			16.5			15.9	
Approach LOS		A			A			B			B	

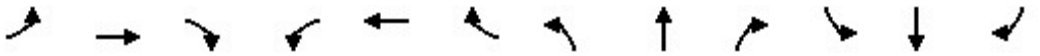
Intersection Summary			
HCM 2000 Control Delay	9.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	43.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	10	5	10	10	30	35	50	225	20	0	70	230
Future Volume (vph)	10	5	10	10	30	35	50	225	20	0	70	230
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	5	10	10	30	35	50	225	20	0	70	230

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	25	75	295	300
Volume Left (vph)	10	10	50	0
Volume Right (vph)	10	35	20	230
Hadj (s)	-0.13	-0.22	0.03	-0.43
Departure Headway (s)	5.2	5.0	4.5	4.1
Degree Utilization, x	0.04	0.10	0.37	0.34
Capacity (veh/h)	606	637	775	850
Control Delay (s)	8.4	8.6	10.1	9.1
Approach Delay (s)	8.4	8.6	10.1	9.1
Approach LOS	A	A	B	A

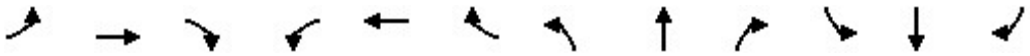
Intersection Summary				
Delay	9.5			
Level of Service	A			
Intersection Capacity Utilization	50.2%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	0	80	35	0	10	30	240	15	5	70	15
Future Volume (Veh/h)	45	0	80	35	0	10	30	240	15	5	70	15
Sign Control		Stop			Stop			Free			Free	
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)	45	0	80	35	0	10	30	240	15	5	70	15
Pedestrians		5			5			5			5	
Lane Width (m)		3.6			3.6			3.6			3.6	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	415	412	88	485	412	258	90			260		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	415	412	88	485	412	258	90			260		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	91	100	92	92	100	99	98			100		
cM capacity (veh/h)	523	513	963	437	513	775	1499			1299		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	125	45	285	90
Volume Left	45	35	30	5
Volume Right	80	10	15	15
cSH	739	484	1499	1299
Volume to Capacity	0.17	0.09	0.02	0.00
Queue Length 95th (m)	4.8	2.4	0.5	0.1
Control Delay (s)	10.9	13.2	0.9	0.5
Lane LOS	B	B	A	A
Approach Delay (s)	10.9	13.2	0.9	0.5
Approach LOS	B	B		

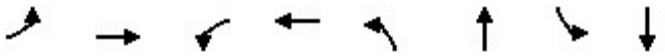
Intersection Summary				
Average Delay	4.1			
Intersection Capacity Utilization	37.0%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	140	290	45	40	250	20	50	120	60	25	90	140
Future Volume (Veh/h)	140	290	45	40	250	20	50	120	60	25	90	140
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)	140	290	45	40	250	20	50	120	60	25	90	140
Pedestrians		5			5			5			5	
Lane Width (m)		3.5			3.5			3.5			3.6	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		134			119							
pX, platoon unblocked												
vC, conflicting volume	275			340			1118	952	322	1040	965	270
vC1, stage 1 conf vol							598	598		345	345	
vC2, stage 2 conf vol							520	355		695	620	
vCu, unblocked vol	275			340			1118	952	322	1040	965	270
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	89			97			76	67	92	88	75	82
cM capacity (veh/h)	1283			1214			207	365	713	208	358	762

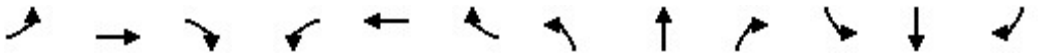
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1
Volume Total	140	335	40	270	50	180	255
Volume Left	140	0	40	0	50	0	25
Volume Right	0	45	0	20	0	60	140
cSH	1283	1700	1214	1700	207	436	459
Volume to Capacity	0.11	0.20	0.03	0.16	0.24	0.41	0.56
Queue Length 95th (m)	2.9	0.0	0.8	0.0	7.3	15.9	26.5
Control Delay (s)	8.2	0.0	8.1	0.0	27.8	19.0	22.2
Lane LOS	A		A		D	C	C
Approach Delay (s)	2.4		1.0		20.9		22.2
Approach LOS					C		C

Intersection Summary			
Average Delay	9.4		
Intersection Capacity Utilization	61.1%	ICU Level of Service	B
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	65	725	190	700	5	125	10	130
v/c Ratio	0.24	0.51	0.37	0.29	0.02	0.29	0.04	0.31
Control Delay	18.4	16.8	7.9	6.9	19.0	13.0	19.2	21.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.4	16.8	7.9	6.9	19.0	13.0	19.2	21.0
Queue Length 50th (m)	4.5	29.5	6.7	16.2	0.4	5.4	0.9	11.0
Queue Length 95th (m)	18.4	68.7	24.2	43.0	3.0	19.2	4.7	27.7
Internal Link Dist (m)		177.9		126.7		56.9		127.4
Turn Bay Length (m)	30.0		30.0		40.0		35.0	
Base Capacity (vph)	595	3073	789	3539	800	1131	804	1206
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	0.11	0.24	0.24	0.20	0.01	0.11	0.01	0.11

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	705	20	190	695	5	5	50	75	10	110	20
Future Volume (vph)	65	705	20	190	695	5	5	50	75	10	110	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	6.0	6.0		4.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00		1.00	0.91		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)	1705	3555		1710	3605		1706	1673		1706	1814	
Flt Permitted	0.39	1.00		0.27	1.00		0.67	1.00		0.68	1.00	
Satd. Flow (perm)	692	3555		490	3605		1210	1673		1215	1814	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	65	705	20	190	695	5	5	50	75	10	110	20
RTOR Reduction (vph)	0	2	0	0	0	0	0	53	0	0	7	0
Lane Group Flow (vph)	65	723	0	190	700	0	5	72	0	10	123	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	2%	1%	2%	2%	0%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	22.4	22.4		35.2	35.2		9.8	9.8		9.8	9.8	
Effective Green, g (s)	22.4	22.4		35.2	35.2		9.8	9.8		9.8	9.8	
Actuated g/C Ratio	0.39	0.39		0.62	0.62		0.17	0.17		0.17	0.17	
Clearance Time (s)	6.0	6.0		4.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	271	1397		490	2226		208	287		208	311	
v/s Ratio Prot		c0.20		c0.06	0.19			0.04			c0.07	
v/s Ratio Perm	0.09			0.18			0.00			0.01		
v/c Ratio	0.24	0.52		0.39	0.31		0.02	0.25		0.05	0.40	
Uniform Delay, d1	11.6	13.2		5.3	5.2		19.6	20.4		19.7	21.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	0.3		0.5	0.1		0.0	0.5		0.1	0.8	
Delay (s)	12.1	13.5		5.9	5.3		19.7	20.9		19.8	21.8	
Level of Service	B	B		A	A		B	C		B	C	
Approach Delay (s)		13.4			5.4			20.8			21.7	
Approach LOS		B			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	10.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	57.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	61.3%	ICU Level of Service	B
Analysis Period (min)	15		

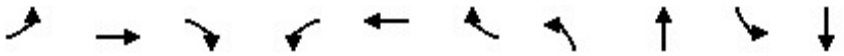
c Critical Lane Group



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	655	110	0	715	0	135
Future Volume (Veh/h)	655	110	0	715	0	135
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	655	110	0	715	0	135
Pedestrians	5			5	5	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	135			202		
pX, platoon unblocked			0.91		0.94	0.91
vC, conflicting volume			770		1078	392
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			543		677	127
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	83
cM capacity (veh/h)			924		358	809

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	437	328	358	358	135
Volume Left	0	0	0	0	0
Volume Right	0	110	0	0	135
cSH	1700	1700	1700	1700	809
Volume to Capacity	0.26	0.19	0.21	0.21	0.17
Queue Length 95th (m)	0.0	0.0	0.0	0.0	4.8
Control Delay (s)	0.0	0.0	0.0	0.0	10.3
Lane LOS					B
Approach Delay (s)	0.0		0.0		10.3
Approach LOS					B

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	37.9%	ICU Level of Service	A
Analysis Period (min)	15		

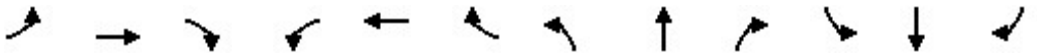


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	170	375	185	280	320	125	175	2245	205	2020
v/c Ratio	0.58	0.61	0.48	0.98	0.51	0.34	0.93	1.07	1.00	0.95
Control Delay	36.4	44.4	15.0	81.9	42.1	8.7	73.1	68.0	90.6	38.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.4	44.4	15.0	81.9	42.1	8.7	73.1	68.0	90.6	38.2
Queue Length 50th (m)	27.8	39.7	8.2	~49.5	33.2	0.0	20.1	~214.6	26.9	159.0
Queue Length 95th (m)	45.0	54.4	27.5	#88.3	46.6	14.8	#77.9	#319.5	#93.2	#268.7
Internal Link Dist (m)		334.1			111.1			202.3		436.5
Turn Bay Length (m)	50.0		30.0	50.0		30.0	100.0		100.0	
Base Capacity (vph)	292	1110	587	286	1132	576	188	2107	204	2119
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	0.58	0.34	0.32	0.98	0.28	0.22	0.93	1.07	1.00	0.95

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

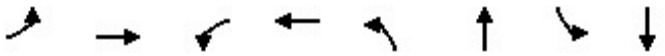
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	170	375	185	280	320	125	175	2060	185	205	1750	270
Future Volume (vph)	170	375	185	280	320	125	175	2060	185	205	1750	270
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	*0.80		1.00	*0.80	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1629	3539	1560	1743	3610	1560	1745	4415		1745	4344	
Flt Permitted	0.47	1.00	1.00	0.39	1.00	1.00	0.08	1.00		0.08	1.00	
Satd. Flow (perm)	799	3539	1560	718	3610	1560	146	4415		143	4344	
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)	170	375	185	280	320	125	175	2060	185	205	1750	270
RTOR Reduction (vph)	0	0	117	0	0	103	0	7	0	0	13	0
Lane Group Flow (vph)	170	375	68	280	320	22	175	2238	0	205	2007	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	7%	2%	0%	0%	0%	0%	0%	2%	0%	0%	3%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	27.2	18.2	18.2	27.2	18.2	18.2	57.2	50.2		59.2	51.2	
Effective Green, g (s)	27.2	18.2	18.2	27.2	18.2	18.2	57.2	50.2		59.2	51.2	
Actuated g/C Ratio	0.26	0.17	0.17	0.26	0.17	0.17	0.54	0.48		0.56	0.49	
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	277	611	269	272	623	269	185	2102		201	2110	
v/s Ratio Prot	0.05	0.11		c0.09	0.09		0.06	c0.51		c0.08	0.46	
v/s Ratio Perm	0.11		0.04	c0.18		0.01	0.45			0.49		
v/c Ratio	0.61	0.61	0.25	1.03	0.51	0.08	0.95	1.06		1.02	0.95	
Uniform Delay, d1	32.5	40.3	37.7	37.2	39.6	36.6	26.5	27.6		30.6	25.9	
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	4.0	1.8	0.5	62.4	0.7	0.1	50.2	39.5		68.7	10.6	
Delay (s)	36.5	42.2	38.2	99.6	40.3	36.7	76.7	67.1		99.3	36.6	
Level of Service	D	D	D	F	D	D	E	E		F	D	
Approach Delay (s)		39.9			62.6			67.8			42.3	
Approach LOS		D			E			E			D	

Intersection Summary			
HCM 2000 Control Delay	54.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	105.4	Sum of lost time (s)	20.0
Intersection Capacity Utilization	100.5%	ICU Level of Service	G
Analysis Period (min)	15		

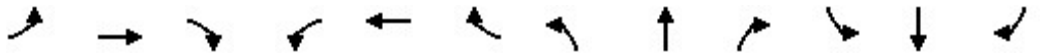
c Critical Lane Group



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	50	60	160	140	25	2430	45	2170
v/c Ratio	0.24	0.18	0.67	0.37	0.13	0.87	0.24	0.75
Control Delay	38.5	23.9	53.3	13.5	7.5	22.0	9.1	16.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Total Delay	38.5	23.9	53.3	13.5	7.5	22.0	9.1	17.0
Queue Length 50th (m)	9.4	6.5	32.9	5.5	1.3	175.5	2.3	95.7
Queue Length 95th (m)	20.4	17.5	55.0	21.7	5.4	#302.7	8.3	229.2
Internal Link Dist (m)		170.8		112.7		238.4		202.3
Turn Bay Length (m)	40.0		60.0		30.0		30.0	
Base Capacity (vph)	367	583	421	592	187	2807	187	2888
Starvation Cap Reductn	0	0	0	0	0	0	0	206
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	0.14	0.10	0.38	0.24	0.13	0.87	0.24	0.81

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	35	25	160	15	125	25	2245	185	45	2090	80
Future Volume (vph)	50	35	25	160	15	125	25	2245	185	45	2090	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	6.0	6.0		6.0	6.0		4.0	6.0		4.0	6.0	
Lane Util. Factor	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	0.98		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.94		1.00	0.87		1.00	0.99		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)	1704	1730		1703	1581		1711	4407		1711	4398	
Flt Permitted	0.62	1.00		0.72	1.00		0.06	1.00		0.06	1.00	
Satd. Flow (perm)	1120	1730		1287	1581		110	4407		107	4398	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	50	35	25	160	15	125	25	2245	185	45	2090	80
RTOR Reduction (vph)	0	20	0	0	90	0	0	5	0	0	2	0
Lane Group Flow (vph)	50	40	0	160	50	0	25	2425	0	45	2168	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	18.9	18.9		18.9	18.9		68.2	65.7		71.0	67.1	
Effective Green, g (s)	18.9	18.9		18.9	18.9		68.2	65.7		71.0	67.1	
Actuated g/C Ratio	0.18	0.18		0.18	0.18		0.65	0.63		0.68	0.64	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	202	312		232	285		110	2770		132	2823	
v/s Ratio Prot		0.02			0.03		0.01	c0.55		c0.01	0.49	
v/s Ratio Perm	0.04			c0.12			0.14			0.22		
v/c Ratio	0.25	0.13		0.69	0.18		0.23	0.88		0.34	0.77	
Uniform Delay, d1	36.7	35.9		40.1	36.2		11.4	16.0		16.9	13.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	0.2		8.3	0.3		1.1	3.7		1.5	1.5	
Delay (s)	37.3	36.1		48.3	36.5		12.5	19.7		18.4	14.7	
Level of Service	D	D		D	D		B	B		B	B	
Approach Delay (s)		36.6			42.8			19.6			14.8	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	19.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	104.5	Sum of lost time (s)	16.0
Intersection Capacity Utilization	82.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

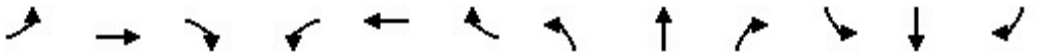


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	85	100	140	215	130	200	2335	305	150	2010	115
v/c Ratio	0.45	0.34	0.39	0.64	0.27	0.81	1.04	0.38	0.77	0.96	0.15
Control Delay	44.9	39.7	9.0	38.6	25.3	47.8	56.6	13.0	45.6	39.6	5.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.9	39.7	9.0	38.6	25.3	47.8	56.6	13.0	45.6	39.6	5.7
Queue Length 50th (m)	15.9	18.3	0.0	35.5	17.8	21.7	~182.4	21.2	11.9	146.5	1.4
Queue Length 95th (m)	29.9	32.6	15.0	55.2	32.2	#83.4	#335.5	60.2	#63.3	#280.6	14.4
Internal Link Dist (m)		188.1			109.9		464.0			238.4	
Turn Bay Length (m)	60.0		40.0	60.0		90.0		40.0	70.0		30.0
Base Capacity (vph)	437	673	643	334	848	246	2244	806	194	2088	763
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	0.19	0.15	0.22	0.64	0.15	0.81	1.04	0.38	0.77	0.96	0.15

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	85	100	140	215	95	35	200	2335	305	150	2010	115
Future Volume (vph)	85	100	140	215	95	35	200	2335	305	150	2010	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	6.0	6.0	6.0	4.0	6.0		4.0	6.0	6.0	4.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	*0.80	1.00	1.00	*0.80	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	0.99		1.00	1.00	0.97	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	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1705	1863	1530	1708	1778		1711	4471	1511	1711	4427	1511
Flt Permitted	0.67	1.00	1.00	0.55	1.00		0.08	1.00	1.00	0.08	1.00	1.00
Satd. Flow (perm)	1209	1863	1530	992	1778		143	4471	1511	152	4427	1511
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)	85	100	140	215	95	35	200	2335	305	150	2010	115
RTOR Reduction (vph)	0	0	118	0	13	0	0	0	50	0	0	53
Lane Group Flow (vph)	85	100	22	215	117	0	200	2335	255	150	2010	62
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%
Turn Type	Perm	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		6
Actuated Green, G (s)	15.7	15.7	15.7	26.8	26.8		60.5	50.4	50.4	54.5	47.4	47.4
Effective Green, g (s)	15.7	15.7	15.7	26.8	26.8		60.5	50.4	50.4	54.5	47.4	47.4
Actuated g/C Ratio	0.16	0.16	0.16	0.27	0.27		0.60	0.50	0.50	0.54	0.47	0.47
Clearance Time (s)	6.0	6.0	6.0	4.0	6.0		4.0	6.0	6.0	4.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	189	291	239	315	475		244	2246	759	192	2092	714
v/s Ratio Prot		0.05		c0.05	0.07		c0.08	c0.52		0.06	0.45	
v/s Ratio Perm	0.07		0.01	c0.13			0.41		0.17	0.37		0.04
v/c Ratio	0.45	0.34	0.09	0.68	0.25		0.82	1.04	0.34	0.78	0.96	0.09
Uniform Delay, d1	38.4	37.7	36.2	32.3	28.8		26.9	24.9	14.9	21.7	25.6	14.5
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.7	0.7	0.2	6.0	0.3		18.9	30.2	0.6	18.4	12.0	0.1
Delay (s)	40.1	38.4	36.4	38.3	29.1		45.8	55.2	15.5	40.1	37.6	14.7
Level of Service	D	D	D	D	C		D	E	B	D	D	B
Approach Delay (s)		38.0			34.8			50.3			36.6	
Approach LOS		D			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	43.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	100.3	Sum of lost time (s)	20.0
Intersection Capacity Utilization	93.7%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	NBL	NBT	SBT
Lane Group Flow (vph)	55	5	145	330
v/c Ratio	0.12	0.01	0.10	0.24
Control Delay	11.1	7.2	6.0	5.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	11.1	7.2	6.0	5.2
Queue Length 50th (m)	2.6	0.0	0.0	0.0
Queue Length 95th (m)	8.3	1.8	17.8	32.4
Internal Link Dist (m)	180.6		51.4	61.3
Turn Bay Length (m)		25.0		
Base Capacity (vph)	806	840	1558	1463
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.07	0.01	0.09	0.23

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	45	10	5	145	190	140
Future Volume (vph)	45	10	5	145	190	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.3	3.6	3.6	3.6
Total Lost time (s)	6.0		6.0	6.0	6.0	
Lane Util. Factor	1.00		1.00	1.00	1.00	
Frpb, ped/bikes	0.99		1.00	1.00	0.99	
Flpb, ped/bikes	1.00		1.00	1.00	1.00	
Frt	0.98		1.00	1.00	0.94	
Flt Protected	0.96		0.95	1.00	1.00	
Satd. Flow (prot)	1732		1703	1863	1734	
Flt Permitted	0.96		0.56	1.00	1.00	
Satd. Flow (perm)	1732		1007	1863	1734	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	45	10	5	145	190	140
RTOR Reduction (vph)	9	0	0	0	30	0
Lane Group Flow (vph)	46	0	5	145	300	0
Confl. Peds. (#/hr)	5	5	5			5
Confl. Bikes (#/hr)		5				5
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases			2			
Actuated Green, G (s)	5.1		30.3	30.3	30.3	
Effective Green, g (s)	5.1		30.3	30.3	30.3	
Actuated g/C Ratio	0.11		0.64	0.64	0.64	
Clearance Time (s)	6.0		6.0	6.0	6.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	186		643	1190	1108	
v/s Ratio Prot	c0.03			0.08	c0.17	
v/s Ratio Perm			0.00			
v/c Ratio	0.25		0.01	0.12	0.27	
Uniform Delay, d1	19.4		3.1	3.3	3.7	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	0.7		0.0	0.0	0.1	
Delay (s)	20.1		3.1	3.4	3.9	
Level of Service	C		A	A	A	
Approach Delay (s)	20.1			3.4	3.9	
Approach LOS	C			A	A	

Intersection Summary			
HCM 2000 Control Delay	5.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.27		
Actuated Cycle Length (s)	47.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	38.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	NBT	SBT
Lane Group Flow (vph)	25	170	205
v/c Ratio	0.06	0.10	0.12
Control Delay	9.4	3.6	3.4
Queue Delay	0.0	0.0	0.0
Total Delay	9.4	3.6	3.4
Queue Length 50th (m)	0.6	0.0	0.0
Queue Length 95th (m)	5.0	19.8	22.3
Internal Link Dist (m)	16.7	34.1	29.1
Turn Bay Length (m)			
Base Capacity (vph)	727	1635	1654
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.03	0.10	0.12

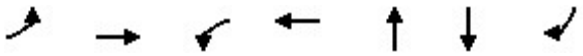
Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	10	15	15	155	185	20
Future Volume (vph)	10	15	15	155	185	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0			6.0	6.0	
Lane Util. Factor	1.00			1.00	1.00	
Frpb, ped/bikes	0.96			1.00	1.00	
Flpb, ped/bikes	1.00			1.00	1.00	
Frt	0.92			1.00	0.99	
Flt Protected	0.98			1.00	1.00	
Satd. Flow (prot)	1619			1854	1833	
Flt Permitted	0.98			0.97	1.00	
Satd. Flow (perm)	1619			1813	1833	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	10	15	15	155	185	20
RTOR Reduction (vph)	14	0	0	0	4	0
Lane Group Flow (vph)	11	0	0	170	201	0
Confl. Peds. (#/hr)	5	5	5			5
Confl. Bikes (#/hr)		5				5
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases			2			
Actuated Green, G (s)	2.8			34.3	34.3	
Effective Green, g (s)	2.8			34.3	34.3	
Actuated g/C Ratio	0.06			0.70	0.70	
Clearance Time (s)	6.0			6.0	6.0	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	92			1266	1280	
v/s Ratio Prot	c0.01				c0.11	
v/s Ratio Perm				0.09		
v/c Ratio	0.12			0.13	0.16	
Uniform Delay, d1	22.0			2.5	2.5	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	0.6			0.0	0.1	
Delay (s)	22.6			2.5	2.6	
Level of Service	C			A	A	
Approach Delay (s)	22.6			2.5	2.6	
Approach LOS	C			A	A	

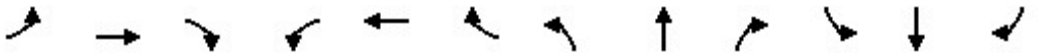
Intersection Summary			
HCM 2000 Control Delay	3.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.15		
Actuated Cycle Length (s)	49.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	40.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



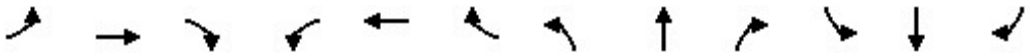
Lane Group	EBL	EBT	WBL	WBT	NBT	SBT	SBR
Lane Group Flow (vph)	55	185	30	225	145	130	60
v/c Ratio	0.09	0.18	0.05	0.22	0.32	0.27	0.13
Control Delay	8.3	7.5	8.0	7.8	13.2	14.1	4.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.3	7.5	8.0	7.8	13.2	14.1	4.9
Queue Length 50th (m)	2.1	6.4	1.1	8.0	7.8	8.1	0.0
Queue Length 95th (m)	8.8	20.3	5.5	24.6	18.0	17.6	5.6
Internal Link Dist (m)		95.3		62.1	101.3	47.0	
Turn Bay Length (m)	45.0		60.0				
Base Capacity (vph)	706	1157	732	1155	925	1016	877
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	0.08	0.16	0.04	0.19	0.16	0.13	0.07

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	150	35	30	180	45	25	95	25	5	125	60
Future Volume (vph)	55	150	35	30	180	45	25	95	25	5	125	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.3	3.6	3.6	3.6	3.6	3.6	3.3	3.6	3.6
Total Lost time (s)	6.0	6.0		6.0	6.0			6.0			6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.99			0.99			1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Frt	1.00	0.97		1.00	0.97			0.98			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.99			1.00	1.00
Satd. Flow (prot)	1703	1800		1702	1796			1791			1859	1528
Flt Permitted	0.62	1.00		0.64	1.00			0.91			0.98	1.00
Satd. Flow (perm)	1108	1800		1148	1796			1646			1829	1528
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	55	150	35	30	180	45	25	95	25	5	125	60
RTOR Reduction (vph)	0	11	0	0	12	0	0	17	0	0	0	47
Lane Group Flow (vph)	55	174	0	30	213	0	0	128	0	0	130	13
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	23.3	23.3		23.3	23.3			9.3			9.3	9.3
Effective Green, g (s)	23.3	23.3		23.3	23.3			9.3			9.3	9.3
Actuated g/C Ratio	0.52	0.52		0.52	0.52			0.21			0.21	0.21
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0			6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	578	940		599	938			343			381	318
v/s Ratio Prot		0.10			c0.12							
v/s Ratio Perm	0.05			0.03				c0.08			0.07	0.01
v/c Ratio	0.10	0.19		0.05	0.23			0.37			0.34	0.04
Uniform Delay, d1	5.4	5.6		5.2	5.8			15.2			15.0	14.1
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	0.1	0.1		0.0	0.1			0.7			0.5	0.1
Delay (s)	5.4	5.7		5.3	5.9			15.8			15.6	14.1
Level of Service	A	A		A	A			B			B	B
Approach Delay (s)		5.7			5.8			15.8			15.1	
Approach LOS		A			A			B			B	

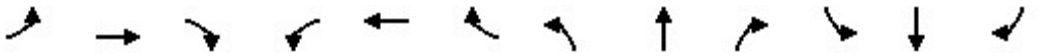
Intersection Summary			
HCM 2000 Control Delay	9.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.27		
Actuated Cycle Length (s)	44.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	72.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	185	25	55	40	15	90	45	290	10	20	145	240
Future Volume (vph)	185	25	55	40	15	90	45	290	10	20	145	240
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)	185	25	55	40	15	90	45	290	10	20	145	240

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	265	145	345	405
Volume Left (vph)	185	40	45	20
Volume Right (vph)	55	90	10	240
Hadj (s)	0.05	-0.28	0.04	-0.31
Departure Headway (s)	6.5	6.5	6.1	5.7
Degree Utilization, x	0.48	0.26	0.58	0.64
Capacity (veh/h)	495	454	552	593
Control Delay (s)	15.4	11.9	17.3	18.1
Approach Delay (s)	15.4	11.9	17.3	18.1
Approach LOS	C	B	C	C

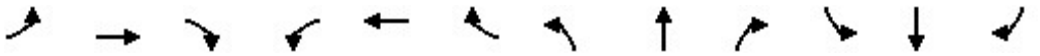
Intersection Summary				
Delay	16.5			
Level of Service	C			
Intersection Capacity Utilization	60.8%	ICU Level of Service	B	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	0	60	35	5	25	90	280	45	25	150	65
Future Volume (Veh/h)	40	0	60	35	5	25	90	280	45	25	150	65
Sign Control		Stop			Stop			Free			Free	
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)	40	0	60	35	5	25	90	280	45	25	150	65
Pedestrians		5			5			5			5	
Lane Width (m)		3.6			3.6			3.6			3.6	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	752	748	192	785	758	312	220			330		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	752	748	192	785	758	312	220			330		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	86	100	93	87	98	97	93			98		
cM capacity (veh/h)	286	309	842	265	305	722	1344			1224		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	100	65	415	240
Volume Left	40	35	90	25
Volume Right	60	25	45	65
cSH	474	355	1344	1224
Volume to Capacity	0.21	0.18	0.07	0.02
Queue Length 95th (m)	6.3	5.3	1.7	0.5
Control Delay (s)	14.6	17.4	2.2	1.0
Lane LOS	B	C	A	A
Approach Delay (s)	14.6	17.4	2.2	1.0
Approach LOS	B	C		

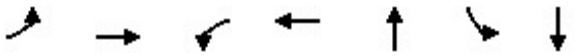
Intersection Summary				
Average Delay	4.6			
Intersection Capacity Utilization	53.8%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	245	185	125	30	165	70	30	155	30	25	95	150
Future Volume (Veh/h)	245	185	125	30	165	70	30	155	30	25	95	150
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)	245	185	125	30	165	70	30	155	30	25	95	150
Pedestrians		5			5			5			5	
Lane Width (m)		3.5			3.5			3.5			3.6	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		134			119							
pX, platoon unblocked												
vC, conflicting volume	240			315			1170	1042	258	1052	1070	210
vC1, stage 1 conf vol							742	742		265	265	
vC2, stage 2 conf vol							428	300		788	805	
vCu, unblocked vol	240			315			1170	1042	258	1052	1070	210
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	81			98			81	48	96	81	66	82
cM capacity (veh/h)	1321			1240			158	297	775	131	279	823

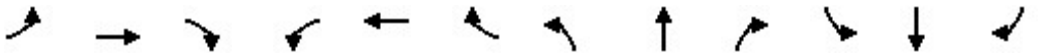
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1
Volume Total	245	310	30	235	30	185	270
Volume Left	245	0	30	0	30	0	25
Volume Right	0	125	0	70	0	30	150
cSH	1321	1700	1240	1700	158	330	378
Volume to Capacity	0.19	0.18	0.02	0.14	0.19	0.56	0.71
Queue Length 95th (m)	5.4	0.0	0.6	0.0	5.4	26.0	42.9
Control Delay (s)	8.3	0.0	8.0	0.0	33.1	28.9	35.0
Lane LOS	A		A		D	D	D
Approach Delay (s)	3.7		0.9		29.5		35.0
Approach LOS					D		D

Intersection Summary				
Average Delay	13.9			
Intersection Capacity Utilization	66.5%	ICU Level of Service	C	
Analysis Period (min)	15			



Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	30	775	20	610	90	10	75
v/c Ratio	0.06	0.33	0.05	0.26	0.16	0.03	0.14
Control Delay	9.6	8.2	9.8	7.8	8.6	11.3	10.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.6	8.2	9.8	7.8	8.6	11.3	10.0
Queue Length 50th (m)	1.1	18.5	0.7	13.7	3.2	0.6	3.5
Queue Length 95th (m)	7.1	51.6	5.3	39.6	10.7	3.0	10.3
Internal Link Dist (m)		177.9		126.7	56.9		127.4
Turn Bay Length (m)	30.0		30.0			30.0	
Base Capacity (vph)	753	3574	642	3535	1601	1162	1653
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	0.04	0.22	0.03	0.17	0.06	0.01	0.05

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	775	0	20	605	5	0	50	40	10	55	20
Future Volume (vph)	30	775	0	20	605	5	0	50	40	10	55	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	6.0	6.0		6.0	6.0			6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00			0.93		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)	1706	3574		1707	3534			1722		1707	1778	
Flt Permitted	0.42	1.00		0.36	1.00			1.00		0.70	1.00	
Satd. Flow (perm)	756	3574		643	3534			1722		1255	1778	
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)	30	775	0	20	605	5	0	50	40	10	55	20
RTOR Reduction (vph)	0	0	0	0	0	0	0	30	0	0	14	0
Lane Group Flow (vph)	30	775	0	20	610	0	0	60	0	10	61	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	2%	1%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	25.0	25.0		25.0	25.0			7.6		7.6	7.6	
Effective Green, g (s)	25.0	25.0		25.0	25.0			7.6		7.6	7.6	
Actuated g/C Ratio	0.56	0.56		0.56	0.56			0.17		0.17	0.17	
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	423	2003		360	1980			293		213	302	
v/s Ratio Prot		c0.22			0.17			c0.03			0.03	
v/s Ratio Perm	0.04			0.03						0.01		
v/c Ratio	0.07	0.39		0.06	0.31			0.21		0.05	0.20	
Uniform Delay, d1	4.5	5.5		4.4	5.2			15.9		15.5	15.9	
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.1		0.1	0.1			0.3		0.1	0.3	
Delay (s)	4.6	5.6		4.5	5.3			16.3		15.6	16.2	
Level of Service	A	A		A	A			B		B	B	
Approach Delay (s)		5.6			5.3			16.3			16.1	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	6.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	44.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	45.2%	ICU Level of Service	A
Analysis Period (min)	15		

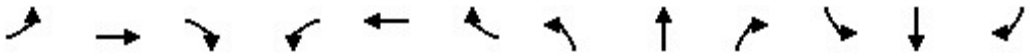
c Critical Lane Group



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	720	0	0	620	0	85
Future Volume (Veh/h)	720	0	0	620	0	85
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	720	0	0	620	0	85
Pedestrians	5			5	5	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	135			202		
pX, platoon unblocked			0.93		0.94	0.93
vC, conflicting volume			725		1040	370
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			542		808	158
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	89
cM capacity (veh/h)			943		296	789

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	480	240	310	310	85
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	85
cSH	1700	1700	1700	1700	789
Volume to Capacity	0.28	0.14	0.18	0.18	0.11
Queue Length 95th (m)	0.0	0.0	0.0	0.0	2.9
Control Delay (s)	0.0	0.0	0.0	0.0	10.1
Lane LOS					B
Approach Delay (s)	0.0		0.0		10.1
Approach LOS					B

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	33.5%	ICU Level of Service	A
Analysis Period (min)	15		

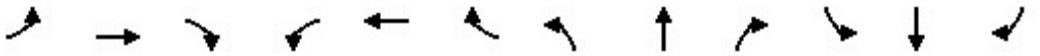


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	245	315	140	210	230	195	235	2180	260	145	1565	100
v/c Ratio	0.78	0.55	0.38	0.78	0.42	0.51	0.85	1.20	0.31	0.76	0.98	0.13
Control Delay	50.8	43.4	9.1	52.0	41.0	15.0	52.1	123.4	11.0	45.0	48.5	1.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.8	43.4	9.1	52.0	41.0	15.0	52.1	123.5	11.0	45.0	48.5	1.9
Queue Length 50th (m)	43.1	32.7	0.0	36.1	23.3	7.6	31.3	~284.6	16.7	12.1	159.1	0.0
Queue Length 95th (m)	65.4	46.1	15.6	56.3	34.6	27.4	#96.2	#423.3	45.3	#58.5	#283.0	5.3
Internal Link Dist (m)		334.1			111.1			202.3			436.5	
Turn Bay Length (m)	50.0		30.0	50.0		30.0	100.0		30.0	100.0		30.0
Base Capacity (vph)	314	1138	588	270	1084	602	278	1810	841	191	1589	783
Starvation Cap Reductn	0	0	0	0	0	0	0	24	0	0	0	0
Spillback Cap Reductn	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	0	0
Reduced v/c Ratio	0.78	0.28	0.24	0.78	0.21	0.32	0.85	1.22	0.31	0.76	0.98	0.13

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	245	315	140	210	230	195	235	2180	260	145	1565	100
Future Volume (vph)	245	315	140	210	230	195	235	2180	260	145	1565	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	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	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1741	3574	1544	1743	3406	1560	1662	3539	1551	1745	3505	1566
Flt Permitted	0.60	1.00	1.00	0.46	1.00	1.00	0.08	1.00	1.00	0.08	1.00	1.00
Satd. Flow (perm)	1095	3574	1544	852	3406	1560	136	3539	1551	155	3505	1566
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)	245	315	140	210	230	195	235	2180	260	145	1565	100
RTOR Reduction (vph)	0	0	118	0	0	129	0	0	49	0	0	55
Lane Group Flow (vph)	245	315	22	210	230	66	235	2180	211	145	1565	45
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	0%	1%	1%	0%	6%	0%	5%	2%	1%	0%	3%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	23.7	16.7	16.7	23.7	16.7	16.7	64.4	53.4	53.4	54.3	47.3	47.3
Effective Green, g (s)	23.7	16.7	16.7	23.7	16.7	16.7	64.4	53.4	53.4	54.3	47.3	47.3
Actuated g/C Ratio	0.23	0.16	0.16	0.23	0.16	0.16	0.62	0.51	0.51	0.52	0.45	0.45
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	292	573	247	253	546	250	276	1815	795	187	1592	711
v/s Ratio Prot	c0.06	0.09		0.06	0.07		c0.11	c0.62		0.05	0.45	
v/s Ratio Perm	c0.13		0.01	0.13		0.04	0.42		0.14	0.35		0.03
v/c Ratio	0.84	0.55	0.09	0.83	0.42	0.26	0.85	1.20	0.27	0.78	0.98	0.06
Uniform Delay, d1	37.1	40.2	37.2	36.9	39.3	38.3	30.6	25.3	14.3	22.8	28.0	16.0
Progression 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
Incremental Delay, d2	18.6	1.1	0.2	20.0	0.5	0.6	21.5	96.1	0.4	18.0	18.7	0.1
Delay (s)	55.7	41.3	37.4	56.9	39.9	38.9	52.1	121.4	14.7	40.8	46.7	16.0
Level of Service	E	D	D	E	D	D	D	F	B	D	D	B
Approach Delay (s)		45.6			45.2			105.0			44.5	
Approach LOS		D			D			F			D	

Intersection Summary			
HCM 2000 Control Delay	72.5	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	104.1	Sum of lost time (s)	20.0
Intersection Capacity Utilization	109.8%	ICU Level of Service	H
Analysis Period (min)	15		

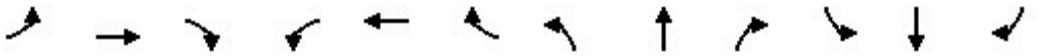
c Critical Lane Group



Lane Group	EBL	EBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	80	20	25	2595	1885	30
v/c Ratio	0.38	0.06	0.24	0.96	0.70	0.03
Control Delay	39.4	0.3	14.9	24.4	11.3	0.4
Queue Delay	0.0	0.0	0.0	1.4	0.2	0.0
Total Delay	39.4	0.3	14.9	25.7	11.5	0.4
Queue Length 50th (m)	13.2	0.0	1.1	187.1	78.1	0.0
Queue Length 95th (m)	26.0	0.0	10.6	#425.1	#232.0	0.9
Internal Link Dist (m)		170.8		238.4	202.3	
Turn Bay Length (m)	40.0		30.0			30.0
Base Capacity (vph)	481	624	106	2714	2688	1168
Starvation Cap Reductn	0	0	0	44	208	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.03	0.24	0.97	0.76	0.03

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	0	20	0	0	0	25	2595	0	0	1885	30
Future Volume (vph)	80	0	20	0	0	0	25	2595	0	0	1885	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	6.0	6.0					6.0	6.0			6.0	6.0
Lane Util. Factor	1.00	1.00					1.00	0.95			0.95	1.00
Frpb, ped/bikes	1.00	0.98					1.00	1.00			1.00	0.96
Flpb, ped/bikes	1.00	1.00					1.00	1.00			1.00	1.00
Frt	1.00	0.85					1.00	1.00			1.00	0.85
Flt Protected	0.95	1.00					0.95	1.00			1.00	1.00
Satd. Flow (prot)	1703	1544					1711	3539			3505	1510
Flt Permitted	0.76	1.00					0.08	1.00			1.00	1.00
Satd. Flow (perm)	1358	1544					139	3539			3505	1510
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)	80	0	20	0	0	0	25	2595	0	0	1885	30
RTOR Reduction (vph)	0	17	0	0	0	0	0	0	0	0	0	8
Lane Group Flow (vph)	80	3	0	0	0	0	25	2595	0	0	1885	22
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%
Turn Type	Perm	NA		pm+pt			Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4		3	8			2			6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	12.4	12.4					70.6	70.6			70.6	70.6
Effective Green, g (s)	12.4	12.4					70.6	70.6			70.6	70.6
Actuated g/C Ratio	0.13	0.13					0.74	0.74			0.74	0.74
Clearance Time (s)	6.0	6.0					6.0	6.0			6.0	6.0
Vehicle Extension (s)	3.0	3.0					5.0	5.0			5.0	5.0
Lane Grp Cap (vph)	177	201					103	2630			2604	1122
v/s Ratio Prot		0.00						c0.73			0.54	
v/s Ratio Perm	c0.06						0.18					0.01
v/c Ratio	0.45	0.01					0.24	0.99			0.72	0.02
Uniform Delay, d1	38.2	36.0					3.8	11.7			6.8	3.2
Progression Factor	1.00	1.00					1.00	1.00			1.00	1.00
Incremental Delay, d2	1.8	0.0					2.6	14.5			1.3	0.0
Delay (s)	40.0	36.0					6.4	26.3			8.0	3.2
Level of Service	D	D					A	C			A	A
Approach Delay (s)		39.2			0.0			26.1			8.0	
Approach LOS		D			A			C			A	

Intersection Summary			
HCM 2000 Control Delay	18.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	95.3%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

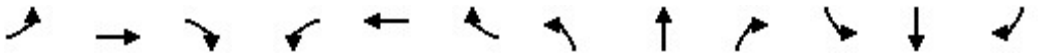


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	155	90	195	85	145	90	2405	120	100	1685	120
v/c Ratio	0.68	0.25	0.43	0.24	0.29	0.47	1.37	0.15	0.53	0.92	0.14
Control Delay	53.5	36.2	7.8	26.5	21.6	22.0	194.7	5.9	25.6	35.4	5.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.5	36.2	7.8	26.5	21.6	22.0	194.7	5.9	25.6	35.4	5.9
Queue Length 50th (m)	30.9	16.4	0.0	12.9	17.5	7.1	~354.8	2.1	7.9	176.2	2.1
Queue Length 95th (m)	52.1	30.0	17.4	23.9	32.6	23.7	#495.3	14.7	#31.9	#304.0	14.7
Internal Link Dist (m)		188.1			109.9		464.0			238.4	
Turn Bay Length (m)	60.0		40.0	60.0		90.0		40.0	70.0		30.0
Base Capacity (vph)	426	666	673	352	828	190	1758	799	190	1834	836
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	0.36	0.14	0.29	0.24	0.18	0.47	1.37	0.15	0.53	0.92	0.14

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	155	90	195	85	85	60	90	2405	120	100	1685	120
Future Volume (vph)	155	90	195	85	85	60	90	2405	120	100	1685	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	6.0	6.0	6.0	4.0	6.0		4.0	6.0	6.0	4.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	0.99		1.00	1.00	0.96	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	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.94		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1705	1863	1531	1707	1733		1711	3539	1511	1711	3505	1511
Flt Permitted	0.66	1.00	1.00	0.58	1.00		0.08	1.00	1.00	0.07	1.00	1.00
Satd. Flow (perm)	1193	1863	1531	1043	1733		139	3539	1511	135	3505	1511
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	155	90	195	85	85	60	90	2405	120	100	1685	120
RTOR Reduction (vph)	0	0	158	0	25	0	0	0	50	0	0	49
Lane Group Flow (vph)	155	90	37	85	120	0	90	2405	70	100	1685	71
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%
Turn Type	Perm	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		6
Actuated Green, G (s)	19.6	19.6	19.6	29.0	29.0		57.1	51.7	51.7	60.5	53.4	53.4
Effective Green, g (s)	19.6	19.6	19.6	29.0	29.0		57.1	51.7	51.7	60.5	53.4	53.4
Actuated g/C Ratio	0.19	0.19	0.19	0.28	0.28		0.55	0.50	0.50	0.58	0.51	0.51
Clearance Time (s)	6.0	6.0	6.0	4.0	6.0		4.0	6.0	6.0	4.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	225	351	289	325	484		158	1762	752	186	1803	777
v/s Ratio Prot		0.05		0.01	c0.07		0.03	c0.68		c0.04	0.48	
v/s Ratio Perm	c0.13		0.02	0.06			0.28		0.05	0.28		0.05
v/c Ratio	0.69	0.26	0.13	0.26	0.25		0.57	1.36	0.09	0.54	0.93	0.09
Uniform Delay, d1	39.3	35.9	35.0	28.4	29.0		20.5	26.0	13.7	22.0	23.6	12.8
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	8.5	0.4	0.2	0.4	0.3		4.7	168.0	0.1	3.0	9.9	0.1
Delay (s)	47.7	36.3	35.2	28.9	29.2		25.2	194.0	13.8	25.0	33.5	13.0
Level of Service	D	D	D	C	C		C	F	B	C	C	B
Approach Delay (s)		39.8			29.1			179.9			31.7	
Approach LOS		D			C			F			C	

Intersection Summary			
HCM 2000 Control Delay	107.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	103.8	Sum of lost time (s)	20.0
Intersection Capacity Utilization	110.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	NBT	SBT
Lane Group Flow (vph)	90	75
v/c Ratio	0.05	0.04
Control Delay	3.1	3.2
Queue Delay	0.0	0.0
Total Delay	3.1	3.2
Queue Length 50th (m)	0.0	0.0
Queue Length 95th (m)	11.0	9.5
Internal Link Dist (m)	51.4	61.3
Turn Bay Length (m)		
Base Capacity (vph)	1691	1691
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.05	0.04

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	90	75	0
Future Volume (vph)	0	0	0	90	75	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.3	3.6	3.6	3.6
Total Lost time (s)				6.0	6.0	
Lane Util. Factor				1.00	1.00	
Frpb, ped/bikes				1.00	1.00	
Flpb, ped/bikes				1.00	1.00	
Frt				1.00	1.00	
Flt Protected				1.00	1.00	
Satd. Flow (prot)				1863	1863	
Flt Permitted				1.00	1.00	
Satd. Flow (perm)				1863	1863	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	90	75	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	90	75	0
Confl. Peds. (#/hr)	5	5	5			5
Confl. Bikes (#/hr)		5				5
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases			2			
Actuated Green, G (s)				36.2	36.2	
Effective Green, g (s)				36.2	36.2	
Actuated g/C Ratio				0.71	0.71	
Clearance Time (s)				6.0	6.0	
Vehicle Extension (s)				3.0	3.0	
Lane Grp Cap (vph)				1330	1330	
v/s Ratio Prot				c0.05	0.04	
v/s Ratio Perm						
v/c Ratio				0.07	0.06	
Uniform Delay, d1				2.2	2.2	
Progression Factor				1.00	1.00	
Incremental Delay, d2				0.0	0.0	
Delay (s)				2.2	2.2	
Level of Service				A	A	
Approach Delay (s)	0.0			2.2	2.2	
Approach LOS	A			A	A	

Intersection Summary			
HCM 2000 Control Delay	2.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.06		
Actuated Cycle Length (s)	50.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	36.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	NBT	SBT
Lane Group Flow (vph)	90	75
v/c Ratio	0.05	0.04
Control Delay	3.1	3.2
Queue Delay	0.0	0.0
Total Delay	3.1	3.2
Queue Length 50th (m)	0.0	0.0
Queue Length 95th (m)	11.0	9.5
Internal Link Dist (m)	34.1	29.1
Turn Bay Length (m)		
Base Capacity (vph)	1691	1691
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.05	0.04

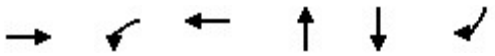
Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	90	75	0
Future Volume (vph)	0	0	0	90	75	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.0	6.0	
Lane Util. Factor				1.00	1.00	
Frpb, ped/bikes				1.00	1.00	
Flpb, ped/bikes				1.00	1.00	
Frt				1.00	1.00	
Flt Protected				1.00	1.00	
Satd. Flow (prot)				1863	1863	
Flt Permitted				1.00	1.00	
Satd. Flow (perm)				1863	1863	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	90	75	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	90	75	0
Confl. Peds. (#/hr)	5	5	5			5
Confl. Bikes (#/hr)		5				5
Turn Type	Prot			NA	NA	
Protected Phases	4			2	6	
Permitted Phases			2			
Actuated Green, G (s)				36.2	36.2	
Effective Green, g (s)				36.2	36.2	
Actuated g/C Ratio				0.71	0.71	
Clearance Time (s)				6.0	6.0	
Vehicle Extension (s)				3.0	3.0	
Lane Grp Cap (vph)				1330	1330	
v/s Ratio Prot				c0.05	0.04	
v/s Ratio Perm						
v/c Ratio				0.07	0.06	
Uniform Delay, d1				2.2	2.2	
Progression Factor				1.00	1.00	
Incremental Delay, d2				0.0	0.0	
Delay (s)				2.2	2.2	
Level of Service				A	A	
Approach Delay (s)	0.0			2.2	2.2	
Approach LOS	A			A	A	

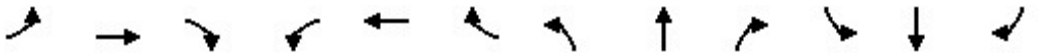
Intersection Summary			
HCM 2000 Control Delay	2.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.06		
Actuated Cycle Length (s)	50.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	36.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



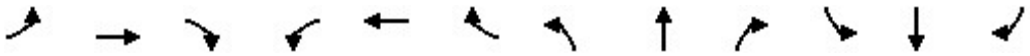
Lane Group	EBT	WBL	WBT	NBT	SBT	SBR
Lane Group Flow (vph)	315	10	220	105	65	10
v/c Ratio	0.30	0.02	0.22	0.25	0.15	0.02
Control Delay	9.0	7.9	8.0	12.1	12.8	2.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.0	7.9	8.0	12.1	12.8	2.3
Queue Length 50th (m)	13.4	0.4	8.2	5.3	3.9	0.0
Queue Length 95th (m)	37.1	2.8	24.7	13.6	10.2	1.3
Internal Link Dist (m)	95.3		62.1	101.3	47.0	
Turn Bay Length (m)		60.0				
Base Capacity (vph)	1851	1015	1790	1552	1671	1518
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.01	0.12	0.07	0.04	0.01

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	305	10	10	175	45	30	45	30	15	50	10
Future Volume (vph)	0	305	10	10	175	45	30	45	30	15	50	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.3	3.6	3.6	3.6	3.6	3.6	3.3	3.6	3.6
Total Lost time (s)		6.0		6.0	6.0			6.0			6.0	6.0
Lane Util. Factor		1.00		1.00	1.00			1.00			1.00	1.00
Frpb, ped/bikes		1.00		1.00	0.99			0.99			1.00	0.97
Flpb, ped/bikes		1.00		1.00	1.00			1.00			1.00	1.00
Frt		1.00		1.00	0.97			0.96			1.00	0.85
Flt Protected		1.00		0.95	1.00			0.99			0.99	1.00
Satd. Flow (prot)		1852		1704	1795			1745			1839	1528
Flt Permitted		1.00		0.57	1.00			0.88			0.90	1.00
Satd. Flow (perm)		1852		1021	1795			1559			1675	1528
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)	0	305	10	10	175	45	30	45	30	15	50	10
RTOR Reduction (vph)	0	1	0	0	8	0	0	15	0	0	0	8
Lane Group Flow (vph)	0	314	0	10	212	0	0	90	0	0	65	2
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		23.3		23.3	23.3			9.3			9.3	9.3
Effective Green, g (s)		23.3		23.3	23.3			9.3			9.3	9.3
Actuated g/C Ratio		0.52		0.52	0.52			0.21			0.21	0.21
Clearance Time (s)		6.0		6.0	6.0			6.0			6.0	6.0
Vehicle Extension (s)		3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)		967		533	937			325			349	318
v/s Ratio Prot		c0.17			0.12							
v/s Ratio Perm				0.01				c0.06			0.04	0.00
v/c Ratio		0.32		0.02	0.23			0.28			0.19	0.01
Uniform Delay, d1		6.1		5.1	5.8			14.8			14.5	14.0
Progression Factor		1.00		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2		0.2		0.0	0.1			0.5			0.3	0.0
Delay (s)		6.3		5.2	5.9			15.3			14.8	14.0
Level of Service		A		A	A			B			B	B
Approach Delay (s)		6.3			5.9			15.3			14.7	
Approach LOS		A			A			B			B	

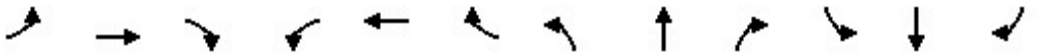
Intersection Summary			
HCM 2000 Control Delay	8.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	44.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	50.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	0	0	0	0	0	0	0	85	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0	0	85	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)	0	0	0	0	0	0	0	85	0	0	0	0

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	0	0	85	0
Volume Left (vph)	0	0	0	0
Volume Right (vph)	0	0	0	0
Hadj (s)	0.00	0.00	0.03	0.00
Departure Headway (s)	4.1	4.1	3.9	4.0
Degree Utilization, x	0.00	0.00	0.09	0.00
Capacity (veh/h)	873	873	902	900
Control Delay (s)	7.1	7.1	7.3	7.0
Approach Delay (s)	0.0	0.0	7.3	0.0
Approach LOS	A	A	A	A

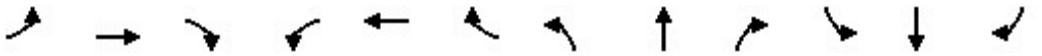
Intersection Summary				
Delay	7.3			
Level of Service	A			
Intersection Capacity Utilization	17.4%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	0	0	0	0	85	0	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	0	0	85	0	0	0	0
Sign Control		Stop			Stop			Free			Free	
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)	0	0	0	0	0	0	0	85	0	0	0	0
Pedestrians		5			5			5			5	
Lane Width (m)		3.6			3.6			3.6			3.6	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	95	95	10	95	95	95	5			90		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	95	95	10	95	95	95	5			90		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	100	100	100			100		
cM capacity (veh/h)	875	788	1062	875	788	954	1610			1499		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	0	0	85	0
Volume Left	0	0	0	0
Volume Right	0	0	0	0
cSH	1700	1700	1610	1700
Volume to Capacity	0.00	0.00	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0
Lane LOS	A	A		
Approach Delay (s)	0.0	0.0	0.0	0.0
Approach LOS	A	A		

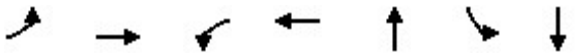
Intersection Summary				
Average Delay	0.0			
Intersection Capacity Utilization	17.4%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	265	45	20	195	0	35	85	50	0	0	0
Future Volume (Veh/h)	0	265	45	20	195	0	35	85	50	0	0	0
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)	0	265	45	20	195	0	35	85	50	0	0	0
Pedestrians		5			5			5			5	
Lane Width (m)		3.5			3.5			3.5			3.6	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		134			119							
pX, platoon unblocked				0.98			0.98	0.98	0.98	0.98	0.98	
vC, conflicting volume	200			315			532	532	298	602	555	205
vC1, stage 1 conf vol							292	292		240	240	
vC2, stage 2 conf vol							240	240		362	315	
vCu, unblocked vol	200			290			512	512	272	584	535	205
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			94	86	93	100	100	100
cM capacity (veh/h)	1366			1241			624	588	745	484	570	829

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1
Volume Total	0	310	20	195	35	135	0
Volume Left	0	0	20	0	35	0	0
Volume Right	0	45	0	0	0	50	0
cSH	1700	1700	1241	1700	624	638	1700
Volume to Capacity	0.00	0.18	0.02	0.11	0.06	0.21	0.00
Queue Length 95th (m)	0.0	0.0	0.4	0.0	1.4	6.4	0.0
Control Delay (s)	0.0	0.0	7.9	0.0	11.1	12.2	0.0
Lane LOS			A		B	B	A
Approach Delay (s)	0.0		0.7		11.9		0.0
Approach LOS					B		A

Intersection Summary				
Average Delay	3.1			
Intersection Capacity Utilization	32.0%	ICU Level of Service		A
Analysis Period (min)	15			



Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	55	705	50	770	70	10	80
v/c Ratio	0.14	0.32	0.08	0.29	0.14	0.03	0.16
Control Delay	15.2	12.3	6.2	6.5	13.4	17.1	15.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.2	12.3	6.2	6.5	13.4	17.1	15.3
Queue Length 50th (m)	3.6	27.7	1.6	18.3	4.0	0.9	5.7
Queue Length 95th (m)	15.0	61.0	8.3	48.9	12.8	4.1	15.4
Internal Link Dist (m)		177.9		126.7	56.9		127.4
Turn Bay Length (m)	30.0		30.0			30.0	
Base Capacity (vph)	596	3304	898	3605	1257	910	1279
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	0.09	0.21	0.06	0.21	0.06	0.01	0.06

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	705	0	50	765	5	0	45	25	10	60	20
Future Volume (vph)	55	705	0	50	765	5	0	45	25	10	60	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	6.0	6.0		4.0	6.0			6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00			0.95		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)	1706	3574		1709	3605			1748		1706	1782	
Flt Permitted	0.36	1.00		0.32	1.00			1.00		0.71	1.00	
Satd. Flow (perm)	646	3574		579	3605			1748		1277	1782	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	55	705	0	50	765	5	0	45	25	10	60	20
RTOR Reduction (vph)	0	0	0	0	0	0	0	20	0	0	12	0
Lane Group Flow (vph)	55	705	0	50	770	0	0	50	0	10	68	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	2%	1%	2%	2%	0%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	26.7	26.7		34.3	34.3			7.1		7.1	7.1	
Effective Green, g (s)	26.7	26.7		34.3	34.3			7.1		7.1	7.1	
Actuated g/C Ratio	0.50	0.50		0.64	0.64			0.13		0.13	0.13	
Clearance Time (s)	6.0	6.0		4.0	6.0			6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	323	1787		448	2315			232		169	236	
v/s Ratio Prot		c0.20		0.01	c0.21			0.03			c0.04	
v/s Ratio Perm	0.09			0.06						0.01		
v/c Ratio	0.17	0.39		0.11	0.33			0.22		0.06	0.29	
Uniform Delay, d1	7.3	8.3		3.8	4.3			20.7		20.2	20.9	
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.1		0.1	0.1			0.5		0.1	0.7	
Delay (s)	7.5	8.5		3.9	4.4			21.1		20.4	21.5	
Level of Service	A	A		A	A			C		C	C	
Approach Delay (s)		8.4			4.4			21.1			21.4	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	7.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	53.4	Sum of lost time (s)	16.0
Intersection Capacity Utilization	63.2%	ICU Level of Service	B
Analysis Period (min)	15		

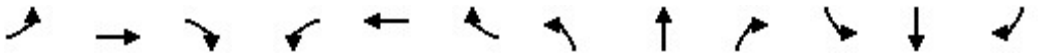
c Critical Lane Group



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	695	0	0	780	0	65
Future Volume (Veh/h)	695	0	0	780	0	65
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	695	0	0	780	0	65
Pedestrians	5			5	5	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	135			202		
pX, platoon unblocked			0.94		0.97	0.94
vC, conflicting volume			700		1095	358
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			542		751	176
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	92
cM capacity (veh/h)			953		332	777

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	463	232	390	390	65
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	65
cSH	1700	1700	1700	1700	777
Volume to Capacity	0.27	0.14	0.23	0.23	0.08
Queue Length 95th (m)	0.0	0.0	0.0	0.0	2.2
Control Delay (s)	0.0	0.0	0.0	0.0	10.1
Lane LOS					B
Approach Delay (s)	0.0		0.0		10.1
Approach LOS					B

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	33.1%	ICU Level of Service	A
Analysis Period (min)	15		

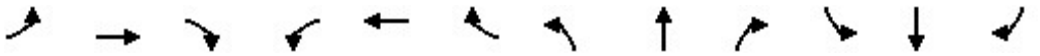


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	205	280	180	285	290	215	140	2050	190	225	2060	350
v/c Ratio	0.79	0.51	0.50	1.01	0.52	0.58	0.73	1.19	0.23	0.93	1.14	0.41
Control Delay	54.3	42.7	15.2	92.4	42.8	18.8	40.8	119.8	9.3	67.8	97.0	13.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.3	42.7	15.2	92.4	42.8	18.8	40.8	119.8	9.3	67.8	97.0	13.6
Queue Length 50th (m)	35.4	28.7	7.0	~56.3	29.8	11.5	10.8	~263.2	9.4	29.0	~255.5	27.9
Queue Length 95th (m)	55.8	41.3	25.8	#81.9	42.5	32.9	#55.3	#400.3	30.2	#97.5	#393.1	69.1
Internal Link Dist (m)		334.1			111.1			202.3			436.5	
Turn Bay Length (m)	50.0		30.0	50.0		30.0	100.0		30.0	100.0		30.0
Base Capacity (vph)	260	1134	597	282	1156	605	192	1718	810	243	1804	853
Starvation Cap Reductn	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	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.79	0.25	0.30	1.01	0.25	0.36	0.73	1.19	0.23	0.93	1.14	0.41

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	205	280	180	285	290	215	140	2050	190	225	2060	350
Future Volume (vph)	205	280	180	285	290	215	140	2050	190	225	2060	350
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	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	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1628	3539	1559	1742	3610	1559	1745	3539	1566	1745	3505	1566
Flt Permitted	0.50	1.00	1.00	0.52	1.00	1.00	0.08	1.00	1.00	0.07	1.00	1.00
Satd. Flow (perm)	856	3539	1559	945	3610	1559	146	3539	1566	138	3505	1566
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	205	280	180	285	290	215	140	2050	190	225	2060	350
RTOR Reduction (vph)	0	0	120	0	0	130	0	0	51	0	0	48
Lane Group Flow (vph)	205	280	60	285	290	85	140	2050	139	225	2060	302
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	7%	2%	0%	0%	0%	0%	0%	2%	0%	0%	3%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	23.1	16.1	16.1	23.1	16.1	16.1	57.3	50.3	50.3	63.5	53.4	53.4
Effective Green, g (s)	23.1	16.1	16.1	23.1	16.1	16.1	57.3	50.3	50.3	63.5	53.4	53.4
Actuated g/C Ratio	0.22	0.16	0.16	0.22	0.16	0.16	0.55	0.49	0.49	0.61	0.52	0.52
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	243	550	242	264	561	242	188	1719	761	241	1808	807
v/s Ratio Prot	0.06	0.08		c0.07	0.08		0.05	0.58		c0.09	c0.59	
v/s Ratio Perm	0.13		0.04	c0.17		0.05	0.36		0.09	0.48		0.19
v/c Ratio	0.84	0.51	0.25	1.08	0.52	0.35	0.74	1.19	0.18	0.93	1.14	0.37
Uniform Delay, d1	37.1	40.1	38.4	39.0	40.1	39.0	22.4	26.6	15.0	31.5	25.1	15.0
Progression 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
Incremental Delay, d2	22.5	0.7	0.5	78.2	0.8	0.9	14.8	92.7	0.2	39.9	70.0	0.6
Delay (s)	59.7	40.8	38.9	117.2	40.9	39.9	37.2	119.3	15.2	71.5	95.1	15.6
Level of Service	E	D	D	F	D	D	D	F	B	E	F	B
Approach Delay (s)		46.1			68.2			106.2			82.5	
Approach LOS		D			E			F			F	

Intersection Summary			
HCM 2000 Control Delay	85.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	103.5	Sum of lost time (s)	20.0
Intersection Capacity Utilization	112.9%	ICU Level of Service	H
Analysis Period (min)	15		

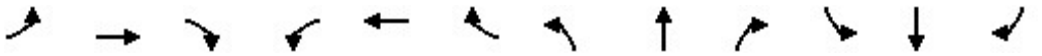
c Critical Lane Group



Lane Group	EBL	EBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	50	25	25	2330	2445	80
v/c Ratio	0.28	0.11	0.37	0.83	0.88	0.07
Control Delay	43.3	12.8	28.4	13.8	16.0	3.8
Queue Delay	0.0	0.0	0.0	0.8	3.0	0.0
Total Delay	43.3	12.8	28.4	14.6	19.0	3.8
Queue Length 50th (m)	10.1	0.0	1.3	127.6	152.0	2.0
Queue Length 95th (m)	20.1	6.7	#18.6	#375.4	#409.0	11.1
Internal Link Dist (m)		170.8		238.4	202.3	
Turn Bay Length (m)	40.0		30.0			30.0
Base Capacity (vph)	425	505	68	2821	2794	1204
Starvation Cap Reductn	0	0	0	214	252	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.05	0.37	0.89	0.96	0.07

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	0	25	0	0	0	25	2330	0	0	2445	80
Future Volume (vph)	50	0	25	0	0	0	25	2330	0	0	2445	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	6.0	6.0					6.0	6.0			6.0	6.0
Lane Util. Factor	1.00	1.00					1.00	0.95			0.95	1.00
Frpb, ped/bikes	1.00	0.97					1.00	1.00			1.00	0.96
Flpb, ped/bikes	1.00	1.00					1.00	1.00			1.00	1.00
Frt	1.00	0.85					1.00	1.00			1.00	0.85
Flt Protected	0.95	1.00					0.95	1.00			1.00	1.00
Satd. Flow (prot)	1702	1541					1711	3539			3505	1508
Flt Permitted	0.76	1.00					0.05	1.00			1.00	1.00
Satd. Flow (perm)	1357	1541					87	3539			3505	1508
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	50	0	25	0	0	0	25	2330	0	0	2445	80
RTOR Reduction (vph)	0	22	0	0	0	0	0	0	0	0	0	6
Lane Group Flow (vph)	50	3	0	0	0	0	25	2330	0	0	2445	74
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%
Turn Type	Perm	NA		Perm			Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	12.0	12.0					83.0	83.0			83.0	83.0
Effective Green, g (s)	12.0	12.0					83.0	83.0			83.0	83.0
Actuated g/C Ratio	0.11	0.11					0.78	0.78			0.78	0.78
Clearance Time (s)	6.0	6.0					6.0	6.0			6.0	6.0
Vehicle Extension (s)	3.0	3.0					5.0	5.0			5.0	5.0
Lane Grp Cap (vph)	152	172					67	2745			2718	1169
v/s Ratio Prot		0.00						0.66			c0.70	
v/s Ratio Perm	c0.04						0.29					0.05
v/c Ratio	0.33	0.02					0.37	0.85			0.90	0.06
Uniform Delay, d1	43.8	42.3					3.8	7.9			8.9	2.8
Progression Factor	1.00	1.00					1.00	1.00			1.00	1.00
Incremental Delay, d2	1.3	0.0					7.2	2.9			4.8	0.0
Delay (s)	45.1	42.3					11.0	10.8			13.7	2.9
Level of Service	D	D					B	B			B	A
Approach Delay (s)		44.1			0.0			10.8			13.3	
Approach LOS		D			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	12.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	107.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	89.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

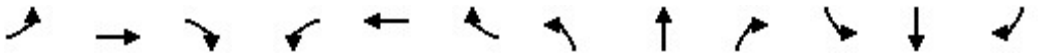


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	85	70	140	45	105	200	2240	25	145	2210	115
v/c Ratio	0.43	0.23	0.38	0.15	0.25	0.98	1.19	0.03	0.71	1.19	0.14
Control Delay	43.0	36.7	8.9	26.4	23.9	81.7	116.6	0.1	37.4	114.7	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.0	36.7	8.9	26.4	23.9	81.7	116.6	0.1	37.4	114.7	5.2
Queue Length 50th (m)	15.9	12.6	0.0	6.7	13.3	23.1	~282.8	0.0	11.3	~278.3	1.3
Queue Length 95th (m)	29.9	24.4	15.0	14.5	25.7	#94.8	#451.1	0.0	#60.2	#445.4	13.8
Internal Link Dist (m)		188.1			109.9		464.0			238.4	
Turn Bay Length (m)	60.0		40.0	60.0		90.0		40.0	70.0		30.0
Base Capacity (vph)	471	711	672	301	894	205	1877	846	205	1859	846
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	0.10	0.21	0.15	0.12	0.98	1.19	0.03	0.71	1.19	0.14

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	85	70	140	45	75	30	200	2240	25	145	2210	115
Future Volume (vph)	85	70	140	45	75	30	200	2240	25	145	2210	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	6.0	6.0	6.0	4.0	6.0		4.0	6.0	6.0	4.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	0.99		1.00	1.00	0.97	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1705	1863	1530	1707	1772		1711	3539	1512	1711	3505	1512
Flt Permitted	0.69	1.00	1.00	0.57	1.00		0.08	1.00	1.00	0.08	1.00	1.00
Satd. Flow (perm)	1237	1863	1530	1016	1772		142	3539	1512	142	3505	1512
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)	85	70	140	45	75	30	200	2240	25	145	2210	115
RTOR Reduction (vph)	0	0	118	0	15	0	0	0	12	0	0	48
Lane Group Flow (vph)	85	70	22	45	90	0	200	2240	13	145	2210	67
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%
Turn Type	Perm	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		6
Actuated Green, G (s)	15.5	15.5	15.5	23.4	23.4		58.0	50.9	50.9	58.0	50.9	50.9
Effective Green, g (s)	15.5	15.5	15.5	23.4	23.4		58.0	50.9	50.9	58.0	50.9	50.9
Actuated g/C Ratio	0.16	0.16	0.16	0.24	0.24		0.60	0.52	0.52	0.60	0.52	0.52
Clearance Time (s)	6.0	6.0	6.0	4.0	6.0		4.0	6.0	6.0	4.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	196	296	243	271	425		198	1849	790	198	1831	790
v/s Ratio Prot		0.04		0.01	c0.05		c0.07	c0.63		0.05	0.63	
v/s Ratio Perm	c0.07		0.01	0.03			0.53		0.01	0.38		0.04
v/c Ratio	0.43	0.24	0.09	0.17	0.21		1.01	1.21	0.02	0.73	1.21	0.09
Uniform Delay, d1	37.0	35.8	34.9	29.0	29.6		28.4	23.3	11.2	21.5	23.3	11.6
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.5	0.4	0.2	0.3	0.2		66.6	100.4	0.0	13.1	98.6	0.1
Delay (s)	38.5	36.2	35.1	29.2	29.9		94.9	123.7	11.2	34.6	121.8	11.7
Level of Service	D	D	D	C	C		F	F	B	C	F	B
Approach Delay (s)		36.3			29.7			120.2			111.6	
Approach LOS		D			C			F			F	

Intersection Summary			
HCM 2000 Control Delay	109.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	97.4	Sum of lost time (s)	20.0
Intersection Capacity Utilization	99.7%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	NBT	SBT
Lane Group Flow (vph)	70	110
v/c Ratio	0.04	0.07
Control Delay	3.2	3.1
Queue Delay	0.0	0.0
Total Delay	3.2	3.1
Queue Length 50th (m)	0.0	0.0
Queue Length 95th (m)	9.1	12.9
Internal Link Dist (m)	51.4	61.3
Turn Bay Length (m)		
Base Capacity (vph)	1691	1691
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.04	0.07

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	70	110	0
Future Volume (vph)	0	0	0	70	110	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.3	3.6	3.6	3.6
Total Lost time (s)				6.0	6.0	
Lane Util. Factor				1.00	1.00	
Frpb, ped/bikes				1.00	1.00	
Flpb, ped/bikes				1.00	1.00	
Frt				1.00	1.00	
Flt Protected				1.00	1.00	
Satd. Flow (prot)				1863	1863	
Flt Permitted				1.00	1.00	
Satd. Flow (perm)				1863	1863	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	70	110	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	70	110	0
Confl. Peds. (#/hr)	5	5	5			5
Confl. Bikes (#/hr)		5				5
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases			2			
Actuated Green, G (s)				36.2	36.2	
Effective Green, g (s)				36.2	36.2	
Actuated g/C Ratio				0.71	0.71	
Clearance Time (s)				6.0	6.0	
Vehicle Extension (s)				3.0	3.0	
Lane Grp Cap (vph)				1330	1330	
v/s Ratio Prot				0.04	c0.06	
v/s Ratio Perm						
v/c Ratio				0.05	0.08	
Uniform Delay, d1				2.2	2.2	
Progression Factor				1.00	1.00	
Incremental Delay, d2				0.0	0.0	
Delay (s)				2.2	2.2	
Level of Service				A	A	
Approach Delay (s)	0.0			2.2	2.2	
Approach LOS	A			A	A	

Intersection Summary			
HCM 2000 Control Delay	2.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.08		
Actuated Cycle Length (s)	50.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	36.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	NBT	SBT
Lane Group Flow (vph)	70	110
v/c Ratio	0.04	0.07
Control Delay	3.2	3.1
Queue Delay	0.0	0.0
Total Delay	3.2	3.1
Queue Length 50th (m)	0.0	0.0
Queue Length 95th (m)	9.1	12.9
Internal Link Dist (m)	34.1	29.1
Turn Bay Length (m)		
Base Capacity (vph)	1691	1691
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.04	0.07

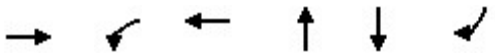
Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	70	110	0
Future Volume (vph)	0	0	0	70	110	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.0	6.0	
Lane Util. Factor				1.00	1.00	
Frpb, ped/bikes				1.00	1.00	
Flpb, ped/bikes				1.00	1.00	
Frt				1.00	1.00	
Flt Protected				1.00	1.00	
Satd. Flow (prot)				1863	1863	
Flt Permitted				1.00	1.00	
Satd. Flow (perm)				1863	1863	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	70	110	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	70	110	0
Confl. Peds. (#/hr)	5	5	5			5
Confl. Bikes (#/hr)		5				5
Turn Type	Prot			NA	NA	
Protected Phases	4			2	6	
Permitted Phases			2			
Actuated Green, G (s)				36.2	36.2	
Effective Green, g (s)				36.2	36.2	
Actuated g/C Ratio				0.71	0.71	
Clearance Time (s)				6.0	6.0	
Vehicle Extension (s)				3.0	3.0	
Lane Grp Cap (vph)				1330	1330	
v/s Ratio Prot				0.04	c0.06	
v/s Ratio Perm						
v/c Ratio				0.05	0.08	
Uniform Delay, d1				2.2	2.2	
Progression Factor				1.00	1.00	
Incremental Delay, d2				0.0	0.0	
Delay (s)				2.2	2.2	
Level of Service				A	A	
Approach Delay (s)	0.0			2.2	2.2	
Approach LOS	A			A	A	

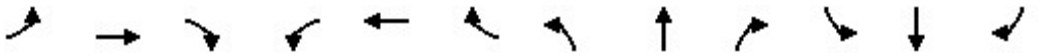
Intersection Summary			
HCM 2000 Control Delay	2.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.08		
Actuated Cycle Length (s)	50.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	36.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



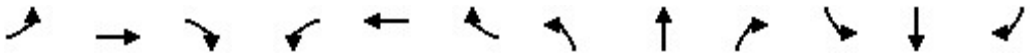
Lane Group	EBT	WBL	WBT	NBT	SBT	SBR
Lane Group Flow (vph)	145	30	120	80	75	35
v/c Ratio	0.12	0.04	0.10	0.16	0.14	0.07
Control Delay	6.8	7.9	6.8	10.6	12.1	5.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.8	7.9	6.8	10.6	12.1	5.4
Queue Length 50th (m)	4.9	1.1	4.0	3.8	4.5	0.0
Queue Length 95th (m)	16.5	5.5	14.2	10.9	11.2	4.3
Internal Link Dist (m)	95.3		62.1	101.3	47.0	
Turn Bay Length (m)		60.0				
Base Capacity (vph)	1778	1181	1790	1627	1863	1519
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.03	0.07	0.05	0.04	0.02

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	110	35	30	95	25	15	45	20	0	75	35
Future Volume (vph)	0	110	35	30	95	25	15	45	20	0	75	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.3	3.6	3.6	3.6	3.6	3.6	3.3	3.6	3.6
Total Lost time (s)		6.0		6.0	6.0			6.0			6.0	6.0
Lane Util. Factor		1.00		1.00	1.00			1.00			1.00	1.00
Frpb, ped/bikes		0.99		1.00	0.99			0.99			1.00	0.96
Flpb, ped/bikes		1.00		1.00	1.00			1.00			1.00	1.00
Frt		0.96		1.00	0.97			0.97			1.00	0.85
Flt Protected		1.00		0.95	1.00			0.99			1.00	1.00
Satd. Flow (prot)		1783		1702	1794			1765			1863	1524
Flt Permitted		1.00		0.66	1.00			0.92			1.00	1.00
Satd. Flow (perm)		1783		1191	1794			1631			1863	1524
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)	0	110	35	30	95	25	15	45	20	0	75	35
RTOR Reduction (vph)	0	8	0	0	7	0	0	14	0	0	0	29
Lane Group Flow (vph)	0	137	0	30	113	0	0	66	0	0	75	6
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Perm	NA		Perm	NA		Perm	NA			NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		23.9		23.9	23.9			6.7			6.7	6.7
Effective Green, g (s)		23.9		23.9	23.9			6.7			6.7	6.7
Actuated g/C Ratio		0.56		0.56	0.56			0.16			0.16	0.16
Clearance Time (s)		6.0		6.0	6.0			6.0			6.0	6.0
Vehicle Extension (s)		3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)		1000		668	1006			256			293	239
v/s Ratio Prot		c0.08			0.06						0.04	
v/s Ratio Perm				0.03				c0.04				0.00
v/c Ratio		0.14		0.04	0.11			0.26			0.26	0.02
Uniform Delay, d1		4.4		4.2	4.4			15.8			15.8	15.2
Progression Factor		1.00		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2		0.1		0.0	0.1			0.5			0.5	0.0
Delay (s)		4.5		4.2	4.4			16.3			16.2	15.2
Level of Service		A		A	A			B			B	B
Approach Delay (s)		4.5			4.4			16.3			15.9	
Approach LOS		A			A			B			B	

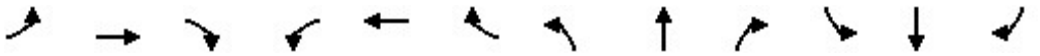
Intersection Summary			
HCM 2000 Control Delay	9.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.16		
Actuated Cycle Length (s)	42.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	50.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	0	0	0	0	0	0	0	65	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0	0	65	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)	0	0	0	0	0	0	0	65	0	0	0	0

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	0	0	65	0
Volume Left (vph)	0	0	0	0
Volume Right (vph)	0	0	0	0
Hadj (s)	0.00	0.00	0.03	0.00
Departure Headway (s)	4.0	4.0	3.9	4.0
Degree Utilization, x	0.00	0.00	0.07	0.00
Capacity (veh/h)	883	883	902	900
Control Delay (s)	7.0	7.0	7.2	7.0
Approach Delay (s)	0.0	0.0	7.2	0.0
Approach LOS	A	A	A	A

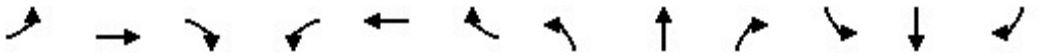
Intersection Summary				
Delay	7.2			
Level of Service	A			
Intersection Capacity Utilization	16.5%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	0	0	0	0	65	0	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	0	0	65	0	0	0	0
Sign Control		Stop			Stop			Free			Free	
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)	0	0	0	0	0	0	0	65	0	0	0	0
Pedestrians		5			5			5			5	
Lane Width (m)		3.6			3.6			3.6			3.6	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	75	75	10	75	75	75	5			70		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	75	75	10	75	75	75	5			70		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	100	100	100			100		
cM capacity (veh/h)	902	809	1062	902	809	978	1610			1524		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	0	0	65	0
Volume Left	0	0	0	0
Volume Right	0	0	0	0
cSH	1700	1700	1610	1700
Volume to Capacity	0.00	0.00	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0
Lane LOS	A	A		
Approach Delay (s)	0.0	0.0	0.0	0.0
Approach LOS	A	A		

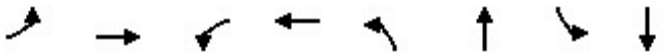
Intersection Summary				
Average Delay	0.0			
Intersection Capacity Utilization	16.5%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	130	110	20	125	0	25	65	15	0	0	0
Future Volume (Veh/h)	0	130	110	20	125	0	25	65	15	0	0	0
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)	0	130	110	20	125	0	25	65	15	0	0	0
Pedestrians		5			5			5			5	
Lane Width (m)		3.5			3.5			3.5			3.6	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		134			119							
pX, platoon unblocked				0.98			0.98	0.98	0.98	0.98	0.98	
vC, conflicting volume	130			245			360	360	195	352	415	135
vC1, stage 1 conf vol							190	190		170	170	
vC2, stage 2 conf vol							170	170		182	245	
vCu, unblocked vol	130			222			339	339	171	331	395	135
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			97	90	98	100	100	100
cM capacity (veh/h)	1449			1317			723	666	850	667	630	906

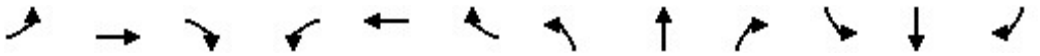
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1
Volume Total	0	240	20	125	25	80	0
Volume Left	0	0	20	0	25	0	0
Volume Right	0	110	0	0	0	15	0
cSH	1700	1700	1317	1700	723	694	1700
Volume to Capacity	0.00	0.14	0.02	0.07	0.03	0.12	0.00
Queue Length 95th (m)	0.0	0.0	0.4	0.0	0.9	3.1	0.0
Control Delay (s)	0.0	0.0	7.8	0.0	10.2	10.9	0.0
Lane LOS			A		B	B	A
Approach Delay (s)	0.0		1.1		10.7		0.0
Approach LOS					B		A

Intersection Summary			
Average Delay	2.6		
Intersection Capacity Utilization	29.1%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	50	835	80	610	10	180	10	90
v/c Ratio	0.14	0.51	0.32	0.38	0.03	0.36	0.03	0.18
Control Delay	10.4	11.0	14.1	9.8	11.7	10.8	11.7	11.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.4	11.0	14.1	9.8	11.7	10.8	11.7	11.7
Queue Length 50th (m)	1.9	20.4	3.3	13.7	0.6	7.2	0.6	4.7
Queue Length 95th (m)	10.4	56.1	17.5	39.3	3.1	19.4	3.1	12.8
Internal Link Dist (m)		177.9		126.7		56.9		127.4
Turn Bay Length (m)	30.0		30.0		40.0		30.0	
Base Capacity (vph)	753	3570	551	3535	1146	1541	1056	1642
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	0.07	0.23	0.15	0.17	0.01	0.12	0.01	0.05

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	830	5	80	605	5	10	75	105	10	70	20
Future Volume (vph)	50	830	5	80	605	5	10	75	105	10	70	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00		1.00	0.91		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1706	3570		1707	3534		1706	1681		1707	1793	
Flt Permitted	0.42	1.00		0.31	1.00		0.70	1.00		0.64	1.00	
Satd. Flow (perm)	756	3570		551	3534		1255	1681		1157	1793	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	50	830	5	80	605	5	10	75	105	10	70	20
RTOR Reduction (vph)	0	1	0	0	1	0	0	46	0	0	9	0
Lane Group Flow (vph)	50	834	0	80	609	0	10	134	0	10	81	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	2%	1%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	21.0	21.0		21.0	21.0		12.5	12.5		12.5	12.5	
Effective Green, g (s)	21.0	21.0		21.0	21.0		12.5	12.5		12.5	12.5	
Actuated g/C Ratio	0.46	0.46		0.46	0.46		0.27	0.27		0.27	0.27	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	348	1647		254	1631		344	461		317	492	
v/s Ratio Prot		c0.23			0.17			c0.08			0.04	
v/s Ratio Perm	0.07			0.15			0.01			0.01		
v/c Ratio	0.14	0.51		0.31	0.37		0.03	0.29		0.03	0.16	
Uniform Delay, d1	7.1	8.6		7.7	8.0		12.1	13.0		12.1	12.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.2		0.7	0.1		0.0	0.4		0.0	0.2	
Delay (s)	7.3	8.9		8.4	8.1		12.1	13.4		12.1	12.7	
Level of Service	A	A		A	A		B	B		B	B	
Approach Delay (s)		8.8			8.2			13.3			12.6	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	9.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	45.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	67.0%	ICU Level of Service	C
Analysis Period (min)	15		

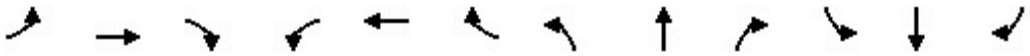
c Critical Lane Group



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	725	25	0	630	0	160
Future Volume (Veh/h)	725	25	0	630	0	160
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	725	25	0	630	0	160
Pedestrians	5			5	5	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	135			202		
pX, platoon unblocked			0.92		0.95	0.92
vC, conflicting volume			755		1062	385
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			566		690	165
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	79
cM capacity (veh/h)			920		358	778

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	483	267	315	315	160
Volume Left	0	0	0	0	0
Volume Right	0	25	0	0	160
cSH	1700	1700	1700	1700	778
Volume to Capacity	0.28	0.16	0.19	0.19	0.21
Queue Length 95th (m)	0.0	0.0	0.0	0.0	6.2
Control Delay (s)	0.0	0.0	0.0	0.0	10.8
Lane LOS					B
Approach Delay (s)	0.0		0.0		10.8
Approach LOS					B

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	38.4%	ICU Level of Service	A
Analysis Period (min)	15		

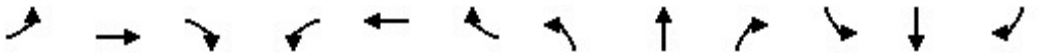


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	245	325	140	210	240	195	270	2225	260	165	1575	100
v/c Ratio	0.79	0.56	0.38	0.79	0.43	0.51	0.97	1.23	0.31	0.86	0.99	0.13
Control Delay	51.8	43.5	9.0	53.1	41.1	15.0	77.1	135.4	11.1	61.0	50.6	1.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.8	43.5	9.0	53.1	41.1	15.0	77.1	135.4	11.1	61.0	50.6	1.9
Queue Length 50th (m)	43.1	33.8	0.0	36.1	24.4	7.8	39.9	~296.3	16.9	17.1	162.0	0.0
Queue Length 95th (m)	65.4	47.3	15.6	56.3	36.0	27.6	#117.2	#435.3	45.3	#71.6	#286.0	5.3
Internal Link Dist (m)		334.1			111.1			202.3			436.5	
Turn Bay Length (m)	50.0		30.0	50.0		30.0	100.0		30.0	100.0		30.0
Base Capacity (vph)	310	1135	586	267	1082	600	277	1806	839	191	1586	782
Starvation Cap Reductn	0	0	0	0	0	0	0	23	0	0	0	0
Spillback Cap Reductn	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	0	0
Reduced v/c Ratio	0.79	0.29	0.24	0.79	0.22	0.33	0.97	1.25	0.31	0.86	0.99	0.13

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	245	325	140	210	240	195	270	2225	260	165	1575	100
Future Volume (vph)	245	325	140	210	240	195	270	2225	260	165	1575	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	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	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1742	3574	1544	1743	3406	1560	1662	3539	1551	1745	3505	1566
Flt Permitted	0.58	1.00	1.00	0.45	1.00	1.00	0.08	1.00	1.00	0.08	1.00	1.00
Satd. Flow (perm)	1066	3574	1544	827	3406	1560	136	3539	1551	155	3505	1566
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)	245	325	140	210	240	195	270	2225	260	165	1575	100
RTOR Reduction (vph)	0	0	117	0	0	128	0	0	49	0	0	55
Lane Group Flow (vph)	245	325	23	210	240	67	270	2225	211	165	1575	45
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	0%	1%	1%	0%	6%	0%	5%	2%	1%	0%	3%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	23.9	16.9	16.9	23.9	16.9	16.9	64.4	53.4	53.4	54.3	47.3	47.3
Effective Green, g (s)	23.9	16.9	16.9	23.9	16.9	16.9	64.4	53.4	53.4	54.3	47.3	47.3
Actuated g/C Ratio	0.23	0.16	0.16	0.23	0.16	0.16	0.62	0.51	0.51	0.52	0.45	0.45
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	289	579	250	250	551	252	275	1811	794	187	1589	710
v/s Ratio Prot	c0.06	0.09		0.06	0.07		c0.12	c0.63		0.06	0.45	
v/s Ratio Perm	c0.14		0.01	0.14		0.04	0.48		0.14	0.40		0.03
v/c Ratio	0.85	0.56	0.09	0.84	0.44	0.27	0.98	1.23	0.27	0.88	0.99	0.06
Uniform Delay, d1	37.2	40.3	37.2	36.9	39.4	38.3	33.3	25.4	14.4	24.6	28.3	16.0
Progression 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
Incremental Delay, d2	20.0	1.2	0.2	21.2	0.6	0.6	49.0	108.0	0.4	35.1	20.5	0.1
Delay (s)	57.1	41.5	37.3	58.2	40.0	38.8	82.3	133.4	14.8	59.7	48.8	16.1
Level of Service	E	D	D	E	D	D	F	F	B	E	D	B
Approach Delay (s)		46.1			45.5			117.2			48.0	
Approach LOS		D			D			F			D	

Intersection Summary			
HCM 2000 Control Delay	79.5	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	104.3	Sum of lost time (s)	20.0
Intersection Capacity Utilization	112.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

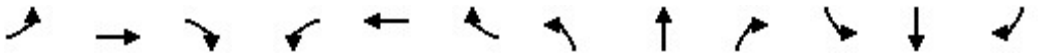


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	80	20	215	95	25	2600	15	10	1885	30
v/c Ratio	0.43	0.07	0.68	0.25	0.35	1.14	0.02	0.14	0.83	0.03
Control Delay	46.0	0.5	43.0	30.8	30.5	90.0	0.0	17.2	20.4	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0
Total Delay	46.0	0.5	43.0	30.8	30.5	90.0	0.0	17.2	21.7	0.4
Queue Length 50th (m)	15.4	0.0	37.2	15.5	2.0	~321.3	0.0	0.7	136.3	0.0
Queue Length 95th (m)	29.6	0.0	57.7	28.4	#17.1	#491.1	0.0	5.4	#302.2	0.8
Internal Link Dist (m)		170.8		112.7		238.4			202.3	
Turn Bay Length (m)	40.0		60.0		30.0		30.0	30.0		30.0
Base Capacity (vph)	413	557	315	716	72	2280	991	72	2258	991
Starvation Cap Reductn	0	0	0	0	0	40	0	0	184	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	0.19	0.04	0.68	0.13	0.35	1.16	0.02	0.14	0.91	0.03

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	0	20	215	20	75	25	2600	15	10	1885	30
Future Volume (vph)	80	0	20	215	20	75	25	2600	15	10	1885	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	6.0	6.0		4.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.97		1.00	0.98		1.00	1.00	0.96	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	1.00
Frt	1.00	0.85		1.00	0.88		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1704	1543		1707	1615		1711	3539	1508	1711	3505	1508
Flt Permitted	0.70	1.00		0.57	1.00		0.06	1.00	1.00	0.06	1.00	1.00
Satd. Flow (perm)	1247	1543		1017	1615		111	3539	1508	111	3505	1508
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)	80	0	20	215	20	75	25	2600	15	10	1885	30
RTOR Reduction (vph)	0	18	0	0	1	0	0	0	5	0	0	11
Lane Group Flow (vph)	80	3	0	215	94	0	25	2600	10	10	1885	19
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%
Turn Type	Perm	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4		3	8			2			6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	12.7	12.7		24.9	24.9		64.7	64.7	64.7	64.7	64.7	64.7
Effective Green, g (s)	12.7	12.7		24.9	24.9		64.7	64.7	64.7	64.7	64.7	64.7
Actuated g/C Ratio	0.12	0.12		0.25	0.25		0.64	0.64	0.64	0.64	0.64	0.64
Clearance Time (s)	6.0	6.0		4.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	155	192		304	395		70	2253	960	70	2232	960
v/s Ratio Prot		0.00		c0.06	0.06			c0.73			0.54	
v/s Ratio Perm	0.06			c0.12			0.22		0.01	0.09		0.01
v/c Ratio	0.52	0.01		0.71	0.24		0.36	1.15	0.01	0.14	0.84	0.02
Uniform Delay, d1	41.6	39.0		34.2	30.7		8.7	18.4	6.7	7.4	14.5	6.8
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.9	0.0		7.3	0.3		6.4	74.9	0.0	2.0	3.5	0.0
Delay (s)	44.5	39.0		41.6	31.1		15.1	93.3	6.8	9.3	18.0	6.8
Level of Service	D	D		D	C		B	F	A	A	B	A
Approach Delay (s)		43.4			38.3			92.1			17.7	
Approach LOS		D			D			F			B	

Intersection Summary			
HCM 2000 Control Delay	59.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	101.6	Sum of lost time (s)	16.0
Intersection Capacity Utilization	101.8%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

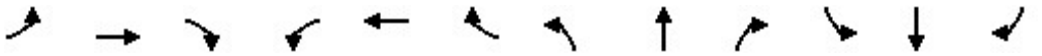


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	155	90	195	270	170	90	2420	285	100	1900	120
v/c Ratio	0.70	0.25	0.47	0.72	0.31	0.49	1.42	0.37	0.54	1.08	0.15
Control Delay	55.1	36.3	13.0	41.2	23.8	22.7	219.4	13.7	26.2	72.7	5.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.1	36.3	13.0	41.2	23.8	22.7	219.4	13.7	26.2	72.7	5.9
Queue Length 50th (m)	31.0	16.4	7.3	46.4	22.5	7.1	~360.0	22.0	8.0	~241.7	2.1
Queue Length 95th (m)	52.4	30.0	26.3	69.6	39.2	23.6	#499.4	54.6	#31.4	#362.1	14.7
Internal Link Dist (m)		188.1			109.9		464.0			238.4	
Turn Bay Length (m)	60.0		40.0	60.0		90.0		40.0	70.0		30.0
Base Capacity (vph)	403	645	631	376	804	185	1701	776	184	1766	809
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	0.38	0.14	0.31	0.72	0.21	0.49	1.42	0.37	0.54	1.08	0.15

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	155	90	195	270	105	65	90	2420	285	100	1900	120
Future Volume (vph)	155	90	195	270	105	65	90	2420	285	100	1900	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	6.0	6.0	6.0	4.0	6.0		4.0	6.0	6.0	4.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	0.99		1.00	1.00	0.96	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	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.94		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1705	1863	1531	1707	1742		1711	3539	1510	1711	3505	1510
Flt Permitted	0.65	1.00	1.00	0.58	1.00		0.08	1.00	1.00	0.08	1.00	1.00
Satd. Flow (perm)	1166	1863	1531	1048	1742		141	3539	1510	137	3505	1510
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	155	90	195	270	105	65	90	2420	285	100	1900	120
RTOR Reduction (vph)	0	0	124	0	22	0	0	0	51	0	0	50
Lane Group Flow (vph)	155	90	71	270	148	0	90	2420	234	100	1900	70
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%
Turn Type	Perm	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		6
Actuated Green, G (s)	20.2	20.2	20.2	31.2	31.2		56.7	51.2	51.2	59.7	52.7	52.7
Effective Green, g (s)	20.2	20.2	20.2	31.2	31.2		56.7	51.2	51.2	59.7	52.7	52.7
Actuated g/C Ratio	0.19	0.19	0.19	0.30	0.30		0.54	0.49	0.49	0.57	0.50	0.50
Clearance Time (s)	6.0	6.0	6.0	4.0	6.0		4.0	6.0	6.0	4.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	223	357	293	353	515		157	1719	733	182	1752	755
v/s Ratio Prot		0.05		c0.05	0.09		0.03	c0.68		c0.04	0.54	
v/s Ratio Perm	0.13		0.05	c0.18			0.28		0.15	0.28		0.05
v/c Ratio	0.70	0.25	0.24	0.76	0.29		0.57	1.41	0.32	0.55	1.08	0.09
Uniform Delay, d1	39.7	36.2	36.1	33.5	28.5		23.0	27.1	16.5	22.4	26.4	13.8
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	9.0	0.4	0.4	9.5	0.3		5.0	187.1	0.5	3.4	48.4	0.1
Delay (s)	48.8	36.6	36.5	43.0	28.9		28.0	214.2	17.0	25.8	74.7	13.9
Level of Service	D	D	D	D	C		C	F	B	C	E	B
Approach Delay (s)		40.8			37.5			188.1			69.0	
Approach LOS		D			D			F			E	

Intersection Summary			
HCM 2000 Control Delay	121.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.16		
Actuated Cycle Length (s)	105.4	Sum of lost time (s)	20.0
Intersection Capacity Utilization	116.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	NBL	NBT	SBT
Lane Group Flow (vph)	25	5	145	215
v/c Ratio	0.05	0.01	0.09	0.14
Control Delay	13.2	4.6	3.6	3.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	13.2	4.6	3.6	3.1
Queue Length 50th (m)	1.4	0.0	0.0	0.0
Queue Length 95th (m)	6.2	1.7	17.1	20.8
Internal Link Dist (m)	180.6		51.4	61.3
Turn Bay Length (m)		25.0		
Base Capacity (vph)	978	999	1666	1581
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.03	0.01	0.09	0.14

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	25	0	5	145	145	70
Future Volume (vph)	25	0	5	145	145	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.3	3.6	3.6	3.6
Total Lost time (s)	6.0		6.0	6.0	6.0	
Lane Util. Factor	1.00		1.00	1.00	1.00	
Frpb, ped/bikes	1.00		1.00	1.00	0.99	
Flpb, ped/bikes	1.00		0.99	1.00	1.00	
Frt	1.00		1.00	1.00	0.96	
Flt Protected	0.95		0.95	1.00	1.00	
Satd. Flow (prot)	1770		1702	1863	1764	
Flt Permitted	0.95		0.62	1.00	1.00	
Satd. Flow (perm)	1770		1117	1863	1764	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	25	0	5	145	145	70
RTOR Reduction (vph)	0	0	0	0	14	0
Lane Group Flow (vph)	25	0	5	145	201	0
Confl. Peds. (#/hr)	5	5	5			5
Confl. Bikes (#/hr)		5				5
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases			2			
Actuated Green, G (s)	2.8		34.3	34.3	34.3	
Effective Green, g (s)	2.8		34.3	34.3	34.3	
Actuated g/C Ratio	0.06		0.70	0.70	0.70	
Clearance Time (s)	6.0		6.0	6.0	6.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	100		780	1301	1232	
v/s Ratio Prot	c0.01			0.08	c0.11	
v/s Ratio Perm			0.00			
v/c Ratio	0.25		0.01	0.11	0.16	
Uniform Delay, d1	22.1		2.2	2.4	2.5	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	1.3		0.0	0.0	0.1	
Delay (s)	23.5		2.2	2.5	2.6	
Level of Service	C		A	A	A	
Approach Delay (s)	23.5			2.4	2.6	
Approach LOS	C			A	A	

Intersection Summary			
HCM 2000 Control Delay	3.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.17		
Actuated Cycle Length (s)	49.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	36.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	NBT	SBT
Lane Group Flow (vph)	30	145	165
v/c Ratio	0.07	0.09	0.10
Control Delay	8.1	3.9	3.8
Queue Delay	0.0	0.0	0.0
Total Delay	8.1	3.9	3.8
Queue Length 50th (m)	0.6	0.0	0.0
Queue Length 95th (m)	5.0	17.4	19.2
Internal Link Dist (m)	16.7	34.1	29.1
Turn Bay Length (m)			
Base Capacity (vph)	919	1629	1650
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.03	0.09	0.10

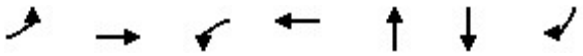
Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	10	20	10	135	160	5
Future Volume (vph)	10	20	10	135	160	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0			6.0	6.0	
Lane Util. Factor	1.00			1.00	1.00	
Frpb, ped/bikes	0.96			1.00	1.00	
Flpb, ped/bikes	1.00			1.00	1.00	
Frt	0.91			1.00	1.00	
Flt Protected	0.98			1.00	1.00	
Satd. Flow (prot)	1604			1856	1853	
Flt Permitted	0.98			0.98	1.00	
Satd. Flow (perm)	1604			1831	1853	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	10	20	10	135	160	5
RTOR Reduction (vph)	19	0	0	0	1	0
Lane Group Flow (vph)	11	0	0	145	164	0
Confl. Peds. (#/hr)	5	5	5			5
Confl. Bikes (#/hr)		5				5
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases			2			
Actuated Green, G (s)	2.9			33.5	33.5	
Effective Green, g (s)	2.9			33.5	33.5	
Actuated g/C Ratio	0.06			0.69	0.69	
Clearance Time (s)	6.0			6.0	6.0	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	96			1267	1282	
v/s Ratio Prot	c0.01				c0.09	
v/s Ratio Perm				0.08		
v/c Ratio	0.12			0.11	0.13	
Uniform Delay, d1	21.5			2.5	2.5	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	0.5			0.0	0.0	
Delay (s)	22.1			2.5	2.6	
Level of Service	C			A	A	
Approach Delay (s)	22.1			2.5	2.6	
Approach LOS	C			A	A	

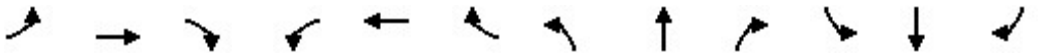
Intersection Summary			
HCM 2000 Control Delay	4.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.13		
Actuated Cycle Length (s)	48.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	36.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



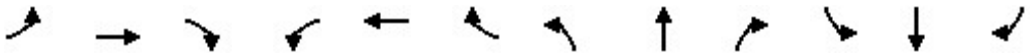
Lane Group	EBL	EBT	WBL	WBT	NBT	SBT	SBR
Lane Group Flow (vph)	20	355	10	265	165	175	25
v/c Ratio	0.04	0.42	0.02	0.32	0.43	0.40	0.06
Control Delay	8.2	10.5	8.1	9.1	16.1	15.8	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.2	10.5	8.1	9.1	16.1	15.8	5.6
Queue Length 50th (m)	0.7	15.5	0.4	10.3	10.0	11.3	0.0
Queue Length 95th (m)	4.3	42.3	2.8	30.1	22.0	23.3	3.6
Internal Link Dist (m)		95.3		62.1	101.3	47.0	
Turn Bay Length (m)	45.0		60.0				
Base Capacity (vph)	1062	1853	981	1797	1404	1667	1518
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	0.02	0.19	0.01	0.15	0.12	0.10	0.02

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	345	10	10	215	50	70	65	30	35	140	25
Future Volume (vph)	20	345	10	10	215	50	70	65	30	35	140	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.3	3.6	3.6	3.6	3.6	3.6	3.3	3.6	3.6
Total Lost time (s)	6.0	6.0		6.0	6.0			6.0			6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.99			0.99			1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Frt	1.00	1.00		1.00	0.97			0.98			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.99	1.00
Satd. Flow (prot)	1703	1853		1704	1800			1765			1843	1531
Flt Permitted	0.60	1.00		0.55	1.00			0.78			0.90	1.00
Satd. Flow (perm)	1068	1853		984	1800			1411			1670	1531
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	345	10	10	215	50	70	65	30	35	140	25
RTOR Reduction (vph)	0	1	0	0	8	0	0	8	0	0	0	18
Lane Group Flow (vph)	20	354	0	10	257	0	0	157	0	0	175	7
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	20.1	20.1		20.1	20.1			11.7			11.7	11.7
Effective Green, g (s)	20.1	20.1		20.1	20.1			11.7			11.7	11.7
Actuated g/C Ratio	0.46	0.46		0.46	0.46			0.27			0.27	0.27
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0			6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	490	850		451	826			376			446	408
v/s Ratio Prot		c0.19			0.14							
v/s Ratio Perm	0.02			0.01				c0.11			0.10	0.00
v/c Ratio	0.04	0.42		0.02	0.31			0.42			0.39	0.02
Uniform Delay, d1	6.5	7.9		6.5	7.5			13.2			13.1	11.8
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	0.0	0.3		0.0	0.2			0.8			0.6	0.0
Delay (s)	6.6	8.3		6.5	7.7			14.0			13.7	11.8
Level of Service	A	A		A	A			B			B	B
Approach Delay (s)		8.2			7.7			14.0			13.5	
Approach LOS		A			A			B			B	

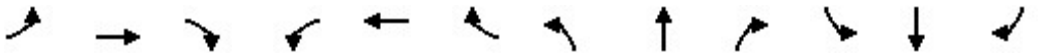
Intersection Summary			
HCM 2000 Control Delay	10.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	43.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	10	5	10	10	30	35	50	225	20	0	70	230
Future Volume (vph)	10	5	10	10	30	35	50	225	20	0	70	230
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	5	10	10	30	35	50	225	20	0	70	230

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	25	75	295	300
Volume Left (vph)	10	10	50	0
Volume Right (vph)	10	35	20	230
Hadj (s)	-0.13	-0.22	0.03	-0.43
Departure Headway (s)	5.2	5.0	4.5	4.1
Degree Utilization, x	0.04	0.10	0.37	0.34
Capacity (veh/h)	606	637	775	850
Control Delay (s)	8.4	8.6	10.1	9.1
Approach Delay (s)	8.4	8.6	10.1	9.1
Approach LOS	A	A	B	A

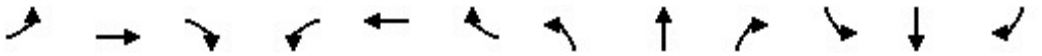
Intersection Summary				
Delay	9.5			
Level of Service	A			
Intersection Capacity Utilization	50.2%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	0	80	35	0	10	30	240	15	5	70	15
Future Volume (Veh/h)	45	0	80	35	0	10	30	240	15	5	70	15
Sign Control		Stop			Stop			Free			Free	
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)	45	0	80	35	0	10	30	240	15	5	70	15
Pedestrians		5			5			5			5	
Lane Width (m)		3.6			3.6			3.6			3.6	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	415	412	88	485	412	258	90			260		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	415	412	88	485	412	258	90			260		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	91	100	92	92	100	99	98			100		
cM capacity (veh/h)	523	513	963	437	513	775	1499			1299		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	125	45	285	90
Volume Left	45	35	30	5
Volume Right	80	10	15	15
cSH	739	484	1499	1299
Volume to Capacity	0.17	0.09	0.02	0.00
Queue Length 95th (m)	4.8	2.4	0.5	0.1
Control Delay (s)	10.9	13.2	0.9	0.5
Lane LOS	B	B	A	A
Approach Delay (s)	10.9	13.2	0.9	0.5
Approach LOS	B	B		

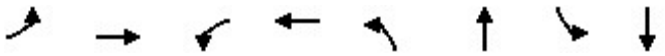
Intersection Summary				
Average Delay	4.1			
Intersection Capacity Utilization	37.0%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	140	290	45	40	250	20	50	120	60	25	90	140
Future Volume (Veh/h)	140	290	45	40	250	20	50	120	60	25	90	140
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)	140	290	45	40	250	20	50	120	60	25	90	140
Pedestrians		5			5			5			5	
Lane Width (m)		3.5			3.5			3.5			3.6	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		134			119							
pX, platoon unblocked												
vC, conflicting volume	275			340			1118	952	322	1040	965	270
vC1, stage 1 conf vol							598	598		345	345	
vC2, stage 2 conf vol							520	355		695	620	
vCu, unblocked vol	275			340			1118	952	322	1040	965	270
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	89			97			76	67	92	88	75	82
cM capacity (veh/h)	1283			1214			207	365	713	208	358	762

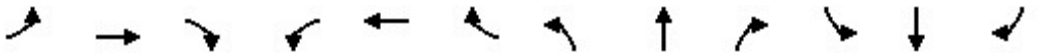
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1
Volume Total	140	335	40	270	50	180	255
Volume Left	140	0	40	0	50	0	25
Volume Right	0	45	0	20	0	60	140
cSH	1283	1700	1214	1700	207	436	459
Volume to Capacity	0.11	0.20	0.03	0.16	0.24	0.41	0.56
Queue Length 95th (m)	2.9	0.0	0.8	0.0	7.3	15.9	26.5
Control Delay (s)	8.2	0.0	8.1	0.0	27.8	19.0	22.2
Lane LOS	A		A		D	C	C
Approach Delay (s)	2.4		1.0		20.9		22.2
Approach LOS					C		C

Intersection Summary			
Average Delay	9.4		
Intersection Capacity Utilization	61.1%	ICU Level of Service	B
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	65	780	190	760	5	125	10	130
v/c Ratio	0.25	0.55	0.38	0.32	0.02	0.29	0.04	0.31
Control Delay	18.6	17.1	8.1	7.0	19.6	13.5	19.7	21.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.6	17.1	8.1	7.0	19.6	13.5	19.7	21.5
Queue Length 50th (m)	4.5	32.5	6.7	18.0	0.4	5.4	0.9	11.0
Queue Length 95th (m)	18.5	74.5	24.1	47.1	3.0	20.0	4.7	28.6
Internal Link Dist (m)		177.9		126.7		56.9		127.4
Turn Bay Length (m)	30.0		30.0		40.0		30.0	
Base Capacity (vph)	575	3150	751	3534	773	1094	776	1165
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	0.11	0.25	0.25	0.22	0.01	0.11	0.01	0.11

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	760	20	190	755	5	5	50	75	10	110	20
Future Volume (vph)	65	760	20	190	755	5	5	50	75	10	110	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	6.0	6.0		4.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00		1.00	0.91		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)	1706	3557		1710	3605		1706	1673		1706	1814	
Flt Permitted	0.36	1.00		0.25	1.00		0.67	1.00		0.68	1.00	
Satd. Flow (perm)	653	3557		445	3605		1210	1673		1215	1814	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	65	760	20	190	755	5	5	50	75	10	110	20
RTOR Reduction (vph)	0	2	0	0	0	0	0	52	0	0	7	0
Lane Group Flow (vph)	65	778	0	190	760	0	5	73	0	10	123	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	2%	1%	2%	2%	0%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	22.9	22.9		35.7	35.7		9.8	9.8		9.8	9.8	
Effective Green, g (s)	22.9	22.9		35.7	35.7		9.8	9.8		9.8	9.8	
Actuated g/C Ratio	0.40	0.40		0.62	0.62		0.17	0.17		0.17	0.17	
Clearance Time (s)	6.0	6.0		4.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	260	1416		469	2238		206	285		207	309	
v/s Ratio Prot		c0.22		c0.06	0.21			0.04			c0.07	
v/s Ratio Perm	0.10			0.19			0.00			0.01		
v/c Ratio	0.25	0.55		0.41	0.34		0.02	0.26		0.05	0.40	
Uniform Delay, d1	11.6	13.3		5.5	5.2		19.9	20.7		19.9	21.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	0.4		0.6	0.1		0.0	0.5		0.1	0.8	
Delay (s)	12.1	13.8		6.1	5.3		19.9	21.2		20.0	22.1	
Level of Service	B	B		A	A		B	C		C	C	
Approach Delay (s)		13.6			5.5			21.1			21.9	
Approach LOS		B			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	10.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	57.5	Sum of lost time (s)	16.0
Intersection Capacity Utilization	63.0%	ICU Level of Service	B
Analysis Period (min)	15		

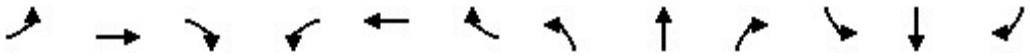
c Critical Lane Group



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	710	110	0	775	0	135
Future Volume (Veh/h)	710	110	0	775	0	135
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	710	110	0	775	0	135
Pedestrians	5			5	5	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	135			202		
pX, platoon unblocked			0.92		0.95	0.92
vC, conflicting volume			825		1162	420
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			627		732	185
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	82
cM capacity (veh/h)			868		337	751

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	473	347	388	388	135
Volume Left	0	0	0	0	0
Volume Right	0	110	0	0	135
cSH	1700	1700	1700	1700	751
Volume to Capacity	0.28	0.20	0.23	0.23	0.18
Queue Length 95th (m)	0.0	0.0	0.0	0.0	5.2
Control Delay (s)	0.0	0.0	0.0	0.0	10.8
Lane LOS					B
Approach Delay (s)	0.0		0.0		10.8
Approach LOS					B

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	39.4%	ICU Level of Service	A
Analysis Period (min)	15		

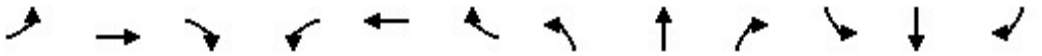


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	205	345	185	285	285	215	180	2090	190	285	2085	350
v/c Ratio	0.75	0.59	0.49	1.09	0.47	0.55	0.95	1.23	0.24	1.19	1.17	0.42
Control Delay	50.2	43.9	16.2	116.4	41.5	17.6	78.0	137.5	9.5	146.3	110.1	14.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.2	43.9	16.2	116.4	41.5	17.6	78.0	137.5	9.5	146.3	110.1	14.0
Queue Length 50th (m)	35.4	36.2	8.9	~60.2	29.3	11.2	20.8	~280.8	9.8	~54.3	~269.8	29.2
Queue Length 95th (m)	55.8	50.2	28.4	#96.8	41.7	32.8	#81.0	#411.2	30.2	#133.6	#399.5	69.1
Internal Link Dist (m)		334.1			111.1			202.3			436.5	
Turn Bay Length (m)	50.0		30.0	50.0		30.0	100.0		30.0	100.0		30.0
Base Capacity (vph)	272	1118	587	261	1141	600	190	1694	801	239	1779	843
Starvation Cap Reductn	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	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.75	0.31	0.32	1.09	0.25	0.36	0.95	1.23	0.24	1.19	1.17	0.42

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	205	345	185	285	285	215	180	2090	190	285	2085	350
Future Volume (vph)	205	345	185	285	285	215	180	2090	190	285	2085	350
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	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	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1628	3539	1560	1743	3610	1560	1745	3539	1566	1745	3505	1566
Flt Permitted	0.51	1.00	1.00	0.43	1.00	1.00	0.08	1.00	1.00	0.07	1.00	1.00
Satd. Flow (perm)	879	3539	1560	782	3610	1560	146	3539	1566	138	3505	1566
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	205	345	185	285	285	215	180	2090	190	285	2085	350
RTOR Reduction (vph)	0	0	114	0	0	129	0	0	52	0	0	49
Lane Group Flow (vph)	205	345	71	285	285	86	180	2090	138	285	2085	301
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	7%	2%	0%	0%	0%	0%	0%	2%	0%	0%	3%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	24.5	17.5	17.5	24.5	17.5	17.5	57.3	50.3	50.3	63.5	53.4	53.4
Effective Green, g (s)	24.5	17.5	17.5	24.5	17.5	17.5	57.3	50.3	50.3	63.5	53.4	53.4
Actuated g/C Ratio	0.23	0.17	0.17	0.23	0.17	0.17	0.55	0.48	0.48	0.61	0.51	0.51
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	255	590	260	246	602	260	186	1696	750	238	1784	797
v/s Ratio Prot	0.05	0.10		c0.08	0.08		0.06	0.59		c0.12	0.59	
v/s Ratio Perm	0.13		0.05	c0.19		0.06	0.46		0.09	c0.61		0.19
v/c Ratio	0.80	0.58	0.27	1.16	0.47	0.33	0.97	1.23	0.18	1.20	1.17	0.38
Uniform Delay, d1	36.6	40.3	38.1	38.9	39.5	38.5	28.2	27.3	15.6	33.1	25.8	15.6
Progression 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
Incremental Delay, d2	16.6	1.5	0.6	107.0	0.6	0.7	56.0	109.9	0.2	122.2	82.4	0.6
Delay (s)	53.2	41.8	38.7	145.9	40.1	39.3	84.1	137.2	15.8	155.4	108.1	16.3
Level of Service	D	D	D	F	D	D	F	F	B	F	F	B
Approach Delay (s)		44.2			78.3			123.9			101.2	
Approach LOS		D			E			F			F	

Intersection Summary			
HCM 2000 Control Delay	100.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.22		
Actuated Cycle Length (s)	104.9	Sum of lost time (s)	20.0
Intersection Capacity Utilization	118.3%	ICU Level of Service	H
Analysis Period (min)	15		

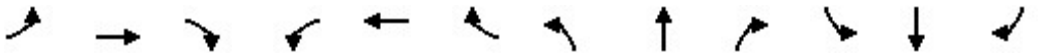
c Critical Lane Group



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	50	60	160	140	25	2285	185	45	2430	80
v/c Ratio	0.25	0.19	0.69	0.48	0.38	0.91	0.17	0.68	0.98	0.07
Control Delay	39.3	34.5	56.0	42.0	29.8	21.7	4.9	65.2	31.2	4.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	4.4	0.0	0.0	29.0	0.0
Total Delay	39.3	34.5	56.0	42.0	29.8	26.1	4.9	65.2	60.2	4.8
Queue Length 50th (m)	9.4	10.2	32.9	26.2	1.8	182.9	7.5	4.6	224.9	3.0
Queue Length 95th (m)	20.4	21.6	55.0	44.9	#17.2	#363.2	22.4	#19.0	#404.9	11.1
Internal Link Dist (m)		170.8		112.7		238.4			202.3	
Turn Bay Length (m)	40.0		60.0		30.0		30.0	30.0		30.0
Base Capacity (vph)	345	541	399	496	66	2500	1079	66	2475	1070
Starvation Cap Reductn	0	0	0	0	0	168	0	0	208	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	0.14	0.11	0.40	0.28	0.38	0.98	0.17	0.68	1.07	0.07

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	35	25	160	15	125	25	2285	185	45	2430	80
Future Volume (vph)	50	35	25	160	15	125	25	2285	185	45	2430	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.98		1.00	1.00	0.96	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	1.00
Frt	1.00	0.94		1.00	0.87		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1704	1730		1703	1580		1711	3539	1508	1711	3505	1508
Flt Permitted	0.62	1.00		0.72	1.00		0.05	1.00	1.00	0.05	1.00	1.00
Satd. Flow (perm)	1112	1730		1287	1580		96	3539	1508	96	3505	1508
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	50	35	25	160	15	125	25	2285	185	45	2430	80
RTOR Reduction (vph)	0	4	0	0	6	0	0	0	17	0	0	8
Lane Group Flow (vph)	50	56	0	160	134	0	25	2285	168	45	2430	72
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	19.3	19.3		19.3	19.3		75.4	75.4	75.4	75.4	75.4	75.4
Effective Green, g (s)	19.3	19.3		19.3	19.3		75.4	75.4	75.4	75.4	75.4	75.4
Actuated g/C Ratio	0.18	0.18		0.18	0.18		0.71	0.71	0.71	0.71	0.71	0.71
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	201	312		232	285		67	2500	1065	67	2476	1065
v/s Ratio Prot		0.03			0.08			0.65			c0.69	
v/s Ratio Perm	0.04			c0.12			0.26		0.11	0.47		0.05
v/c Ratio	0.25	0.18		0.69	0.47		0.37	0.91	0.16	0.67	0.98	0.07
Uniform Delay, d1	37.5	37.0		40.9	39.1		6.2	13.0	5.2	8.7	15.0	4.8
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7	0.3		8.3	1.2		7.2	6.0	0.1	29.5	14.0	0.1
Delay (s)	38.1	37.3		49.2	40.4		13.4	19.0	5.3	38.2	29.0	4.9
Level of Service	D	D		D	D		B	B	A	D	C	A
Approach Delay (s)		37.7			45.1			17.9			28.4	
Approach LOS		D			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	24.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	106.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	102.3%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

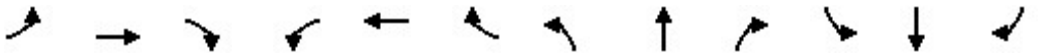


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	85	100	140	215	130	200	2375	305	150	2350	115
v/c Ratio	0.45	0.34	0.39	0.64	0.27	1.03	1.34	0.38	0.77	1.34	0.14
Control Delay	44.9	39.7	9.0	38.6	25.3	98.6	180.7	13.0	45.5	180.3	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.9	39.7	9.0	38.6	25.3	98.6	180.7	13.0	45.5	180.3	5.2
Queue Length 50th (m)	15.9	18.3	0.0	35.5	17.8	23.2	~312.9	21.2	12.3	~309.4	1.3
Queue Length 95th (m)	29.9	32.6	15.0	55.2	32.2	#94.8	#487.4	60.2	#63.3	#482.6	13.8
Internal Link Dist (m)		188.1			109.9		464.0			238.4	
Turn Bay Length (m)	60.0		40.0	60.0		90.0		40.0	70.0		30.0
Base Capacity (vph)	437	673	643	334	848	194	1776	806	194	1759	806
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	0.19	0.15	0.22	0.64	0.15	1.03	1.34	0.38	0.77	1.34	0.14

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	85	100	140	215	95	35	200	2375	305	150	2350	115
Future Volume (vph)	85	100	140	215	95	35	200	2375	305	150	2350	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	6.0	6.0	6.0	4.0	6.0		4.0	6.0	6.0	4.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	0.99		1.00	1.00	0.97	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1705	1863	1530	1708	1778		1711	3539	1511	1711	3505	1511
Flt Permitted	0.67	1.00	1.00	0.55	1.00		0.08	1.00	1.00	0.08	1.00	1.00
Satd. Flow (perm)	1209	1863	1530	992	1778		143	3539	1511	143	3505	1511
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)	85	100	140	215	95	35	200	2375	305	150	2350	115
RTOR Reduction (vph)	0	0	118	0	13	0	0	0	50	0	0	50
Lane Group Flow (vph)	85	100	22	215	117	0	200	2375	255	150	2350	65
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%
Turn Type	Perm	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		6
Actuated Green, G (s)	15.7	15.7	15.7	26.8	26.8		57.5	50.4	50.4	57.5	50.4	50.4
Effective Green, g (s)	15.7	15.7	15.7	26.8	26.8		57.5	50.4	50.4	57.5	50.4	50.4
Actuated g/C Ratio	0.16	0.16	0.16	0.27	0.27		0.57	0.50	0.50	0.57	0.50	0.50
Clearance Time (s)	6.0	6.0	6.0	4.0	6.0		4.0	6.0	6.0	4.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	189	291	239	315	475		192	1778	759	192	1761	759
v/s Ratio Prot		0.05		c0.05	0.07		c0.07	c0.67		0.06	0.67	
v/s Ratio Perm	0.07		0.01	c0.13			0.52		0.17	0.39		0.04
v/c Ratio	0.45	0.34	0.09	0.68	0.25		1.04	1.34	0.34	0.78	1.33	0.09
Uniform Delay, d1	38.4	37.7	36.2	32.3	28.8		28.5	24.9	14.9	22.8	24.9	13.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.7	0.7	0.2	6.0	0.3		76.3	155.0	0.6	18.4	154.5	0.1
Delay (s)	40.1	38.4	36.4	38.3	29.1		104.8	180.0	15.5	41.2	179.4	13.1
Level of Service	D	D	D	D	C		F	F	B	D	F	B
Approach Delay (s)		38.0			34.8			157.3			164.2	
Approach LOS		D			C			F			F	

Intersection Summary			
HCM 2000 Control Delay	147.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.15		
Actuated Cycle Length (s)	100.3	Sum of lost time (s)	20.0
Intersection Capacity Utilization	116.3%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	NBL	NBT	SBT
Lane Group Flow (vph)	55	5	145	330
v/c Ratio	0.12	0.01	0.10	0.24
Control Delay	11.1	7.2	6.0	5.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	11.1	7.2	6.0	5.3
Queue Length 50th (m)	2.6	0.0	0.0	0.0
Queue Length 95th (m)	8.3	1.8	17.8	33.2
Internal Link Dist (m)	180.6		51.4	61.3
Turn Bay Length (m)		25.0		
Base Capacity (vph)	965	807	1495	1405
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.06	0.01	0.10	0.23

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	45	10	5	145	190	140
Future Volume (vph)	45	10	5	145	190	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.3	3.6	3.6	3.6
Total Lost time (s)	6.0		6.0	6.0	6.0	
Lane Util. Factor	1.00		1.00	1.00	1.00	
Frpb, ped/bikes	0.99		1.00	1.00	0.99	
Flpb, ped/bikes	1.00		1.00	1.00	1.00	
Frt	0.98		1.00	1.00	0.94	
Flt Protected	0.96		0.95	1.00	1.00	
Satd. Flow (prot)	1732		1703	1863	1734	
Flt Permitted	0.96		0.56	1.00	1.00	
Satd. Flow (perm)	1732		1007	1863	1734	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	45	10	5	145	190	140
RTOR Reduction (vph)	9	0	0	0	27	0
Lane Group Flow (vph)	46	0	5	145	303	0
Confl. Peds. (#/hr)	5	5	5			5
Confl. Bikes (#/hr)		5				5
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases			2			
Actuated Green, G (s)	5.1		30.3	30.3	30.3	
Effective Green, g (s)	5.1		30.3	30.3	30.3	
Actuated g/C Ratio	0.11		0.64	0.64	0.64	
Clearance Time (s)	6.0		6.0	6.0	6.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	186		643	1190	1108	
v/s Ratio Prot	c0.03			0.08	c0.17	
v/s Ratio Perm			0.00			
v/c Ratio	0.25		0.01	0.12	0.27	
Uniform Delay, d1	19.4		3.1	3.3	3.7	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	0.7		0.0	0.0	0.1	
Delay (s)	20.1		3.1	3.4	3.9	
Level of Service	C		A	A	A	
Approach Delay (s)	20.1			3.4	3.9	
Approach LOS	C			A	A	

Intersection Summary			
HCM 2000 Control Delay	5.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.27		
Actuated Cycle Length (s)	47.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	38.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	NBT	SBT
Lane Group Flow (vph)	25	170	205
v/c Ratio	0.06	0.10	0.12
Control Delay	9.4	3.6	3.5
Queue Delay	0.0	0.0	0.0
Total Delay	9.4	3.6	3.5
Queue Length 50th (m)	0.6	0.0	0.0
Queue Length 95th (m)	5.0	19.8	22.5
Internal Link Dist (m)	16.7	34.1	29.1
Turn Bay Length (m)			
Base Capacity (vph)	916	1622	1641
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.03	0.10	0.12

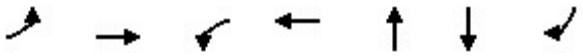
Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	10	15	15	155	185	20
Future Volume (vph)	10	15	15	155	185	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0			6.0	6.0	
Lane Util. Factor	1.00			1.00	1.00	
Frpb, ped/bikes	0.96			1.00	1.00	
Flpb, ped/bikes	1.00			1.00	1.00	
Frt	0.92			1.00	0.99	
Flt Protected	0.98			1.00	1.00	
Satd. Flow (prot)	1619			1854	1833	
Flt Permitted	0.98			0.97	1.00	
Satd. Flow (perm)	1619			1813	1833	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	10	15	15	155	185	20
RTOR Reduction (vph)	14	0	0	0	3	0
Lane Group Flow (vph)	11	0	0	170	202	0
Confl. Peds. (#/hr)	5	5	5			5
Confl. Bikes (#/hr)		5				5
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases			2			
Actuated Green, G (s)	2.8			34.3	34.3	
Effective Green, g (s)	2.8			34.3	34.3	
Actuated g/C Ratio	0.06			0.70	0.70	
Clearance Time (s)	6.0			6.0	6.0	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	92			1266	1280	
v/s Ratio Prot	c0.01				c0.11	
v/s Ratio Perm				0.09		
v/c Ratio	0.12			0.13	0.16	
Uniform Delay, d1	22.0			2.5	2.5	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	0.6			0.0	0.1	
Delay (s)	22.6			2.5	2.6	
Level of Service	C			A	A	
Approach Delay (s)	22.6			2.5	2.6	
Approach LOS	C			A	A	

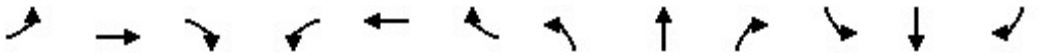
Intersection Summary			
HCM 2000 Control Delay	3.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.15		
Actuated Cycle Length (s)	49.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	40.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



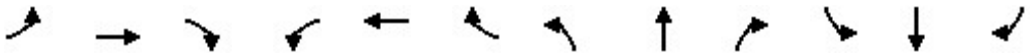
Lane Group	EBL	EBT	WBL	WBT	NBT	SBT	SBR
Lane Group Flow (vph)	55	185	30	225	145	130	60
v/c Ratio	0.09	0.18	0.05	0.22	0.30	0.25	0.12
Control Delay	8.3	7.9	8.0	8.1	13.7	13.8	4.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.3	7.9	8.0	8.1	13.7	13.8	4.8
Queue Length 50th (m)	2.1	6.7	1.1	8.5	8.5	8.1	0.0
Queue Length 95th (m)	8.8	21.1	5.5	25.5	18.8	17.6	5.6
Internal Link Dist (m)		95.3		62.1	101.3	47.0	
Turn Bay Length (m)	45.0		60.0				
Base Capacity (vph)	1100	1797	1140	1792	1639	1826	1519
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	0.05	0.10	0.03	0.13	0.09	0.07	0.04

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	150	35	30	180	45	25	95	25	5	125	60
Future Volume (vph)	55	150	35	30	180	45	25	95	25	5	125	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.3	3.6	3.6	3.6	3.6	3.6	3.3	3.6	3.6
Total Lost time (s)	6.0	6.0		6.0	6.0			6.0			6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.99			0.99			1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Frt	1.00	0.97		1.00	0.97			0.98			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.99			1.00	1.00
Satd. Flow (prot)	1703	1800		1703	1796			1792			1859	1529
Flt Permitted	0.62	1.00		0.64	1.00			0.91			0.98	1.00
Satd. Flow (perm)	1108	1800		1149	1796			1643			1828	1529
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	55	150	35	30	180	45	25	95	25	5	125	60
RTOR Reduction (vph)	0	7	0	0	7	0	0	9	0	0	0	48
Lane Group Flow (vph)	55	178	0	30	218	0	0	136	0	0	130	12
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	21.1	21.1		21.1	21.1			8.7			8.7	8.7
Effective Green, g (s)	21.1	21.1		21.1	21.1			8.7			8.7	8.7
Actuated g/C Ratio	0.50	0.50		0.50	0.50			0.21			0.21	0.21
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0			6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	559	908		579	906			341			380	318
v/s Ratio Prot		0.10			c0.12							
v/s Ratio Perm	0.05			0.03				c0.08			0.07	0.01
v/c Ratio	0.10	0.20		0.05	0.24			0.40			0.34	0.04
Uniform Delay, d1	5.4	5.7		5.3	5.8			14.3			14.1	13.2
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	0.1	0.1		0.0	0.1			0.8			0.5	0.1
Delay (s)	5.5	5.8		5.3	6.0			15.1			14.7	13.3
Level of Service	A	A		A	A			B			B	B
Approach Delay (s)		5.7			5.9			15.1			14.2	
Approach LOS		A			A			B			B	

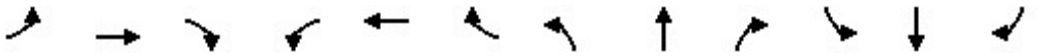
Intersection Summary			
HCM 2000 Control Delay	9.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	41.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	72.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	185	25	55	40	15	90	45	290	10	20	145	240
Future Volume (vph)	185	25	55	40	15	90	45	290	10	20	145	240
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)	185	25	55	40	15	90	45	290	10	20	145	240

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	265	145	345	405
Volume Left (vph)	185	40	45	20
Volume Right (vph)	55	90	10	240
Hadj (s)	0.05	-0.28	0.04	-0.31
Departure Headway (s)	6.5	6.5	6.1	5.7
Degree Utilization, x	0.48	0.26	0.58	0.64
Capacity (veh/h)	495	454	552	593
Control Delay (s)	15.4	11.9	17.3	18.1
Approach Delay (s)	15.4	11.9	17.3	18.1
Approach LOS	C	B	C	C

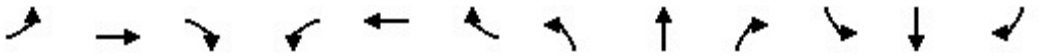
Intersection Summary				
Delay	16.5			
Level of Service	C			
Intersection Capacity Utilization	60.8%	ICU Level of Service	B	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	0	60	35	5	25	90	280	45	25	150	65
Future Volume (Veh/h)	40	0	60	35	5	25	90	280	45	25	150	65
Sign Control		Stop			Stop			Free			Free	
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)	40	0	60	35	5	25	90	280	45	25	150	65
Pedestrians		5			5			5			5	
Lane Width (m)		3.6			3.6			3.6			3.6	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	752	748	192	785	758	312	220			330		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	752	748	192	785	758	312	220			330		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	86	100	93	87	98	97	93			98		
cM capacity (veh/h)	286	309	842	265	305	722	1344			1224		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	100	65	415	240
Volume Left	40	35	90	25
Volume Right	60	25	45	65
cSH	474	355	1344	1224
Volume to Capacity	0.21	0.18	0.07	0.02
Queue Length 95th (m)	6.3	5.3	1.7	0.5
Control Delay (s)	14.6	17.4	2.2	1.0
Lane LOS	B	C	A	A
Approach Delay (s)	14.6	17.4	2.2	1.0
Approach LOS	B	C		

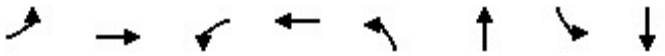
Intersection Summary				
Average Delay	4.6			
Intersection Capacity Utilization	53.8%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	245	185	125	30	165	70	30	155	30	25	95	150
Future Volume (Veh/h)	245	185	125	30	165	70	30	155	30	25	95	150
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)	245	185	125	30	165	70	30	155	30	25	95	150
Pedestrians		5			5			5			5	
Lane Width (m)		3.5			3.5			3.5			3.6	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		134			119							
pX, platoon unblocked												
vC, conflicting volume	240			315			1170	1042	258	1052	1070	210
vC1, stage 1 conf vol							742	742		265	265	
vC2, stage 2 conf vol							428	300		788	805	
vCu, unblocked vol	240			315			1170	1042	258	1052	1070	210
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	81			98			81	48	96	81	66	82
cM capacity (veh/h)	1321			1240			158	297	775	131	279	823

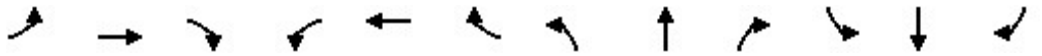
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1
Volume Total	245	310	30	235	30	185	270
Volume Left	245	0	30	0	30	0	25
Volume Right	0	125	0	70	0	30	150
cSH	1321	1700	1240	1700	158	330	378
Volume to Capacity	0.19	0.18	0.02	0.14	0.19	0.56	0.71
Queue Length 95th (m)	5.4	0.0	0.6	0.0	5.4	26.0	42.9
Control Delay (s)	8.3	0.0	8.0	0.0	33.1	28.9	35.0
Lane LOS	A		A		D	D	D
Approach Delay (s)	3.7		0.9		29.5		35.0
Approach LOS					D		D

Intersection Summary				
Average Delay	13.9			
Intersection Capacity Utilization	66.5%	ICU Level of Service	C	
Analysis Period (min)	15			



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	50	835	80	610	10	180	10	90
v/c Ratio	0.14	0.51	0.32	0.38	0.03	0.36	0.03	0.18
Control Delay	10.4	11.0	14.1	9.8	11.7	10.8	11.7	11.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.4	11.0	14.1	9.8	11.7	10.8	11.7	11.7
Queue Length 50th (m)	1.9	20.4	3.3	13.7	0.6	7.2	0.6	4.7
Queue Length 95th (m)	10.4	56.1	17.5	39.3	3.1	19.4	3.1	12.8
Internal Link Dist (m)		177.9		126.7		56.9		127.4
Turn Bay Length (m)	30.0		30.0		40.0		30.0	
Base Capacity (vph)	753	3570	551	3535	1146	1541	1056	1642
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	0.07	0.23	0.15	0.17	0.01	0.12	0.01	0.05

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	830	5	80	605	5	10	75	105	10	70	20
Future Volume (vph)	50	830	5	80	605	5	10	75	105	10	70	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00		1.00	0.91		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1706	3570		1707	3534		1706	1681		1707	1793	
Flt Permitted	0.42	1.00		0.31	1.00		0.70	1.00		0.64	1.00	
Satd. Flow (perm)	756	3570		551	3534		1255	1681		1157	1793	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	50	830	5	80	605	5	10	75	105	10	70	20
RTOR Reduction (vph)	0	1	0	0	1	0	0	46	0	0	9	0
Lane Group Flow (vph)	50	834	0	80	609	0	10	134	0	10	81	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	2%	1%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	21.0	21.0		21.0	21.0		12.5	12.5		12.5	12.5	
Effective Green, g (s)	21.0	21.0		21.0	21.0		12.5	12.5		12.5	12.5	
Actuated g/C Ratio	0.46	0.46		0.46	0.46		0.27	0.27		0.27	0.27	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	348	1647		254	1631		344	461		317	492	
v/s Ratio Prot		c0.23			0.17			c0.08			0.04	
v/s Ratio Perm	0.07			0.15			0.01			0.01		
v/c Ratio	0.14	0.51		0.31	0.37		0.03	0.29		0.03	0.16	
Uniform Delay, d1	7.1	8.6		7.7	8.0		12.1	13.0		12.1	12.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.2		0.7	0.1		0.0	0.4		0.0	0.2	
Delay (s)	7.3	8.9		8.4	8.1		12.1	13.4		12.1	12.7	
Level of Service	A	A		A	A		B	B		B	B	
Approach Delay (s)		8.8			8.2			13.3			12.6	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	9.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	45.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	67.0%	ICU Level of Service	C
Analysis Period (min)	15		

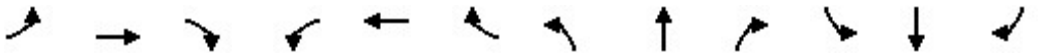
c Critical Lane Group



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	725	25	0	630	0	160
Future Volume (Veh/h)	725	25	0	630	0	160
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	725	25	0	630	0	160
Pedestrians	5			5	5	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	135			202		
pX, platoon unblocked			0.92		0.95	0.92
vC, conflicting volume			755		1062	385
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			567		690	166
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	79
cM capacity (veh/h)			920		358	777

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	483	267	315	315	160
Volume Left	0	0	0	0	0
Volume Right	0	25	0	0	160
cSH	1700	1700	1700	1700	777
Volume to Capacity	0.28	0.16	0.19	0.19	0.21
Queue Length 95th (m)	0.0	0.0	0.0	0.0	6.2
Control Delay (s)	0.0	0.0	0.0	0.0	10.8
Lane LOS					B
Approach Delay (s)	0.0		0.0		10.8
Approach LOS					B

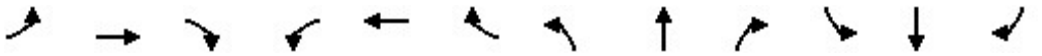
Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	38.4%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	245	325	140	210	240	195	270	1510	260	165	1095	100
v/c Ratio	0.78	0.56	0.38	0.78	0.43	0.50	0.77	0.84	0.31	0.86	0.74	0.14
Control Delay	50.9	43.3	9.0	52.1	40.9	14.0	34.8	28.5	11.1	60.3	30.1	2.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0
Total Delay	50.9	43.3	9.0	52.1	40.9	14.0	34.8	28.8	11.1	60.3	30.1	2.1
Queue Length 50th (m)	43.1	33.8	0.0	36.1	24.4	6.5	29.6	130.7	16.9	16.1	95.7	0.0
Queue Length 95th (m)	65.4	47.3	15.6	56.3	36.0	25.9	#92.4	#242.2	45.3	#71.4	159.9	5.6
Internal Link Dist (m)		334.1			111.1			202.3			436.5	
Turn Bay Length (m)	50.0		30.0	50.0		30.0	100.0		30.0	100.0		30.0
Base Capacity (vph)	313	1144	590	270	1090	609	356	1819	844	192	1496	745
Starvation Cap Reductn	0	0	0	0	0	0	0	38	0	0	0	0
Spillback Cap Reductn	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	0	0
Reduced v/c Ratio	0.78	0.28	0.24	0.78	0.22	0.32	0.76	0.85	0.31	0.86	0.73	0.13

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	245	325	140	210	240	195	270	1510	260	165	1095	100
Future Volume (vph)	245	325	140	210	240	195	270	1510	260	165	1095	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	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	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1742	3574	1544	1743	3406	1560	1662	3539	1551	1745	3505	1565
Flt Permitted	0.58	1.00	1.00	0.45	1.00	1.00	0.12	1.00	1.00	0.09	1.00	1.00
Satd. Flow (perm)	1070	3574	1544	832	3406	1560	207	3539	1551	168	3505	1565
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)	245	325	140	210	240	195	270	1510	260	165	1095	100
RTOR Reduction (vph)	0	0	117	0	0	134	0	0	49	0	0	58
Lane Group Flow (vph)	245	325	23	210	240	61	270	1510	211	165	1095	42
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	0%	1%	1%	0%	6%	0%	5%	2%	1%	0%	3%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	23.9	16.9	16.9	23.9	16.9	16.9	63.6	52.6	52.6	50.8	43.8	43.8
Effective Green, g (s)	23.9	16.9	16.9	23.9	16.9	16.9	63.6	52.6	52.6	50.8	43.8	43.8
Actuated g/C Ratio	0.23	0.16	0.16	0.23	0.16	0.16	0.61	0.51	0.51	0.49	0.42	0.42
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	292	583	252	253	556	254	349	1798	788	189	1483	662
v/s Ratio Prot	c0.06	0.09		0.06	0.07		c0.12	c0.43		0.06	0.31	
v/s Ratio Perm	c0.14		0.01	0.14		0.04	0.36		0.14	0.37		0.03
v/c Ratio	0.84	0.56	0.09	0.83	0.43	0.24	0.77	0.84	0.27	0.87	0.74	0.06
Uniform Delay, d1	36.7	39.9	36.8	36.4	39.0	37.7	21.6	21.8	14.5	20.1	25.0	17.7
Progression 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
Incremental Delay, d2	18.6	1.2	0.2	20.0	0.5	0.5	10.2	4.1	0.4	32.9	2.4	0.1
Delay (s)	55.3	41.0	36.9	56.5	39.5	38.2	31.9	25.9	14.9	53.0	27.4	17.8
Level of Service	E	D	D	E	D	D	C	C	B	D	C	B
Approach Delay (s)		45.1			44.6			25.3			29.8	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	32.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	103.5	Sum of lost time (s)	20.0
Intersection Capacity Utilization	92.4%	ICU Level of Service	F
Analysis Period (min)	15		

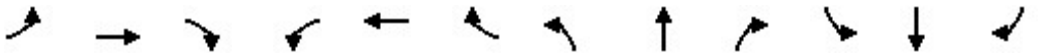
c Critical Lane Group



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	80	20	215	95	25	1885	15	10	1405	30
v/c Ratio	0.43	0.07	0.68	0.25	0.16	0.83	0.02	0.14	0.62	0.03
Control Delay	45.9	0.5	42.7	28.3	14.2	20.1	0.0	17.2	14.2	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.2	0.0
Total Delay	45.9	0.5	42.7	28.3	14.2	20.4	0.0	17.2	14.4	0.4
Queue Length 50th (m)	15.4	0.0	37.2	14.3	1.8	135.0	0.0	0.7	78.6	0.0
Queue Length 95th (m)	29.6	0.0	57.7	27.1	9.5	#299.7	0.0	5.4	166.1	0.8
Internal Link Dist (m)		170.8		112.7		238.4			202.3	
Turn Bay Length (m)	40.0		60.0		30.0		30.0	30.0		30.0
Base Capacity (vph)	416	561	317	725	154	2296	998	72	2274	998
Starvation Cap Reductn	0	0	0	0	0	74	0	0	243	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	0.19	0.04	0.68	0.13	0.16	0.85	0.02	0.14	0.69	0.03

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	0	20	215	20	75	25	1885	15	10	1405	30
Future Volume (vph)	80	0	20	215	20	75	25	1885	15	10	1405	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	6.0	6.0		4.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.97		1.00	0.98		1.00	1.00	0.96	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	1.00
Frt	1.00	0.85		1.00	0.88		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1704	1543		1707	1615		1711	3539	1508	1711	3505	1508
Flt Permitted	0.70	1.00		0.56	1.00		0.13	1.00	1.00	0.06	1.00	1.00
Satd. Flow (perm)	1247	1543		1015	1615		238	3539	1508	112	3505	1508
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)	80	0	20	215	20	75	25	1885	15	10	1405	30
RTOR Reduction (vph)	0	18	0	0	6	0	0	0	5	0	0	11
Lane Group Flow (vph)	80	2	0	215	89	0	25	1885	10	10	1405	19
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%
Turn Type	Perm	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4		3	8			2			6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	12.6	12.6		24.9	24.9		64.2	64.2	64.2	64.2	64.2	64.2
Effective Green, g (s)	12.6	12.6		24.9	24.9		64.2	64.2	64.2	64.2	64.2	64.2
Actuated g/C Ratio	0.12	0.12		0.25	0.25		0.64	0.64	0.64	0.64	0.64	0.64
Clearance Time (s)	6.0	6.0		4.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	155	192		306	397		151	2247	957	71	2225	957
v/s Ratio Prot		0.00		c0.06	0.06			c0.53			0.40	
v/s Ratio Perm	0.06			c0.12			0.10		0.01	0.09		0.01
v/c Ratio	0.52	0.01		0.70	0.22		0.17	0.84	0.01	0.14	0.63	0.02
Uniform Delay, d1	41.4	38.8		33.9	30.4		7.5	14.4	6.8	7.4	11.2	6.8
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.9	0.0		7.1	0.3		1.1	3.3	0.0	1.9	0.8	0.0
Delay (s)	44.3	38.8		41.0	30.7		8.6	17.7	6.8	9.3	12.1	6.8
Level of Service	D	D		D	C		A	B	A	A	B	A
Approach Delay (s)		43.2			37.9			17.5			11.9	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	17.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	101.1	Sum of lost time (s)	16.0
Intersection Capacity Utilization	82.1%	ICU Level of Service	E
Analysis Period (min)	15		

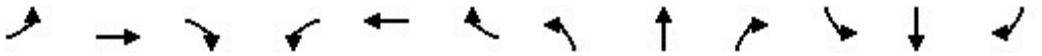
c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	155	90	195	270	170	90	1705	285	100	1420	120
v/c Ratio	0.70	0.25	0.46	0.72	0.31	0.49	1.00	0.37	0.54	0.80	0.15
Control Delay	55.1	36.3	12.2	41.2	23.8	22.7	50.9	13.7	26.2	28.5	5.9
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	55.1	36.3	12.2	41.2	23.8	22.7	50.9	13.7	26.2	28.5	5.9
Queue Length 50th (m)	31.0	16.4	6.2	46.4	22.5	7.1	179.7	22.0	8.0	130.4	2.1
Queue Length 95th (m)	52.4	30.0	25.0	69.6	39.2	23.6	#307.2	54.6	#31.4	#231.7	14.7
Internal Link Dist (m)		188.1			109.9		464.0			238.4	
Turn Bay Length (m)	60.0		40.0	60.0		90.0		40.0	70.0		30.0
Base Capacity (vph)	403	645	635	376	804	185	1701	776	184	1766	809
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	0.38	0.14	0.31	0.72	0.21	0.49	1.00	0.37	0.54	0.80	0.15

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	155	90	195	270	105	65	90	1705	285	100	1420	120
Future Volume (vph)	155	90	195	270	105	65	90	1705	285	100	1420	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	6.0	6.0	6.0	4.0	6.0		4.0	6.0	6.0	4.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	0.99		1.00	1.00	0.96	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	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.94		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1705	1863	1531	1707	1742		1711	3539	1510	1711	3505	1510
Flt Permitted	0.65	1.00	1.00	0.58	1.00		0.08	1.00	1.00	0.08	1.00	1.00
Satd. Flow (perm)	1166	1863	1531	1048	1742		141	3539	1510	137	3505	1510
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	155	90	195	270	105	65	90	1705	285	100	1420	120
RTOR Reduction (vph)	0	0	129	0	22	0	0	0	51	0	0	50
Lane Group Flow (vph)	155	90	66	270	148	0	90	1705	234	100	1420	70
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%
Turn Type	Perm	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		6
Actuated Green, G (s)	20.2	20.2	20.2	31.2	31.2		56.7	51.2	51.2	59.7	52.7	52.7
Effective Green, g (s)	20.2	20.2	20.2	31.2	31.2		56.7	51.2	51.2	59.7	52.7	52.7
Actuated g/C Ratio	0.19	0.19	0.19	0.30	0.30		0.54	0.49	0.49	0.57	0.50	0.50
Clearance Time (s)	6.0	6.0	6.0	4.0	6.0		4.0	6.0	6.0	4.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	223	357	293	353	515		157	1719	733	182	1752	755
v/s Ratio Prot		0.05		c0.05	0.09		0.03	c0.48		c0.04	0.41	
v/s Ratio Perm	0.13		0.04	c0.18			0.28		0.15	0.28		0.05
v/c Ratio	0.70	0.25	0.22	0.76	0.29		0.57	0.99	0.32	0.55	0.81	0.09
Uniform Delay, d1	39.7	36.2	36.0	33.5	28.5		17.7	26.9	16.5	22.4	22.2	13.8
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	9.0	0.4	0.4	9.5	0.3		5.0	19.8	0.5	3.4	3.3	0.1
Delay (s)	48.8	36.6	36.4	43.0	28.9		22.6	46.6	17.0	25.8	25.5	13.9
Level of Service	D	D	D	D	C		C	D	B	C	C	B
Approach Delay (s)		40.8			37.5			41.5			24.7	
Approach LOS		D			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	35.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	105.4	Sum of lost time (s)	20.0
Intersection Capacity Utilization	96.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	NBL	NBT	SBT
Lane Group Flow (vph)	25	5	145	215
v/c Ratio	0.05	0.01	0.09	0.14
Control Delay	13.2	4.6	3.6	3.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	13.2	4.6	3.6	3.1
Queue Length 50th (m)	1.4	0.0	0.0	0.0
Queue Length 95th (m)	6.2	1.7	17.1	20.8
Internal Link Dist (m)	180.6		51.4	61.3
Turn Bay Length (m)		25.0		
Base Capacity (vph)	978	999	1666	1581
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.03	0.01	0.09	0.14

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	25	0	5	145	145	70
Future Volume (vph)	25	0	5	145	145	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.3	3.6	3.6	3.6
Total Lost time (s)	6.0		6.0	6.0	6.0	
Lane Util. Factor	1.00		1.00	1.00	1.00	
Frpb, ped/bikes	1.00		1.00	1.00	0.99	
Flpb, ped/bikes	1.00		0.99	1.00	1.00	
Frt	1.00		1.00	1.00	0.96	
Flt Protected	0.95		0.95	1.00	1.00	
Satd. Flow (prot)	1770		1702	1863	1764	
Flt Permitted	0.95		0.62	1.00	1.00	
Satd. Flow (perm)	1770		1117	1863	1764	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	25	0	5	145	145	70
RTOR Reduction (vph)	0	0	0	0	14	0
Lane Group Flow (vph)	25	0	5	145	201	0
Confl. Peds. (#/hr)	5	5	5			5
Confl. Bikes (#/hr)		5				5
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases			2			
Actuated Green, G (s)	2.8		34.3	34.3	34.3	
Effective Green, g (s)	2.8		34.3	34.3	34.3	
Actuated g/C Ratio	0.06		0.70	0.70	0.70	
Clearance Time (s)	6.0		6.0	6.0	6.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	100		780	1301	1232	
v/s Ratio Prot	c0.01			0.08	c0.11	
v/s Ratio Perm			0.00			
v/c Ratio	0.25		0.01	0.11	0.16	
Uniform Delay, d1	22.1		2.2	2.4	2.5	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	1.3		0.0	0.0	0.1	
Delay (s)	23.5		2.2	2.5	2.6	
Level of Service	C		A	A	A	
Approach Delay (s)	23.5			2.4	2.6	
Approach LOS	C			A	A	

Intersection Summary			
HCM 2000 Control Delay	3.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.17		
Actuated Cycle Length (s)	49.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	36.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	NBT	SBT
Lane Group Flow (vph)	30	145	165
v/c Ratio	0.07	0.09	0.10
Control Delay	8.1	3.9	3.8
Queue Delay	0.0	0.0	0.0
Total Delay	8.1	3.9	3.8
Queue Length 50th (m)	0.6	0.0	0.0
Queue Length 95th (m)	5.0	17.4	19.2
Internal Link Dist (m)	16.7	34.1	29.1
Turn Bay Length (m)			
Base Capacity (vph)	919	1629	1650
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.03	0.09	0.10

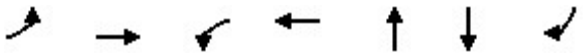
Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	10	20	10	135	160	5
Future Volume (vph)	10	20	10	135	160	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0			6.0	6.0	
Lane Util. Factor	1.00			1.00	1.00	
Frpb, ped/bikes	0.96			1.00	1.00	
Flpb, ped/bikes	1.00			1.00	1.00	
Frt	0.91			1.00	1.00	
Flt Protected	0.98			1.00	1.00	
Satd. Flow (prot)	1604			1856	1853	
Flt Permitted	0.98			0.98	1.00	
Satd. Flow (perm)	1604			1831	1853	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	10	20	10	135	160	5
RTOR Reduction (vph)	19	0	0	0	1	0
Lane Group Flow (vph)	11	0	0	145	164	0
Confl. Peds. (#/hr)	5	5	5			5
Confl. Bikes (#/hr)		5				5
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases			2			
Actuated Green, G (s)	2.9			33.5	33.5	
Effective Green, g (s)	2.9			33.5	33.5	
Actuated g/C Ratio	0.06			0.69	0.69	
Clearance Time (s)	6.0			6.0	6.0	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	96			1267	1282	
v/s Ratio Prot	c0.01				c0.09	
v/s Ratio Perm				0.08		
v/c Ratio	0.12			0.11	0.13	
Uniform Delay, d1	21.5			2.5	2.5	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	0.5			0.0	0.0	
Delay (s)	22.1			2.5	2.6	
Level of Service	C			A	A	
Approach Delay (s)	22.1			2.5	2.6	
Approach LOS	C			A	A	

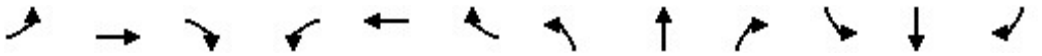
Intersection Summary			
HCM 2000 Control Delay	4.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.13		
Actuated Cycle Length (s)	48.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	36.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



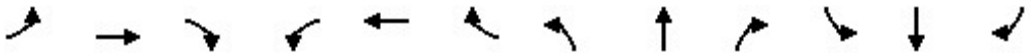
Lane Group	EBL	EBT	WBL	WBT	NBT	SBT	SBR
Lane Group Flow (vph)	20	355	10	265	165	175	25
v/c Ratio	0.04	0.42	0.02	0.32	0.43	0.40	0.06
Control Delay	8.2	10.5	8.1	9.1	16.1	15.8	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.2	10.5	8.1	9.1	16.1	15.8	5.6
Queue Length 50th (m)	0.7	15.5	0.4	10.3	10.0	11.3	0.0
Queue Length 95th (m)	4.3	42.3	2.8	30.1	22.0	23.3	3.6
Internal Link Dist (m)		95.3		62.1	101.3	47.0	
Turn Bay Length (m)	45.0		60.0				
Base Capacity (vph)	1062	1853	981	1797	1404	1667	1518
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	0.02	0.19	0.01	0.15	0.12	0.10	0.02

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	345	10	10	215	50	70	65	30	35	140	25
Future Volume (vph)	20	345	10	10	215	50	70	65	30	35	140	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.3	3.6	3.6	3.6	3.6	3.6	3.3	3.6	3.6
Total Lost time (s)	6.0	6.0		6.0	6.0			6.0			6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.99			0.99			1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Frt	1.00	1.00		1.00	0.97			0.98			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.99	1.00
Satd. Flow (prot)	1703	1853		1704	1800			1765			1843	1531
Flt Permitted	0.60	1.00		0.55	1.00			0.78			0.90	1.00
Satd. Flow (perm)	1068	1853		984	1800			1411			1670	1531
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	345	10	10	215	50	70	65	30	35	140	25
RTOR Reduction (vph)	0	1	0	0	8	0	0	8	0	0	0	18
Lane Group Flow (vph)	20	354	0	10	257	0	0	157	0	0	175	7
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	20.1	20.1		20.1	20.1			11.7			11.7	11.7
Effective Green, g (s)	20.1	20.1		20.1	20.1			11.7			11.7	11.7
Actuated g/C Ratio	0.46	0.46		0.46	0.46			0.27			0.27	0.27
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0			6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	490	850		451	826			376			446	408
v/s Ratio Prot		c0.19			0.14							
v/s Ratio Perm	0.02			0.01				c0.11			0.10	0.00
v/c Ratio	0.04	0.42		0.02	0.31			0.42			0.39	0.02
Uniform Delay, d1	6.5	7.9		6.5	7.5			13.2			13.1	11.8
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	0.0	0.3		0.0	0.2			0.8			0.6	0.0
Delay (s)	6.6	8.3		6.5	7.7			14.0			13.7	11.8
Level of Service	A	A		A	A			B			B	B
Approach Delay (s)		8.2			7.7			14.0			13.5	
Approach LOS		A			A			B			B	

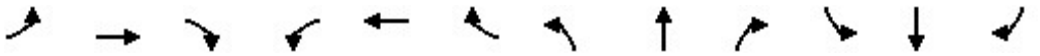
Intersection Summary			
HCM 2000 Control Delay	10.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	43.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	10	5	10	10	30	35	50	225	20	0	70	230
Future Volume (vph)	10	5	10	10	30	35	50	225	20	0	70	230
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	5	10	10	30	35	50	225	20	0	70	230

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	25	75	295	300
Volume Left (vph)	10	10	50	0
Volume Right (vph)	10	35	20	230
Hadj (s)	-0.13	-0.22	0.03	-0.43
Departure Headway (s)	5.2	5.0	4.5	4.1
Degree Utilization, x	0.04	0.10	0.37	0.34
Capacity (veh/h)	606	637	775	850
Control Delay (s)	8.4	8.6	10.1	9.1
Approach Delay (s)	8.4	8.6	10.1	9.1
Approach LOS	A	A	B	A

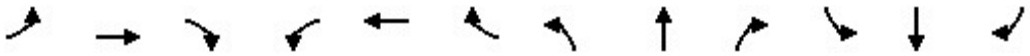
Intersection Summary				
Delay	9.5			
Level of Service	A			
Intersection Capacity Utilization	50.2%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	0	80	35	0	10	30	240	15	5	70	15
Future Volume (Veh/h)	45	0	80	35	0	10	30	240	15	5	70	15
Sign Control		Stop			Stop			Free			Free	
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)	45	0	80	35	0	10	30	240	15	5	70	15
Pedestrians		5			5			5			5	
Lane Width (m)		3.6			3.6			3.6			3.6	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	415	412	88	485	412	258	90			260		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	415	412	88	485	412	258	90			260		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	91	100	92	92	100	99	98			100		
cM capacity (veh/h)	523	513	963	437	513	775	1499			1299		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	125	45	285	90
Volume Left	45	35	30	5
Volume Right	80	10	15	15
cSH	739	484	1499	1299
Volume to Capacity	0.17	0.09	0.02	0.00
Queue Length 95th (m)	4.8	2.4	0.5	0.1
Control Delay (s)	10.9	13.2	0.9	0.5
Lane LOS	B	B	A	A
Approach Delay (s)	10.9	13.2	0.9	0.5
Approach LOS	B	B		

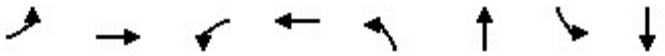
Intersection Summary				
Average Delay	4.1			
Intersection Capacity Utilization	37.0%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	140	290	45	40	250	20	50	120	60	25	90	140
Future Volume (Veh/h)	140	290	45	40	250	20	50	120	60	25	90	140
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)	140	290	45	40	250	20	50	120	60	25	90	140
Pedestrians		5			5			5			5	
Lane Width (m)		3.5			3.5			3.5			3.6	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		134			119							
pX, platoon unblocked												
vC, conflicting volume	275			340			1118	952	322	1040	965	270
vC1, stage 1 conf vol							598	598		345	345	
vC2, stage 2 conf vol							520	355		695	620	
vCu, unblocked vol	275			340			1118	952	322	1040	965	270
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	89			97			76	67	92	88	75	82
cM capacity (veh/h)	1283			1214			207	365	713	208	358	762

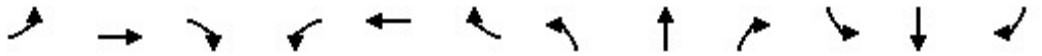
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1
Volume Total	140	335	40	270	50	180	255
Volume Left	140	0	40	0	50	0	25
Volume Right	0	45	0	20	0	60	140
cSH	1283	1700	1214	1700	207	436	459
Volume to Capacity	0.11	0.20	0.03	0.16	0.24	0.41	0.56
Queue Length 95th (m)	2.9	0.0	0.8	0.0	7.3	15.9	26.5
Control Delay (s)	8.2	0.0	8.1	0.0	27.8	19.0	22.2
Lane LOS	A		A		D	C	C
Approach Delay (s)	2.4		1.0		20.9		22.2
Approach LOS					C		C

Intersection Summary			
Average Delay	9.4		
Intersection Capacity Utilization	61.1%	ICU Level of Service	B
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	65	780	190	760	5	125	10	130
v/c Ratio	0.25	0.55	0.38	0.32	0.02	0.29	0.04	0.31
Control Delay	18.6	17.1	8.1	7.0	19.6	13.5	19.7	21.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.6	17.1	8.1	7.0	19.6	13.5	19.7	21.5
Queue Length 50th (m)	4.5	32.5	6.7	18.0	0.4	5.4	0.9	11.0
Queue Length 95th (m)	18.5	74.5	24.1	47.1	3.0	20.0	4.7	28.6
Internal Link Dist (m)		177.9		126.7		56.9		127.4
Turn Bay Length (m)	30.0		30.0		40.0		30.0	
Base Capacity (vph)	575	3150	751	3534	773	1094	776	1165
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	0.11	0.25	0.25	0.22	0.01	0.11	0.01	0.11

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	760	20	190	755	5	5	50	75	10	110	20
Future Volume (vph)	65	760	20	190	755	5	5	50	75	10	110	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	6.0	6.0		4.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00		1.00	0.91		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)	1706	3557		1710	3605		1706	1673		1706	1814	
Flt Permitted	0.36	1.00		0.25	1.00		0.67	1.00		0.68	1.00	
Satd. Flow (perm)	653	3557		445	3605		1210	1673		1215	1814	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	65	760	20	190	755	5	5	50	75	10	110	20
RTOR Reduction (vph)	0	2	0	0	0	0	0	52	0	0	7	0
Lane Group Flow (vph)	65	778	0	190	760	0	5	73	0	10	123	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	2%	1%	2%	2%	0%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	22.9	22.9		35.7	35.7		9.8	9.8		9.8	9.8	
Effective Green, g (s)	22.9	22.9		35.7	35.7		9.8	9.8		9.8	9.8	
Actuated g/C Ratio	0.40	0.40		0.62	0.62		0.17	0.17		0.17	0.17	
Clearance Time (s)	6.0	6.0		4.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	260	1416		469	2238		206	285		207	309	
v/s Ratio Prot		c0.22		c0.06	0.21			0.04			c0.07	
v/s Ratio Perm	0.10			0.19			0.00			0.01		
v/c Ratio	0.25	0.55		0.41	0.34		0.02	0.26		0.05	0.40	
Uniform Delay, d1	11.6	13.3		5.5	5.2		19.9	20.7		19.9	21.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	0.4		0.6	0.1		0.0	0.5		0.1	0.8	
Delay (s)	12.1	13.8		6.1	5.3		19.9	21.2		20.0	22.1	
Level of Service	B	B		A	A		B	C		C	C	
Approach Delay (s)		13.6			5.5			21.1			21.9	
Approach LOS		B			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	10.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	57.5	Sum of lost time (s)	16.0
Intersection Capacity Utilization	63.0%	ICU Level of Service	B
Analysis Period (min)	15		

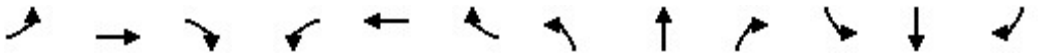
c Critical Lane Group



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	710	110	0	775	0	135
Future Volume (Veh/h)	710	110	0	775	0	135
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	710	110	0	775	0	135
Pedestrians	5			5	5	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	135			202		
pX, platoon unblocked			0.92		0.95	0.92
vC, conflicting volume			825		1162	420
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			627		732	185
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	82
cM capacity (veh/h)			868		337	751

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	473	347	388	388	135
Volume Left	0	0	0	0	0
Volume Right	0	110	0	0	135
cSH	1700	1700	1700	1700	751
Volume to Capacity	0.28	0.20	0.23	0.23	0.18
Queue Length 95th (m)	0.0	0.0	0.0	0.0	5.2
Control Delay (s)	0.0	0.0	0.0	0.0	10.8
Lane LOS					B
Approach Delay (s)	0.0		0.0		10.8
Approach LOS					B

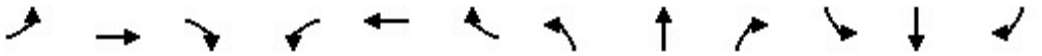
Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	39.4%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	205	345	185	285	285	215	180	1475	190	285	1405	350
v/c Ratio	0.64	0.59	0.47	0.92	0.47	0.49	0.95	0.99	0.26	0.98	0.84	0.43
Control Delay	38.2	43.9	12.5	65.7	41.5	8.8	79.0	52.1	8.2	77.9	30.5	14.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.2	43.9	12.5	65.7	41.5	8.8	79.0	52.1	8.2	77.9	30.5	14.6
Queue Length 50th (m)	33.9	36.2	4.8	49.3	29.3	0.0	20.9	154.3	6.5	42.8	126.6	28.9
Queue Length 95th (m)	53.3	50.2	23.2	#79.6	41.7	18.6	#81.3	#268.7	25.7	#122.0	#227.6	69.0
Internal Link Dist (m)		334.1			111.1			202.3			436.5	
Turn Bay Length (m)	50.0		30.0	50.0		30.0	100.0		30.0	100.0		30.0
Base Capacity (vph)	318	1118	602	311	1141	640	189	1491	737	290	1678	809
Starvation Cap Reductn	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	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.64	0.31	0.31	0.92	0.25	0.34	0.95	0.99	0.26	0.98	0.84	0.43

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	205	345	185	285	285	215	180	1475	190	285	1405	350
Future Volume (vph)	205	345	185	285	285	215	180	1475	190	285	1405	350
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	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	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1628	3539	1560	1743	3610	1560	1745	3539	1565	1745	3505	1566
Flt Permitted	0.51	1.00	1.00	0.43	1.00	1.00	0.09	1.00	1.00	0.08	1.00	1.00
Satd. Flow (perm)	879	3539	1560	782	3610	1560	166	3539	1565	152	3505	1566
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	205	345	185	285	285	215	180	1475	190	285	1405	350
RTOR Reduction (vph)	0	0	132	0	0	179	0	0	79	0	0	60
Lane Group Flow (vph)	205	345	53	285	285	36	180	1475	111	285	1405	290
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	7%	2%	0%	0%	0%	0%	0%	2%	0%	0%	3%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	27.6	17.5	17.5	27.6	17.5	17.5	51.2	44.2	44.2	61.3	50.3	50.3
Effective Green, g (s)	27.6	17.5	17.5	27.6	17.5	17.5	51.2	44.2	44.2	61.3	50.3	50.3
Actuated g/C Ratio	0.26	0.17	0.17	0.26	0.17	0.17	0.49	0.42	0.42	0.58	0.48	0.48
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	303	590	260	298	602	260	186	1491	659	287	1680	750
v/s Ratio Prot	0.07	0.10		c0.09	0.08		0.06	0.42		c0.12	0.40	
v/s Ratio Perm	0.11		0.03	c0.16		0.02	0.41		0.07	c0.45		0.18
v/c Ratio	0.68	0.58	0.20	0.96	0.47	0.14	0.97	0.99	0.17	0.99	0.84	0.39
Uniform Delay, d1	32.8	40.3	37.7	36.1	39.5	37.3	23.0	30.1	18.9	33.0	23.7	17.4
Progression 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
Incremental Delay, d2	5.9	1.5	0.4	40.1	0.6	0.2	56.0	20.7	0.3	51.0	4.2	0.7
Delay (s)	38.7	41.8	38.1	76.1	40.1	37.5	79.0	50.8	19.2	84.0	27.9	18.1
Level of Service	D	D	D	E	D	D	E	D	B	F	C	B
Approach Delay (s)		40.0			52.5			50.3			34.1	
Approach LOS		D			D			D			C	

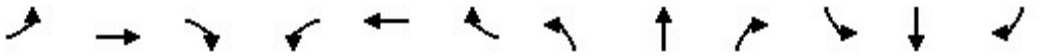
Intersection Summary			
HCM 2000 Control Delay	43.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	104.9	Sum of lost time (s)	20.0
Intersection Capacity Utilization	101.3%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	50	60	160	140	25	1670	185	45	1750	80
v/c Ratio	0.21	0.16	0.62	0.41	0.27	0.71	0.18	0.42	0.75	0.08
Control Delay	36.3	23.5	47.6	31.5	17.5	12.8	4.5	23.6	14.0	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.2	0.0
Total Delay	36.3	23.5	47.6	31.5	17.5	12.9	4.5	23.6	14.1	4.7
Queue Length 50th (m)	8.5	6.0	29.7	19.4	1.6	89.5	6.1	3.3	99.1	2.6
Queue Length 95th (m)	20.3	17.7	55.0	40.0	10.0	173.8	19.7	19.6	192.6	10.5
Internal Link Dist (m)		170.8		112.7		238.4			202.3	
Turn Bay Length (m)	40.0		60.0		30.0		30.0	30.0		30.0
Base Capacity (vph)	444	665	483	613	112	2853	1228	132	2826	1219
Starvation Cap Reductn	0	0	0	0	0	173	0	0	284	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	0.11	0.09	0.33	0.23	0.22	0.62	0.15	0.34	0.69	0.07

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	35	25	160	15	125	25	1670	185	45	1750	80
Future Volume (vph)	50	35	25	160	15	125	25	1670	185	45	1750	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.98		1.00	1.00	0.96	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	1.00
Frt	1.00	0.94		1.00	0.87		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1705	1731		1704	1582		1711	3539	1510	1711	3505	1510
Flt Permitted	0.66	1.00		0.72	1.00		0.08	1.00	1.00	0.09	1.00	1.00
Satd. Flow (perm)	1184	1731		1288	1582		139	3539	1510	163	3505	1510
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	50	35	25	160	15	125	25	1670	185	45	1750	80
RTOR Reduction (vph)	0	19	0	0	23	0	0	0	27	0	0	11
Lane Group Flow (vph)	50	41	0	160	117	0	25	1670	158	45	1750	69
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	18.7	18.7		18.7	18.7		61.7	61.7	61.7	61.7	61.7	61.7
Effective Green, g (s)	18.7	18.7		18.7	18.7		61.7	61.7	61.7	61.7	61.7	61.7
Actuated g/C Ratio	0.20	0.20		0.20	0.20		0.67	0.67	0.67	0.67	0.67	0.67
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	239	350		260	320		92	2363	1008	108	2340	1008
v/s Ratio Prot		0.02			0.07			0.47			c0.50	
v/s Ratio Perm	0.04			c0.12			0.18		0.10	0.28		0.05
v/c Ratio	0.21	0.12		0.62	0.37		0.27	0.71	0.16	0.42	0.75	0.07
Uniform Delay, d1	30.7	30.1		33.6	31.7		6.2	9.7	5.7	7.1	10.2	5.3
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	0.4	0.1		4.3	0.7		3.3	1.2	0.2	5.4	1.6	0.1
Delay (s)	31.1	30.3		37.9	32.4		9.6	10.9	5.9	12.4	11.8	5.4
Level of Service	C	C		D	C		A	B	A	B	B	A
Approach Delay (s)		30.7			35.3			10.4			11.5	
Approach LOS		C			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	13.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	92.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	83.5%	ICU Level of Service	E
Analysis Period (min)	15		

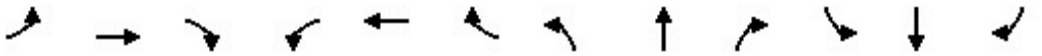
c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	85	100	140	215	130	200	1760	305	150	1670	115
v/c Ratio	0.45	0.34	0.39	0.64	0.27	0.88	0.99	0.38	0.77	0.99	0.15
Control Delay	44.9	39.7	9.0	38.6	25.3	58.5	45.5	12.9	45.2	46.6	5.6
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	44.9	39.7	9.0	38.6	25.3	58.5	45.5	12.9	45.2	46.6	5.6
Queue Length 50th (m)	15.9	18.3	0.0	35.5	17.8	22.2	163.9	20.9	12.2	156.7	1.4
Queue Length 95th (m)	29.9	32.6	15.0	55.2	32.2	#87.2	#322.1	59.8	#63.0	#307.5	14.2
Internal Link Dist (m)		188.1			109.9		464.0			238.4	
Turn Bay Length (m)	60.0		40.0	60.0		90.0		40.0	70.0		30.0
Base Capacity (vph)	437	673	643	334	848	228	1776	807	194	1689	777
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	0.19	0.15	0.22	0.64	0.15	0.88	0.99	0.38	0.77	0.99	0.15

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	85	100	140	215	95	35	200	1760	305	150	1670	115
Future Volume (vph)	85	100	140	215	95	35	200	1760	305	150	1670	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5	3.3	3.6	3.5
Total Lost time (s)	6.0	6.0	6.0	4.0	6.0		4.0	6.0	6.0	4.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	0.99		1.00	1.00	0.97	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1705	1863	1530	1708	1778		1711	3539	1511	1711	3505	1511
Flt Permitted	0.67	1.00	1.00	0.55	1.00		0.08	1.00	1.00	0.08	1.00	1.00
Satd. Flow (perm)	1209	1863	1530	992	1778		143	3539	1511	149	3505	1511
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)	85	100	140	215	95	35	200	1760	305	150	1670	115
RTOR Reduction (vph)	0	0	118	0	13	0	0	0	51	0	0	52
Lane Group Flow (vph)	85	100	22	215	117	0	200	1760	254	150	1670	63
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%
Turn Type	Perm	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		6
Actuated Green, G (s)	15.7	15.7	15.7	26.8	26.8		59.5	50.4	50.4	55.5	48.4	48.4
Effective Green, g (s)	15.7	15.7	15.7	26.8	26.8		59.5	50.4	50.4	55.5	48.4	48.4
Actuated g/C Ratio	0.16	0.16	0.16	0.27	0.27		0.59	0.50	0.50	0.55	0.48	0.48
Clearance Time (s)	6.0	6.0	6.0	4.0	6.0		4.0	6.0	6.0	4.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	189	291	239	315	475		227	1778	759	193	1691	729
v/s Ratio Prot		0.05		c0.05	0.07		c0.08	c0.50		0.06	0.48	
v/s Ratio Perm	0.07		0.01	c0.13			0.44		0.17	0.38		0.04
v/c Ratio	0.45	0.34	0.09	0.68	0.25		0.88	0.99	0.33	0.78	0.99	0.09
Uniform Delay, d1	38.4	37.7	36.2	32.3	28.8		27.9	24.7	14.9	21.9	25.7	14.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.7	0.7	0.2	6.0	0.3		30.3	18.9	0.5	17.6	18.9	0.1
Delay (s)	40.1	38.4	36.4	38.3	29.1		58.3	43.6	15.5	39.5	44.6	14.1
Level of Service	D	D	D	D	C		E	D	B	D	D	B
Approach Delay (s)		38.0			34.8			41.1			42.4	
Approach LOS		D			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	40.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	100.3	Sum of lost time (s)	20.0
Intersection Capacity Utilization	97.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	NBL	NBT	SBT
Lane Group Flow (vph)	55	5	145	330
v/c Ratio	0.12	0.01	0.10	0.24
Control Delay	11.1	7.2	6.0	5.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	11.1	7.2	6.0	5.3
Queue Length 50th (m)	2.6	0.0	0.0	0.0
Queue Length 95th (m)	8.3	1.8	17.8	33.2
Internal Link Dist (m)	180.6		51.4	61.3
Turn Bay Length (m)		25.0		
Base Capacity (vph)	965	807	1495	1405
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.06	0.01	0.10	0.23

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	45	10	5	145	190	140
Future Volume (vph)	45	10	5	145	190	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.3	3.6	3.6	3.6
Total Lost time (s)	6.0		6.0	6.0	6.0	
Lane Util. Factor	1.00		1.00	1.00	1.00	
Frpb, ped/bikes	0.99		1.00	1.00	0.99	
Flpb, ped/bikes	1.00		1.00	1.00	1.00	
Frt	0.98		1.00	1.00	0.94	
Flt Protected	0.96		0.95	1.00	1.00	
Satd. Flow (prot)	1732		1703	1863	1734	
Flt Permitted	0.96		0.56	1.00	1.00	
Satd. Flow (perm)	1732		1007	1863	1734	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	45	10	5	145	190	140
RTOR Reduction (vph)	9	0	0	0	27	0
Lane Group Flow (vph)	46	0	5	145	303	0
Confl. Peds. (#/hr)	5	5	5			5
Confl. Bikes (#/hr)		5				5
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases			2			
Actuated Green, G (s)	5.1		30.3	30.3	30.3	
Effective Green, g (s)	5.1		30.3	30.3	30.3	
Actuated g/C Ratio	0.11		0.64	0.64	0.64	
Clearance Time (s)	6.0		6.0	6.0	6.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	186		643	1190	1108	
v/s Ratio Prot	c0.03			0.08	c0.17	
v/s Ratio Perm			0.00			
v/c Ratio	0.25		0.01	0.12	0.27	
Uniform Delay, d1	19.4		3.1	3.3	3.7	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	0.7		0.0	0.0	0.1	
Delay (s)	20.1		3.1	3.4	3.9	
Level of Service	C		A	A	A	
Approach Delay (s)	20.1			3.4	3.9	
Approach LOS	C			A	A	

Intersection Summary			
HCM 2000 Control Delay	5.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.27		
Actuated Cycle Length (s)	47.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	38.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	NBT	SBT
Lane Group Flow (vph)	25	170	205
v/c Ratio	0.06	0.10	0.12
Control Delay	9.4	3.6	3.5
Queue Delay	0.0	0.0	0.0
Total Delay	9.4	3.6	3.5
Queue Length 50th (m)	0.6	0.0	0.0
Queue Length 95th (m)	5.0	19.8	22.5
Internal Link Dist (m)	16.7	34.1	29.1
Turn Bay Length (m)			
Base Capacity (vph)	916	1622	1641
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.03	0.10	0.12

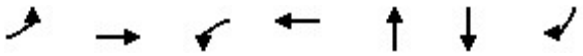
Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	10	15	15	155	185	20
Future Volume (vph)	10	15	15	155	185	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0			6.0	6.0	
Lane Util. Factor	1.00			1.00	1.00	
Frpb, ped/bikes	0.96			1.00	1.00	
Flpb, ped/bikes	1.00			1.00	1.00	
Frt	0.92			1.00	0.99	
Flt Protected	0.98			1.00	1.00	
Satd. Flow (prot)	1619			1854	1833	
Flt Permitted	0.98			0.97	1.00	
Satd. Flow (perm)	1619			1813	1833	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	10	15	15	155	185	20
RTOR Reduction (vph)	14	0	0	0	3	0
Lane Group Flow (vph)	11	0	0	170	202	0
Confl. Peds. (#/hr)	5	5	5			5
Confl. Bikes (#/hr)		5				5
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases			2			
Actuated Green, G (s)	2.8			34.3	34.3	
Effective Green, g (s)	2.8			34.3	34.3	
Actuated g/C Ratio	0.06			0.70	0.70	
Clearance Time (s)	6.0			6.0	6.0	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	92			1266	1280	
v/s Ratio Prot	c0.01				c0.11	
v/s Ratio Perm				0.09		
v/c Ratio	0.12			0.13	0.16	
Uniform Delay, d1	22.0			2.5	2.5	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	0.6			0.0	0.1	
Delay (s)	22.6			2.5	2.6	
Level of Service	C			A	A	
Approach Delay (s)	22.6			2.5	2.6	
Approach LOS	C			A	A	

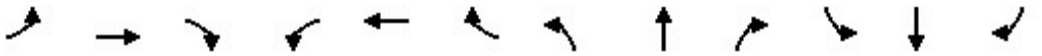
Intersection Summary			
HCM 2000 Control Delay	3.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.15		
Actuated Cycle Length (s)	49.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	40.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



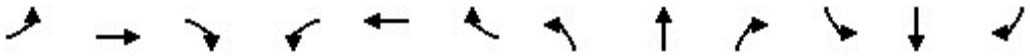
Lane Group	EBL	EBT	WBL	WBT	NBT	SBT	SBR
Lane Group Flow (vph)	55	185	30	225	145	130	60
v/c Ratio	0.09	0.18	0.05	0.22	0.30	0.25	0.12
Control Delay	8.3	7.9	8.0	8.1	13.7	13.8	4.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.3	7.9	8.0	8.1	13.7	13.8	4.8
Queue Length 50th (m)	2.1	6.7	1.1	8.5	8.5	8.1	0.0
Queue Length 95th (m)	8.8	21.1	5.5	25.5	18.8	17.6	5.6
Internal Link Dist (m)		95.3		62.1	101.3	47.0	
Turn Bay Length (m)	45.0		60.0				
Base Capacity (vph)	1100	1797	1140	1792	1639	1826	1519
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	0.05	0.10	0.03	0.13	0.09	0.07	0.04

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	150	35	30	180	45	25	95	25	5	125	60
Future Volume (vph)	55	150	35	30	180	45	25	95	25	5	125	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.3	3.6	3.6	3.6	3.6	3.6	3.3	3.6	3.6
Total Lost time (s)	6.0	6.0		6.0	6.0			6.0			6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.99			0.99			1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Frt	1.00	0.97		1.00	0.97			0.98			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.99			1.00	1.00
Satd. Flow (prot)	1703	1800		1703	1796			1792			1859	1529
Flt Permitted	0.62	1.00		0.64	1.00			0.91			0.98	1.00
Satd. Flow (perm)	1108	1800		1149	1796			1643			1828	1529
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	55	150	35	30	180	45	25	95	25	5	125	60
RTOR Reduction (vph)	0	7	0	0	7	0	0	9	0	0	0	48
Lane Group Flow (vph)	55	178	0	30	218	0	0	136	0	0	130	12
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	21.1	21.1		21.1	21.1			8.7			8.7	8.7
Effective Green, g (s)	21.1	21.1		21.1	21.1			8.7			8.7	8.7
Actuated g/C Ratio	0.50	0.50		0.50	0.50			0.21			0.21	0.21
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0			6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	559	908		579	906			341			380	318
v/s Ratio Prot		0.10			c0.12							
v/s Ratio Perm	0.05			0.03				c0.08			0.07	0.01
v/c Ratio	0.10	0.20		0.05	0.24			0.40			0.34	0.04
Uniform Delay, d1	5.4	5.7		5.3	5.8			14.3			14.1	13.2
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	0.1	0.1		0.0	0.1			0.8			0.5	0.1
Delay (s)	5.5	5.8		5.3	6.0			15.1			14.7	13.3
Level of Service	A	A		A	A			B			B	B
Approach Delay (s)		5.7			5.9			15.1			14.2	
Approach LOS		A			A			B			B	

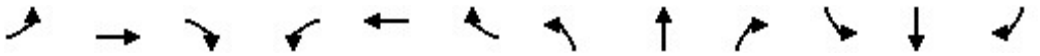
Intersection Summary			
HCM 2000 Control Delay	9.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	41.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	72.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	185	25	55	40	15	90	45	290	10	20	145	240
Future Volume (vph)	185	25	55	40	15	90	45	290	10	20	145	240
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)	185	25	55	40	15	90	45	290	10	20	145	240

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	265	145	345	405
Volume Left (vph)	185	40	45	20
Volume Right (vph)	55	90	10	240
Hadj (s)	0.05	-0.28	0.04	-0.31
Departure Headway (s)	6.5	6.5	6.1	5.7
Degree Utilization, x	0.48	0.26	0.58	0.64
Capacity (veh/h)	495	454	552	593
Control Delay (s)	15.4	11.9	17.3	18.1
Approach Delay (s)	15.4	11.9	17.3	18.1
Approach LOS	C	B	C	C

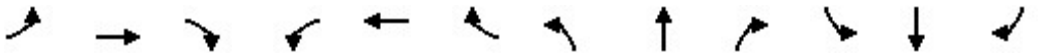
Intersection Summary				
Delay	16.5			
Level of Service	C			
Intersection Capacity Utilization	60.8%	ICU Level of Service	B	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	0	60	35	5	25	90	280	45	25	150	65
Future Volume (Veh/h)	40	0	60	35	5	25	90	280	45	25	150	65
Sign Control		Stop			Stop			Free			Free	
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)	40	0	60	35	5	25	90	280	45	25	150	65
Pedestrians		5			5			5			5	
Lane Width (m)		3.6			3.6			3.6			3.6	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	752	748	192	785	758	312	220			330		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	752	748	192	785	758	312	220			330		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	86	100	93	87	98	97	93			98		
cM capacity (veh/h)	286	309	842	265	305	722	1344			1224		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	100	65	415	240
Volume Left	40	35	90	25
Volume Right	60	25	45	65
cSH	474	355	1344	1224
Volume to Capacity	0.21	0.18	0.07	0.02
Queue Length 95th (m)	6.3	5.3	1.7	0.5
Control Delay (s)	14.6	17.4	2.2	1.0
Lane LOS	B	C	A	A
Approach Delay (s)	14.6	17.4	2.2	1.0
Approach LOS	B	C		

Intersection Summary				
Average Delay	4.6			
Intersection Capacity Utilization	53.8%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	245	185	125	30	165	70	30	155	30	25	95	150
Future Volume (Veh/h)	245	185	125	30	165	70	30	155	30	25	95	150
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)	245	185	125	30	165	70	30	155	30	25	95	150
Pedestrians		5			5			5			5	
Lane Width (m)		3.5			3.5			3.5			3.6	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		134			119							
pX, platoon unblocked												
vC, conflicting volume	240			315			1170	1042	258	1052	1070	210
vC1, stage 1 conf vol							742	742		265	265	
vC2, stage 2 conf vol							428	300		788	805	
vCu, unblocked vol	240			315			1170	1042	258	1052	1070	210
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	81			98			81	48	96	81	66	82
cM capacity (veh/h)	1321			1240			158	297	775	131	279	823

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1
Volume Total	245	310	30	235	30	185	270
Volume Left	245	0	30	0	30	0	25
Volume Right	0	125	0	70	0	30	150
cSH	1321	1700	1240	1700	158	330	378
Volume to Capacity	0.19	0.18	0.02	0.14	0.19	0.56	0.71
Queue Length 95th (m)	5.4	0.0	0.6	0.0	5.4	26.0	42.9
Control Delay (s)	8.3	0.0	8.0	0.0	33.1	28.9	35.0
Lane LOS	A		A		D	D	D
Approach Delay (s)	3.7		0.9		29.5		35.0
Approach LOS					D		D

Intersection Summary				
Average Delay	13.9			
Intersection Capacity Utilization	66.5%	ICU Level of Service	C	
Analysis Period (min)	15			

Appendix I:
Traffic Signal Warrants

Input Data Sheet

Analysis Sheet | Results Sheet | Justification 5A | Justification 7 | GO TO Justification:

What are the intersecting roadways? Trafalgar Road & Main Street - 2031 Conditions

What is the direction of the Main Road street? North-South

When was the data collected?

Justification 1 - 4: Volume Warrants

a.- Number of approach lanes on the Main Road? 2 or more

b.- Number of approach lanes on the Minor Road? 1

c.- How many approaches? 3

d.- What is the operating environment? Urban Population >= 10,000 AND Speed < 70 km/hr

e.- What is the eight hour vehicle volume at the intersection? (Please fill in table below)

Hour Ending	Main Northbound Approach			Minor Eastbound Approach			Main Southbound Approach			Minor Westbound Approach			Pedestrians Crossing Main Road
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
07:00	21	1,991	0	81	0	20	0	1,489	25	0	0	0	
08:00	25	2,320	0	80	0	20	0	1,735	30	0	0	0	
09:00	22	1,351	0	43	0	11	0	1,010	27	0	0	0	
10:00	25	1,195	0	19	0	5	0	894	30	0	0	0	
15:00	7	1,193	0	41	0	20	0	1,083	22	0	0	0	
16:00	19	2,128	0	39	0	19	0	1,931	59	0	0	0	
17:00	25	2,160	0	50	0	25	0	1,960	80	0	0	0	
18:00	24	1,944	0	68	0	34	0	1,764	76	0	0	0	
Total	**168**	**14,282**	**0**	**421**	**0**	**154**	**0**	**11,866**	**349**	**0**	**0**	**0**	**0**

Justification 5: Collision Experience

Preceding Months	Number of Collisions*
1-12	
13-24	
25-36	

Note: If desired, Justification 5A can be calculated instead to determine expected safety improvement following signalization

* Include only collisions that are susceptable to correction through the installation of traffic signal control

Justification 6: Pedestrian Volume

a.- Please fill in table below summarizing total pedestrians crossing major roadway at the intersection (Zone 1) or in proximity to the intersection (Zones 2-4). Please reference Section 4.8 of the Manual for further explanation and graphical representation.

	Zone 1		Zone 2 (if needed)		Zone 3 (if needed)		Zone 4 (if needed)		Total
	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	
Total 8 hour pedestrian volume									
Factored 8 hour pedestrian volume	0		0		0		0		
% Assigned to crossing rate									
Net 8 Hour Pedestrian Volume at Crossing									0
Net 8 Hour Vehicular Volume on Street Being Crossed									

b.- Please fill in table below summarizing delay to pedestrians crossing major roadway at the intersection (Zone 1) or in proximity to the intersection (Zones 2-4). Please reference Section 4.8 of the Manual for further explanation and graphical representation.

	Zone 1		Zone 2 (if needed)		Zone 3 (if needed)		Zone 4 (if needed)		Total
	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	
Total 8 hour pedestrian volume	0	0	0	0	0	0	0	0	
Total 8 hour pedestrians delayed greater than 10 seconds									
Factored volume of total pedestrians	0		0		0		0		
Factored volume of delayed pedestrians	0		0		0		0		
% Assigned to Crossing Rate	0%		0%		0%		0%		
Net 8 Hour Volume of Total Pedestrians									0
Net 8 Hour Volume of Delayed Pedestrians									0

Justification 7 - Projected Volumes

Intersection: Trafalgar Road & Main Street - 2031 Conc Count Date:

Return to Justifications 1 - 6

INPUT

PRIOR TO START - FILL OUT GEOMETRY INPUTS IN THE INPUT DATA SPREADSHEET - STEPS A to D

a.- Both Intersection Roads Exist? No

b.- What kind of count estimate available? 8-hour

Proceed to fill out Input Data tab step E with future projected condition, view results in D

c1.- 8-Hour Count Estimate

Hour Ending	Main Northbound Approach			Minor Eastbound Approach			Main Southbound Approach			Minor Westbound Approach			Pedestrians Crossing Main Road
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
07:00	21	1,991	0	81	0	20	0	1,489	25	0	0	0	0
08:00	25	2,320	0	80	0	20	0	1,735	30	0	0	0	0
09:00	22	1,351	0	43	0	11	0	1,010	27	0	0	0	0
10:00	25	1,195	0	19	0	5	0	894	30	0	0	0	0
15:00	7	1,193	0	41	0	20	0	1,083	22	0	0	0	0
16:00	19	2,128	0	39	0	19	0	1,931	59	0	0	0	0
17:00	25	2,160	0	50	0	25	0	1,960	80	0	0	0	0
18:00	24	1,944	0	68	0	34	0	1,764	76	0	0	0	0
Total	**168**	**14,282**	**0**	**421**	**0**	**154**	**0**	**11,866**	**349**	**0**	**0**	**0**	**0**

c2.- Peak Hour Estimate

Peak Hour	Main Northbound Approach			Minor Eastbound Approach			Main Southbound Approach			Minor Westbound Approach			Pedestrians Crossing Main Road
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
AM Peak Hour													
PM Peak Hour													
AHV	0	0	0	0	0	0	0	0	0	0	0	0	0
	Main Street AHV Sum			**Minor Street AHV Sum**									
	0			**0**									

c3.- AADT Estimate - can leave movements without data blank. If midblock reading, can assign demand to through movement.

AADT	Main Northbound Approach			Minor Eastbound Approach			Main Southbound Approach			Minor Westbound Approach			Pedestrians Crossing Main Road
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
AHV	0	0	0	0	0	0	0	0	0	0	0	0	0
	Main Street AHV Sum			**Minor Street AHV Sum**									
	0			**0**									

d. Justification 7 Result

Justification	Description	Minimum Requirement 1 Lane Highways		Minimum Requirement 2 or more lanes		Compliance		Case?
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%	
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	-	-	-	900	2168	240.9	**Case 1 - Undoubtedly Warranted**
	B. Vehicle volume, along minor streets (average hour)	-	-	-	255	24	9.4	
2. Delay to cross Traffic	A. Vehicle volume, major street (average hour)	-	-	-	900	2144	238.2	
	B. Combined vehicle and pedestrian volume crossing	-	-	-	75	19	25.3	

Input Data Sheet

Analysis Sheet | Results Sheet | Justification 5A | Justification 7 | GO TO Justification:

What are the intersecting roadways? Trafalgar Road & Main Street - 2036 Conditions

What is the direction of the Main Road street? North-South

When was the data collected?

Justification 1 - 4: Volume Warrants

a.- Number of approach lanes on the Main Road? 2 or more

b.- Number of approach lanes on the Minor Road? 1

c.- How many approaches? 4

d.- What is the operating environment? Urban Population >= 10,000 AND Speed < 70 km/hr

e.- What is the eight hour vehicle volume at the intersection? (Please fill in table below)

Hour Ending	Main Northbound Approach			Minor Eastbound Approach			Main Southbound Approach			Minor Westbound Approach			Pedestrians Crossing Main Road
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
07:00	21	1,965	11	81	0	20	7	1,510	25	211	20	73	
08:00	25	2,290	15	80	0	20	10	1,760	30	215	20	75	
09:00	22	1,333	21	43	0	11	12	1,025	27	140	11	52	
10:00	25	1,180	34	19	0	5	19	907	30	125	5	55	
15:00	7	1,127	117	41	30	20	25	1,077	22	139	14	117	
16:00	19	2,009	156	39	29	19	37	1,921	59	134	14	115	
17:00	25	2,040	185	50	35	25	45	1,950	80	160	15	125	
18:00	24	1,836	170	68	43	34	41	1,755	76	193	16	129	
Total	**168**	**13,780**	**709**	**421**	**137**	**154**	**196**	**11,905**	**349**	**1,317**	**115**	**741**	**0**

Justification 5: Collision Experience

Preceding Months	Number of Collisions*
1-12	
13-24	
25-36	

Note: If desired, Justification 5A can be calculated instead to determine expected safety improvement following signalization

* Include only collisions that are susceptable to correction through the installation of traffic signal control

Justification 6: Pedestrian Volume

a.- Please fill in table below summarizing total pedestrians crossing major roadway at the intersection (Zone 1) or in proximity to the intersection (Zones 2-4). Please reference Section 4.8 of the Manual for further explanation and graphical representation.

	Zone 1		Zone 2 (if needed)		Zone 3 (if needed)		Zone 4 (if needed)		Total
	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	
Total 8 hour pedestrian volume									
Factored 8 hour pedestrian volume	0		0		0		0		
% Assigned to crossing rate									
Net 8 Hour Pedestrian Volume at Crossing									0
Net 8 Hour Vehicular Volume on Street Being Crossed									

b.- Please fill in table below summarizing delay to pedestrians crossing major roadway at the intersection (Zone 1) or in proximity to the intersection (Zones 2-4). Please reference Section 4.8 of the Manual for further explanation and graphical representation.

	Zone 1		Zone 2 (if needed)		Zone 3 (if needed)		Zone 4 (if needed)		Total
	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	
Total 8 hour pedestrian volume	0	0	0	0	0	0	0	0	
Total 8 hour pedestrians delayed greater than 10 seconds									
Factored volume of total pedestrians	0		0		0		0		
Factored volume of delayed pedestrians	0		0		0		0		
% Assigned to Crossing Rate	0%		0%		0%		0%		
Net 8 Hour Volume of Total Pedestrians									0
Net 8 Hour Volume of Delayed Pedestrians									0

Justification 7 - Projected Volumes

Intersection: Trafalgar Road & Main Street - 2036 Conc Count Date:

Return to Justifications 1 - 6

INPUT

PRIOR TO START - FILL OUT GEOMETRY INPUTS IN THE INPUT DATA SPREADSHEET - STEPS A to D

a.- Both Intersection Roads Exist? No

b.- What kind of count estimate available? 8-hour

Proceed to fill out Input Data tab step E with future projected condition, view results in D

c1.- 8-Hour Count Estimate

Hour Ending	Main Northbound Approach			Minor Eastbound Approach			Main Southbound Approach			Minor Westbound Approach			Pedestrians Crossing Main Road
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
07:00	21	1,965	11	81	0	20	7	1,510	25	211	20	73	0
08:00	25	2,290	15	80	0	20	10	1,760	30	215	20	75	0
09:00	22	1,333	21	43	0	11	12	1,025	27	140	11	52	0
10:00	25	1,180	34	19	0	5	19	907	30	125	5	55	0
15:00	7	1,127	117	41	30	20	25	1,077	22	139	14	117	0
16:00	19	2,009	156	39	29	19	37	1,921	59	134	14	115	0
17:00	25	2,040	185	50	35	25	45	1,950	80	160	15	125	0
18:00	24	1,836	170	68	43	34	41	1,755	76	193	16	129	0
Total	**168**	**13,780**	**709**	**421**	**137**	**154**	**196**	**11,905**	**349**	**1,317**	**115**	**741**	**0**

c2.- Peak Hour Estimate

Peak Hour	Main Northbound Approach			Minor Eastbound Approach			Main Southbound Approach			Minor Westbound Approach			Pedestrians Crossing Main Road
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
AM Peak Hour													
PM Peak Hour													
AHV	0	0	0	0	0	0	0	0	0	0	0	0	0
	Main Street AHV Sum			**Minor Street AHV Sum**									
	0			**0**									

c3.- AADT Estimate - can leave movements without data blank. If midblock reading, can assign demand to through movement.

AADT	Main Northbound Approach			Minor Eastbound Approach			Main Southbound Approach			Minor Westbound Approach			Pedestrians Crossing Main Road
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
AHV	0	0	0	0	0	0	0	0	0	0	0	0	0
	Main Street AHV Sum			**Minor Street AHV Sum**									
	0			**0**									

d. Justification 7 Result

Justification	Description	Minimum Requirement 1 Lane Highways		Minimum Requirement 2 or more lanes		Compliance		Case?
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%	
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	-	-	-	900	2404	267.1	**Case 1 - Undoubtedly Warranted**
	B. Vehicle volume, along minor streets (average hour)	-	-	-	170	209	122.9	
2. Delay to cross Traffic	A. Vehicle volume, major street (average hour)	-	-	-	900	2195	243.9	
	B. Combined vehicle and pedestrian volume crossing	-	-	-	75	149	198.7	

Input Data Sheet

Analysis Sheet | Results Sheet | Justification 5A | Justification 7 | GO TO Justification:

What are the intersecting roadways? Trafalgar Road & Settlers Road - 2031 Conditions

What is the direction of the Main Road street? North-South

When was the data collected?

Justification 1 - 4: Volume Warrants

a.- Number of approach lanes on the Main Road? 2 or more

b.- Number of approach lanes on the Minor Road? 1

c.- How many approaches? 4

d.- What is the operating environment? Urban Population >= 10,000 AND Speed < 70 km/hr

e.- What is the eight hour vehicle volume at the intersection? (Please fill in table below)

Hour Ending	Main Northbound Approach			Minor Eastbound Approach			Main Southbound Approach			Minor Westbound Approach			Pedestrians Crossing Main Road
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
07:00	76	1,785	28	156	50	197	53	1,347	101	124	76	109	
08:00	90	2,080	35	155	50	195	65	1,570	120	125	75	110	
09:00	81	1,211	35	84	27	106	62	914	108	74	41	66	
10:00	90	1,072	44	37	12	46	74	809	120	48	18	45	
15:00	56	1,119	41	69	61	114	52	939	32	55	61	63	
16:00	148	1,995	78	66	58	108	127	1,675	85	52	58	60	
17:00	200	2,025	100	85	75	140	170	1,700	115	65	75	75	
18:00	190	1,823	94	115	101	189	161	1,530	109	83	101	97	
Total	**931**	**13,110**	**455**	**767**	**434**	**1,095**	**764**	**10,484**	**790**	**626**	**505**	**625**	**0**

Justification 5: Collision Experience

Preceding Months	Number of Collisions*
1-12	
13-24	
25-36	

Note: If desired, Justification 5A can be calculated instead to determine expected safety improvement following signalization

* Include only collisions that are susceptable to correction through the installation of traffic signal control

Justification 6: Pedestrian Volume

a.- Please fill in table below summarizing total pedestrians crossing major roadway at the intersection (Zone 1) or in proximity to the intersection (Zones 2-4). Please reference Section 4.8 of the Manual for further explanation and graphical representation.

	Zone 1		Zone 2 (if needed)		Zone 3 (if needed)		Zone 4 (if needed)		Total
	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	
Total 8 hour pedestrian volume									
Factored 8 hour pedestrian volume	0		0		0		0		
% Assigned to crossing rate									
Net 8 Hour Pedestrian Volume at Crossing									0
Net 8 Hour Vehicular Volume on Street Being Crossed									

b.- Please fill in table below summarizing delay to pedestrians crossing major roadway at the intersection (Zone 1) or in proximity to the intersection (Zones 2-4). Please reference Section 4.8 of the Manual for further explanation and graphical representation.

	Zone 1		Zone 2 (if needed)		Zone 3 (if needed)		Zone 4 (if needed)		Total
	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	
Total 8 hour pedestrian volume	0	0	0	0	0	0	0	0	
Total 8 hour pedestrians delayed greater than 10 seconds									
Factored volume of total pedestrians	0		0		0		0		
Factored volume of delayed pedestrians	0		0		0		0		
% Assigned to Crossing Rate	0%		0%		0%		0%		
Net 8 Hour Volume of Total Pedestrians									0
Net 8 Hour Volume of Delayed Pedestrians									0

Justification 7 - Projected Volumes

Intersection: Trafalgar Road & Settlers Road - 2031 Cc Count Date:

Return to Justifications 1 - 6

INPUT

PRIOR TO START - FILL OUT GEOMETRY INPUTS IN THE INPUT DATA SPREADSHEET - STEPS A to D

a.- Both Intersection Roads Exist? No

b.- What kind of count estimate available? 8-hour

Proceed to fill out Input Data tab step E with future projected condition, view results in D

c1.- 8-Hour Count Estimate

Hour Ending	Main Northbound Approach			Minor Eastbound Approach			Main Southbound Approach			Minor Westbound Approach			Pedestrians Crossing Main Road
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
07:00	76	1,785	28	156	50	197	53	1,347	101	124	76	109	0
08:00	90	2,080	35	155	50	195	65	1,570	120	125	75	110	0
09:00	81	1,211	35	84	27	106	62	914	108	74	41	66	0
10:00	90	1,072	44	37	12	46	74	809	120	48	18	45	0
15:00	56	1,119	41	69	61	114	52	939	32	55	61	63	0
16:00	148	1,995	78	66	58	108	127	1,675	85	52	58	60	0
17:00	200	2,025	100	85	75	140	170	1,700	115	65	75	75	0
18:00	190	1,823	94	115	101	189	161	1,530	109	83	101	97	0
Total	**931**	**13,110**	**455**	**767**	**434**	**1,095**	**764**	**10,484**	**790**	**626**	**505**	**625**	**0**

c2.- Peak Hour Estimate

Peak Hour	Main Northbound Approach			Minor Eastbound Approach			Main Southbound Approach			Minor Westbound Approach			Pedestrians Crossing Main Road
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
AM Peak Hour													
PM Peak Hour													
AHV	0	0	0	0	0	0	0	0	0	0	0	0	0
	Main Street AHV Sum			**Minor Street AHV Sum**									
	0			**0**									

c3.- AADT Estimate - can leave movements without data blank. If midblock reading, can assign demand to through movement.

AADT	Main Northbound Approach			Minor Eastbound Approach			Main Southbound Approach			Minor Westbound Approach			Pedestrians Crossing Main Road
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
AHV	0	0	0	0	0	0	0	0	0	0	0	0	0
	Main Street AHV Sum			**Minor Street AHV Sum**									
	0			**0**									

d. Justification 7 Result

Justification	Description	Minimum Requirement 1 Lane Highways		Minimum Requirement 2 or more lanes		Compliance		Case?
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%	
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	-	-	-	900	2415	268.3	**Case 1 - Undoubtedly Warranted**
	B. Vehicle volume, along minor streets (average hour)	-	-	-	170	206	121.2	
2. Delay to cross Traffic	A. Vehicle volume, major street (average hour)	-	-	-	900	2209	245.4	
	B. Combined vehicle and pedestrian volume crossing	-	-	-	75	103	137.3	

Input Data Sheet

Analysis Sheet | Results Sheet | Justification 5A | Justification 7 | GO TO Justification:

What are the intersecting roadways? Trafalgar Road & Settlers Road - 2036 Conditions

What is the direction of the Main Road street? North-South

When was the data collected?

Justification 1 - 4: Volume Warrants

a.- Number of approach lanes on the Main Road? 2 or more

b.- Number of approach lanes on the Minor Road? 1

c.- How many approaches? 4

d.- What is the operating environment? Urban Population >= 10,000 AND Speed < 70 km/hr

e.- What is the eight hour vehicle volume at the intersection? (Please fill in table below)

Hour Ending	Main Northbound Approach			Minor Eastbound Approach			Main Southbound Approach			Minor Westbound Approach			Pedestrians Crossing Main Road
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
07:00	76	1,810	232	156	91	197	84	1,523	101	262	106	66	
08:00	90	2,110	285	155	90	195	100	1,775	120	270	105	65	
09:00	81	1,228	287	84	49	106	90	1,033	108	182	57	35	
10:00	90	1,087	361	37	21	46	100	915	120	176	25	15	
15:00	56	1,177	142	69	82	114	42	1,033	32	185	79	28	
16:00	148	2,098	243	66	78	108	111	1,842	85	178	76	27	
17:00	200	2,130	305	85	100	140	150	1,870	115	215	95	35	
18:00	190	1,917	284	115	132	189	142	1,683	109	264	124	47	
Total	**931**	**13,557**	**2,139**	**767**	**643**	**1,095**	**819**	**11,674**	**790**	**1,732**	**667**	**318**	**0**

Justification 5: Collision Experience

Preceding Months	Number of Collisions*
1-12	
13-24	
25-36	

Note: If desired, Justification 5A can be calculated instead to determine expected safety improvement following signalization

* Include only collisions that are susceptable to correction through the installation of traffic signal control

Justification 6: Pedestrian Volume

a.- Please fill in table below summarizing total pedestrians crossing major roadway at the intersection (Zone 1) or in proximity to the intersection (Zones 2-4). Please reference Section 4.8 of the Manual for further explanation and graphical representation.

	Zone 1		Zone 2 (if needed)		Zone 3 (if needed)		Zone 4 (if needed)		Total
	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	
Total 8 hour pedestrian volume									
Factored 8 hour pedestrian volume	0		0		0		0		
% Assigned to crossing rate									
Net 8 Hour Pedestrian Volume at Crossing									0
Net 8 Hour Vehicular Volume on Street Being Crossed									

b.- Please fill in table below summarizing delay to pedestrians crossing major roadway at the intersection (Zone 1) or in proximity to the intersection (Zones 2-4). Please reference Section 4.8 of the Manual for further explanation and graphical representation.

	Zone 1		Zone 2 (if needed)		Zone 3 (if needed)		Zone 4 (if needed)		Total
	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	
Total 8 hour pedestrian volume	0	0	0	0	0	0	0	0	
Total 8 hour pedestrians delayed greater than 10 seconds									
Factored volume of total pedestrians	0		0		0		0		
Factored volume of delayed pedestrians	0		0		0		0		
% Assigned to Crossing Rate	0%		0%		0%		0%		
Net 8 Hour Volume of Total Pedestrians									0
Net 8 Hour Volume of Delayed Pedestrians									0

Justification 7 - Projected Volumes

Intersection: Trafalgar Road & Settlers Road - 2036 Cc Count Date:

Return to Justifications 1 - 6

INPUT

PRIOR TO START - FILL OUT GEOMETRY INPUTS IN THE INPUT DATA SPREADSHEET - STEPS A to D

a.- Both Intersection Roads Exist? No

b.- What kind of count estimate available? 8-hour

Proceed to fill out Input Data tab step E with future projected condition, view results in D

c1.- 8-Hour Count Estimate

Hour Ending	Main Northbound Approach			Minor Eastbound Approach			Main Southbound Approach			Minor Westbound Approach			Pedestrians Crossing Main Road
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
07:00	76	1,810	232	156	91	197	84	1,523	101	262	106	66	0
08:00	90	2,110	285	155	90	195	100	1,775	120	270	105	65	0
09:00	81	1,228	287	84	49	106	90	1,033	108	182	57	35	0
10:00	90	1,087	361	37	21	46	100	915	120	176	25	15	0
15:00	56	1,177	142	69	82	114	42	1,033	32	185	79	28	0
16:00	148	2,098	243	66	78	108	111	1,842	85	178	76	27	0
17:00	200	2,130	305	85	100	140	150	1,870	115	215	95	35	0
18:00	190	1,917	284	115	132	189	142	1,683	109	264	124	47	0
Total	**931**	**13,557**	**2,139**	**767**	**643**	**1,095**	**819**	**11,674**	**790**	**1,732**	**667**	**318**	**0**

c2.- Peak Hour Estimate

Peak Hour	Main Northbound Approach			Minor Eastbound Approach			Main Southbound Approach			Minor Westbound Approach			Pedestrians Crossing Main Road
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
AM Peak Hour													
PM Peak Hour													
AHV	0	0	0	0	0	0	0	0	0	0	0	0	0
	Main Street AHV Sum			**Minor Street AHV Sum**									
	0			**0**									

c3.- AADT Estimate - can leave movements without data blank. If midblock reading, can assign demand to through movement.

AADT	Main Northbound Approach			Minor Eastbound Approach			Main Southbound Approach			Minor Westbound Approach			Pedestrians Crossing Main Road
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
AHV	0	0	0	0	0	0	0	0	0	0	0	0	0
	Main Street AHV Sum			**Minor Street AHV Sum**									
	0			**0**									

d. Justification 7 Result

Justification	Description	Minimum Requirement 1 Lane Highways		Minimum Requirement 2 or more lanes		Compliance		Case?
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%	
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	-	-	-	900	2993	332.6	**Case 1 - Undoubtedly Warranted**
	B. Vehicle volume, along minor streets (average hour)	-	-	-	170	320	188.2	
2. Delay to cross Traffic	A. Vehicle volume, major street (average hour)	-	-	-	900	2482	275.8	
	B. Combined vehicle and pedestrian volume crossing	-	-	-	75	238	317.3	

Input Data Sheet

Analysis Sheet | Results Sheet | Justification 5A | Justification 7 | GO TO Justification:

What are the intersecting roadways? Burnhamthorpe Road East & Street C - 2031 Conditions

What is the direction of the Main Road street? East-West

When was the data collected?

Justification 1 - 4: Volume Warrants

a.- Number of approach lanes on the Main Road? 2 or more

b.- Number of approach lanes on the Minor Road? 1

c.- How many approaches? 3

d.- What is the operating environment? Urban Population >= 10,000 AND Speed < 70 km/hr

e.- What is the eight hour vehicle volume at the intersection? (Please fill in table below)

Hour Ending	Main Eastbound Approach			Minor Northbound Approach			Main Westbound Approach			Minor Southbound Approach			Pedestrians Crossing Main Road
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
07:00	25	648	0	0	0	0	0	476	4	10	0	20	
08:00	30	755	0	0	0	0	0	555	5	10	0	20	
09:00	27	440	0	0	0	0	0	323	4	5	0	11	
10:00	30	389	0	0	0	0	0	286	5	2	0	5	
15:00	15	351	0	0	0	0	0	389	1	8	0	16	
16:00	41	625	0	0	0	0	0	694	4	8	0	15	
17:00	55	635	0	0	0	0	0	705	5	10	0	20	
18:00	52	572	0	0	0	0	0	635	5	14	0	27	
Total	**275**	**4,415**	**0**	**0**	**0**	**0**	**0**	**4,063**	**33**	**67**	**0**	**134**	**0**

Justification 5: Collision Experience

Preceding Months	Number of Collisions*
1-12	
13-24	
25-36	

Note: If desired, Justification 5A can be calculated instead to determine expected safety improvement following signalization

* Include only collisions that are susceptable to correction through the installation of traffic signal control

Justification 6: Pedestrian Volume

a.- Please fill in table below summarizing total pedestrians crossing major roadway at the intersection (Zone 1) or in proximity to the intersection (Zones 2-4). Please reference Section 4.8 of the Manual for further explanation and graphical representation.

	Zone 1		Zone 2 (if needed)		Zone 3 (if needed)		Zone 4 (if needed)		Total
	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	
Total 8 hour pedestrian volume									
Factored 8 hour pedestrian volume	0		0		0		0		
% Assigned to crossing rate									
Net 8 Hour Pedestrian Volume at Crossing									0
Net 8 Hour Vehicular Volume on Street Being Crossed									

b.- Please fill in table below summarizing delay to pedestrians crossing major roadway at the intersection (Zone 1) or in proximity to the intersection (Zones 2-4). Please reference Section 4.8 of the Manual for further explanation and graphical representation.

	Zone 1		Zone 2 (if needed)		Zone 3 (if needed)		Zone 4 (if needed)		Total
	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	
Total 8 hour pedestrian volume	0	0	0	0	0	0	0	0	
Total 8 hour pedestrians delayed greater than 10 seconds									
Factored volume of total pedestrians	0		0		0		0		
Factored volume of delayed pedestrians	0		0		0		0		
% Assigned to Crossing Rate	0%		0%		0%		0%		
Net 8 Hour Volume of Total Pedestrians									0
Net 8 Hour Volume of Delayed Pedestrians									0

Justification 7 - Projected Volumes

Intersection: Burnhamthorpe Road East & Street C - 20 Count Date:

Return to Justifications 1 - 6

INPUT

PRIOR TO START - FILL OUT GEOMETRY INPUTS IN THE INPUT DATA SPREADSHEET - STEPS A to D

a.- Both Intersection Roads Exist? No

b.- What kind of count estimate available? 8-hour

Proceed to fill out Input Data tab step E with future projected condition, view results in D

c1.- 8-Hour Count Estimate

Hour Ending	Main Eastbound Approach			Minor Northbound Approach			Main Westbound Approach			Minor Southbound Approach			Pedestrians Crossing Main Road
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
07:00	25	648	0	0	0	0	0	476	4	10	0	20	0
08:00	30	755	0	0	0	0	0	555	5	10	0	20	0
09:00	27	440	0	0	0	0	0	323	4	5	0	11	0
10:00	30	389	0	0	0	0	0	286	5	2	0	5	0
15:00	15	351	0	0	0	0	0	389	1	8	0	16	0
16:00	41	625	0	0	0	0	0	694	4	8	0	15	0
17:00	55	635	0	0	0	0	0	705	5	10	0	20	0
18:00	52	572	0	0	0	0	0	635	5	14	0	27	0
Total	**275**	**4,415**	**0**	**0**	**0**	**0**	**0**	**4,063**	**33**	**67**	**0**	**134**	**0**

c2.- Peak Hour Estimate

Peak Hour	Main Eastbound Approach			Minor Northbound Approach			Main Westbound Approach			Minor Southbound Approach			Pedestrians Crossing Main Road
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
AM Peak Hour													
PM Peak Hour													
AHV	0	0	0	0	0	0	0	0	0	0	0	0	0
	Main Street AHV Sum			**Minor Street AHV Sum**									
	0			**0**									

c3.- AADT Estimate - can leave movements without data blank. If midblock reading, can assign demand to through movement.

AADT	Main Eastbound Approach			Minor Northbound Approach			Main Westbound Approach			Minor Southbound Approach			Pedestrians Crossing Main Road
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
AHV	0	0	0	0	0	0	0	0	0	0	0	0	0
	Main Street AHV Sum			**Minor Street AHV Sum**									
	0			**0**									

d. Justification 7 Result

Justification	Description	Minimum Requirement 1 Lane Highways		Minimum Requirement 2 or more lanes		Compliance		Case?
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%	
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	-	-	-	900	717	79.7	**Case 3 - Warrant is Unlikely**
	B. Vehicle volume, along minor streets (average hour)	-	-	-	255	7	2.7	
2. Delay to cross Traffic	A. Vehicle volume, major street (average hour)	-	-	-	900	710	78.9	
	B. Combined vehicle and pedestrian volume crossing	-	-	-	75	2	2.7	

Input Data Sheet

Analysis Sheet | Results Sheet | Justification 5A | Justification 7 | GO TO Justification:

What are the intersecting roadways? Burnhamthorpe Road East & Street C - 2036 Conditions

What is the direction of the Main Road street? East-West

When was the data collected?

Justification 1 - 4: Volume Warrants

a.- Number of approach lanes on the Main Road? 2 or more

b.- Number of approach lanes on the Minor Road? 1

c.- How many approaches? 4

d.- What is the operating environment? Urban Population >= 10,000 AND Speed < 70 km/hr

e.- What is the eight hour vehicle volume at the intersection? (Please fill in table below)

Hour Ending	Main Eastbound Approach			Minor Northbound Approach			Main Westbound Approach			Minor Southbound Approach			Pedestrians Crossing Main Road
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
07:00	42	678	4	10	76	106	66	463	4	10	69	20	
08:00	50	790	5	10	75	105	80	540	5	10	70	20	
09:00	45	460	4	5	41	57	80	314	4	5	44	11	
10:00	50	407	5	2	18	25	99	278	5	2	35	5	
15:00	18	373	6	4	41	61	74	367	1	8	92	16	
16:00	48	665	15	4	39	58	146	655	4	8	88	15	
17:00	65	675	20	5	50	75	190	665	5	10	110	20	
18:00	62	608	19	7	68	101	179	599	5	14	141	27	
Total	**380**	**4,656**	**78**	**47**	**408**	**588**	**914**	**3,881**	**33**	**67**	**649**	**134**	**0**

Justification 5: Collision Experience

Preceding Months	Number of Collisions*
1-12	
13-24	
25-36	

Note: If desired, Justification 5A can be calculated instead to determine expected safety improvement following signalization

* Include only collisions that are susceptable to correction through the installation of traffic signal control

Justification 6: Pedestrian Volume

a.- Please fill in table below summarizing total pedestrians crossing major roadway at the intersection (Zone 1) or in proximity to the intersection (Zones 2-4). Please reference Section 4.8 of the Manual for further explanation and graphical representation.

	Zone 1		Zone 2 (if needed)		Zone 3 (if needed)		Zone 4 (if needed)		Total
	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	
Total 8 hour pedestrian volume									
Factored 8 hour pedestrian volume	0		0		0		0		
% Assigned to crossing rate									
Net 8 Hour Pedestrian Volume at Crossing									0
Net 8 Hour Vehicular Volume on Street Being Crossed									

b.- Please fill in table below summarizing delay to pedestrians crossing major roadway at the intersection (Zone 1) or in proximity to the intersection (Zones 2-4). Please reference Section 4.8 of the Manual for further explanation and graphical representation.

	Zone 1		Zone 2 (if needed)		Zone 3 (if needed)		Zone 4 (if needed)		Total
	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	
Total 8 hour pedestrian volume	0	0	0	0	0	0	0	0	
Total 8 hour pedestrians delayed greater than 10 seconds									
Factored volume of total pedestrians	0		0		0		0		
Factored volume of delayed pedestrians	0		0		0		0		
% Assigned to Crossing Rate	0%		0%		0%		0%		
Net 8 Hour Volume of Total Pedestrians									0
Net 8 Hour Volume of Delayed Pedestrians									0

Justification 7 - Projected Volumes

Intersection: Burnhamthorpe Road East & Street C - 20 Count Date:

Return to Justifications 1 - 6

INPUT

PRIOR TO START - FILL OUT GEOMETRY INPUTS IN THE INPUT DATA SPREADSHEET - STEPS A to D

a.- Both Intersection Roads Exist? No

b.- What kind of count estimate available? 8-hour

Proceed to fill out Input Data tab step E with future projected condition, view results in D

c1.- 8-Hour Count Estimate

Hour Ending	Main Eastbound Approach			Minor Northbound Approach			Main Westbound Approach			Minor Southbound Approach			Pedestrians Crossing Main Road
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
07:00	42	678	4	10	76	106	66	463	4	10	69	20	0
08:00	50	790	5	10	75	105	80	540	5	10	70	20	0
09:00	45	460	4	5	41	57	80	314	4	5	44	11	0
10:00	50	407	5	2	18	25	99	278	5	2	35	5	0
15:00	18	373	6	4	41	61	74	367	1	8	92	16	0
16:00	48	665	15	4	39	58	146	655	4	8	88	15	0
17:00	65	675	20	5	50	75	190	665	5	10	110	20	0
18:00	62	608	19	7	68	101	179	599	5	14	141	27	0
Total	**380**	**4,656**	**78**	**47**	**408**	**588**	**914**	**3,881**	**33**	**67**	**649**	**134**	**0**

c2.- Peak Hour Estimate

Peak Hour	Main Eastbound Approach			Minor Northbound Approach			Main Westbound Approach			Minor Southbound Approach			Pedestrians Crossing Main Road
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
AM Peak Hour													
PM Peak Hour													
AHV	0	0	0	0	0	0	0	0	0	0	0	0	0
	Main Street AHV Sum			**Minor Street AHV Sum**									
	0			**0**									

c3.- AADT Estimate - can leave movements without data blank. If midblock reading, can assign demand to through movement.

AADT	Main Eastbound Approach			Minor Northbound Approach			Main Westbound Approach			Minor Southbound Approach			Pedestrians Crossing Main Road
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
AHV	0	0	0	0	0	0	0	0	0	0	0	0	0
	Main Street AHV Sum			**Minor Street AHV Sum**									
	0			**0**									

d. Justification 7 Result

Justification	Description	Minimum Requirement 1 Lane Highways		Minimum Requirement 2 or more lanes		Compliance		Case?
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%	
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	-	-	-	900	931	103.4	**Case 2 - Might be Warranted**
	B. Vehicle volume, along minor streets (average hour)	-	-	-	170	87	51.2	
2. Delay to cross Traffic	A. Vehicle volume, major street (average hour)	-	-	-	900	839	93.2	
	B. Combined vehicle and pedestrian volume crossing	-	-	-	75	39	52.0	

Input Data Sheet

Analysis Sheet | Results Sheet | Justification 5A | Justification 7 | GO TO Justification:

What are the intersecting roadways? Settlers Road & Street C - 2036 Conditions

What is the direction of the Main Road street? East-West

When was the data collected?

Justification 1 - 4: Volume Warrants

a.- Number of approach lanes on the Main Road? 1

b.- Number of approach lanes on the Minor Road? 1

c.- How many approaches? 4

d.- What is the operating environment? Urban

Population >= 10,000 AND Speed < 70 km/hr

e.- What is the eight hour vehicle volume at the intersection? (Please fill in table below)

Hour Ending	Main Eastbound Approach			Minor Northbound Approach			Main Westbound Approach			Minor Southbound Approach			Pedestrians Crossing Main Road
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
07:00	17	296	8	71	64	30	8	184	42	35	139	25	
08:00	20	345	10	70	65	30	10	215	50	35	140	25	
09:00	18	201	9	38	42	16	9	125	45	19	82	14	
10:00	20	178	10	17	34	7	10	111	50	8	52	6	
15:00	15	83	10	20	78	20	8	99	13	4	102	49	
16:00	41	148	26	19	75	19	22	177	33	4	98	46	
17:00	55	150	35	25	95	25	30	180	45	5	125	60	
18:00	52	135	33	34	126	34	28	162	43	7	166	81	
Total	**238**	**1,536**	**141**	**294**	**579**	**181**	**125**	**1,253**	**321**	**117**	**904**	**306**	**0**

Justification 5: Collision Experience

Preceding Months	Number of Collisions*
1-12	
13-24	
25-36	

Note: If desired, Justification 5A can be calculated instead to determine expected safety improvement following signalization

* Include only collisions that are susceptable to correction through the installation of traffic signal control

Justification 6: Pedestrian Volume

a.- Please fill in table below summarizing total pedestrians crossing major roadway at the intersection (Zone 1) or in proximity to the intersection (Zones 2-4). Please reference Section 4.8 of the Manual for further explanation and graphical representation.

	Zone 1		Zone 2 (if needed)		Zone 3 (if needed)		Zone 4 (if needed)		Total
	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	
Total 8 hour pedestrian volume									
Factored 8 hour pedestrian volume	0		0		0		0		
% Assigned to crossing rate									
Net 8 Hour Pedestrian Volume at Crossing									0
Net 8 Hour Vehicular Volume on Street Being Crossed									

b.- Please fill in table below summarizing delay to pedestrians crossing major roadway at the intersection (Zone 1) or in proximity to the intersection (Zones 2-4). Please reference Section 4.8 of the Manual for further explanation and graphical representation.

	Zone 1		Zone 2 (if needed)		Zone 3 (if needed)		Zone 4 (if needed)		Total
	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	
Total 8 hour pedestrian volume	0	0	0	0	0	0	0	0	
Total 8 hour pedestrians delayed greater than 10 seconds									
Factored volume of total pedestrians	0		0		0		0		
Factored volume of delayed pedestrians	0		0		0		0		
% Assigned to Crossing Rate	0%		0%		0%		0%		
Net 8 Hour Volume of Total Pedestrians									0
Net 8 Hour Volume of Delayed Pedestrians									0

Justification 7 - Projected Volumes

Intersection: Settlers Road & Street C - 2036 Condition Count Date:

Return to Justifications 1 - 6

INPUT

PRIOR TO START - FILL OUT GEOMETRY INPUTS IN THE INPUT DATA SPREADSHEET - STEPS A to D

a.- Both Intersection Roads Exist? No

b.- What kind of count estimate available? 8-hour

Proceed to fill out Input Data tab step E with future projected condition, view results in D

c1.- 8-Hour Count Estimate

Hour Ending	Main Eastbound Approach			Minor Northbound Approach			Main Westbound Approach			Minor Southbound Approach			Pedestrians Crossing Main Road
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
07:00	17	296	8	71	64	30	8	184	42	35	139	25	0
08:00	20	345	10	70	65	30	10	215	50	35	140	25	0
09:00	18	201	9	38	42	16	9	125	45	19	82	14	0
10:00	20	178	10	17	34	7	10	111	50	8	52	6	0
15:00	15	83	10	20	78	20	8	99	13	4	102	49	0
16:00	41	148	26	19	75	19	22	177	33	4	98	46	0
17:00	55	150	35	25	95	25	30	180	45	5	125	60	0
18:00	52	135	33	34	126	34	28	162	43	7	166	81	0
Total	**238**	**1,536**	**141**	**294**	**579**	**181**	**125**	**1,253**	**321**	**117**	**904**	**306**	**0**

c2.- Peak Hour Estimate

Peak Hour	Main Eastbound Approach			Minor Northbound Approach			Main Westbound Approach			Minor Southbound Approach			Pedestrians Crossing Main Road
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
AM Peak Hour													
PM Peak Hour													
AHV	0	0	0	0	0	0	0	0	0	0	0	0	0
	Main Street AHV Sum			**Minor Street AHV Sum**									
	0			**0**									

c3.- AADT Estimate - can leave movements without data blank. If midblock reading, can assign demand to through movement.

AADT	Main Eastbound Approach			Minor Northbound Approach			Main Westbound Approach			Minor Southbound Approach			Pedestrians Crossing Main Road
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
AHV	0	0	0	0	0	0	0	0	0	0	0	0	0
	Main Street AHV Sum			**Minor Street AHV Sum**									
	0			**0**									

d. Justification 7 Result

Justification	Description	Minimum Requirement 1 Lane Highways		Minimum Requirement 2 or more lanes		Compliance		Case?
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%	
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	-	720	-	-	501	69.6	**Case 2 - Might be Warranted**
	B. Vehicle volume, along minor streets (average hour)	-	170	-	-	124	72.9	
2. Delay to cross Traffic	A. Vehicle volume, major street (average hour)	-	720	-	-	228	31.7	
	B. Combined vehicle and pedestrian volume crossing	-	75	-	-	77	102.7	

Input Data Sheet

Analysis Sheet | Results Sheet | Justification 5A | Justification 7 | GO TO Justification:

What are the intersecting roadways? Street C & Main Street - 2036 Conditions

What is the direction of the Main Road street? North-South

When was the data collected?

Justification 1 - 4: Volume Warrants

a.- Number of approach lanes on the Main Road? 1

b.- Number of approach lanes on the Minor Road? 1

c.- How many approaches? 3

d.- What is the operating environment? Urban Population >= 10,000 AND Speed < 70 km/hr

e.- What is the eight hour vehicle volume at the intersection? (Please fill in table below)

Hour Ending	Main Northbound Approach			Minor Eastbound Approach			Main Southbound Approach			Minor Westbound Approach			Pedestrians Crossing Main Road
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
07:00	4	124	0	25	0	0	0	124	56	0	0	0	
08:00	5	145	0	25	0	0	0	145	70	0	0	0	
09:00	4	84	0	14	0	0	0	84	74	0	0	0	
10:00	5	75	0	6	0	0	0	75	98	0	0	0	
15:00	1	80	0	37	0	8	0	105	68	0	0	0	
16:00	4	143	0	35	0	8	0	187	112	0	0	0	
17:00	5	145	0	45	0	10	0	190	140	0	0	0	
18:00	5	131	0	61	0	14	0	171	131	0	0	0	
Total	**33**	**927**	**0**	**248**	**0**	**40**	**0**	**1,081**	**749**	**0**	**0**	**0**	**0**

Justification 5: Collision Experience

Preceding Months	Number of Collisions*
1-12	
13-24	
25-36	

Note: If desired, Justification 5A can be calculated instead to determine expected safety improvement following signalization

* Include only collisions that are susceptable to correction through the installation of traffic signal control

Justification 6: Pedestrian Volume

a.- Please fill in table below summarizing total pedestrians crossing major roadway at the intersection (Zone 1) or in proximity to the intersection (Zones 2-4). Please reference Section 4.8 of the Manual for further explanation and graphical representation.

	Zone 1		Zone 2 (if needed)		Zone 3 (if needed)		Zone 4 (if needed)		Total
	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	
Total 8 hour pedestrian volume									
Factored 8 hour pedestrian volume	0		0		0		0		
% Assigned to crossing rate									
Net 8 Hour Pedestrian Volume at Crossing									0
Net 8 Hour Vehicular Volume on Street Being Crossed									

b.- Please fill in table below summarizing delay to pedestrians crossing major roadway at the intersection (Zone 1) or in proximity to the intersection (Zones 2-4). Please reference Section 4.8 of the Manual for further explanation and graphical representation.

	Zone 1		Zone 2 (if needed)		Zone 3 (if needed)		Zone 4 (if needed)		Total
	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	
Total 8 hour pedestrian volume	0	0	0	0	0	0	0	0	
Total 8 hour pedestrians delayed greater than 10 seconds									
Factored volume of total pedestrians	0		0		0		0		
Factored volume of delayed pedestrians	0		0		0		0		
% Assigned to Crossing Rate	0%		0%		0%		0%		
Net 8 Hour Volume of Total Pedestrians									0
Net 8 Hour Volume of Delayed Pedestrians									0

Justification 7 - Projected Volumes

Intersection: Street C & Main Street - 2036 Conditions Count Date:

Return to Justifications 1 - 6

INPUT

PRIOR TO START - FILL OUT GEOMETRY INPUTS IN THE INPUT DATA SPREADSHEET - STEPS A to D

a.- Both Intersection Roads Exist? No

b.- What kind of count estimate available? 8-hour

Proceed to fill out Input Data tab step E with future projected condition, view results in D

c1.- 8-Hour Count Estimate

Hour Ending	Main Northbound Approach			Minor Eastbound Approach			Main Southbound Approach			Minor Westbound Approach			Pedestrians Crossing Main Road
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
07:00	4	124	0	25	0	0	0	124	56	0	0	0	0
08:00	5	145	0	25	0	0	0	145	70	0	0	0	0
09:00	4	84	0	14	0	0	0	84	74	0	0	0	0
10:00	5	75	0	6	0	0	0	75	98	0	0	0	0
15:00	1	80	0	37	0	8	0	105	68	0	0	0	0
16:00	4	143	0	35	0	8	0	187	112	0	0	0	0
17:00	5	145	0	45	0	10	0	190	140	0	0	0	0
18:00	5	131	0	61	0	14	0	171	131	0	0	0	0
Total	**33**	**927**	**0**	**248**	**0**	**40**	**0**	**1,081**	**749**	**0**	**0**	**0**	**0**

c2.- Peak Hour Estimate

Peak Hour	Main Northbound Approach			Minor Eastbound Approach			Main Southbound Approach			Minor Westbound Approach			Pedestrians Crossing Main Road
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
AM Peak Hour													
PM Peak Hour													
AHV	0	0	0	0	0	0	0	0	0	0	0	0	0
	Main Street AHV Sum			**Minor Street AHV Sum**									
	0			**0**									

c3.- AADT Estimate - can leave movements without data blank. If midblock reading, can assign demand to through movement.

AADT	Main Northbound Approach			Minor Eastbound Approach			Main Southbound Approach			Minor Westbound Approach			Pedestrians Crossing Main Road
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
AHV	0	0	0	0	0	0	0	0	0	0	0	0	0
	Main Street AHV Sum			**Minor Street AHV Sum**									
	0			**0**									

d. Justification 7 Result

Justification	Description	Minimum Requirement 1 Lane Highways		Minimum Requirement 2 or more lanes		Compliance		Case?
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%	
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	-	720	-	-	259	36.0	**Case 3 - Warrant is Unlikely**
	B. Vehicle volume, along minor streets (average hour)	-	255	-	-	6	2.4	
2. Delay to cross Traffic	A. Vehicle volume, major street (average hour)	-	720	-	-	246	34.2	
	B. Combined vehicle and pedestrian volume crossing	-	75	-	-	6	8.0	

Input Data Sheet

Analysis Sheet | Results Sheet | Justification 5A | Justification 7 | GO TO Justification:

What are the intersecting roadways? Street C & Street B - 2036 Conditions

What is the direction of the Main Road street? North-South

When was the data collected?

Justification 1 - 4: Volume Warrants

a.- Number of approach lanes on the Main Road? 1

b.- Number of approach lanes on the Minor Road? 1

c.- How many approaches? 3

d.- What is the operating environment? Urban Population >= 10,000 AND Speed < 70 km/hr

e.- What is the eight hour vehicle volume at the intersection? (Please fill in table below)

Hour Ending	Main Northbound Approach			Minor Eastbound Approach			Main Southbound Approach			Minor Westbound Approach			Pedestrians Crossing Main Road
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
07:00	7	116	0	10	0	18	0	137	4	0	0	0	
08:00	10	135	0	10	0	20	0	160	5	0	0	0	
09:00	12	79	0	5	0	17	0	93	4	0	0	0	
10:00	19	70	0	2	0	24	0	82	5	0	0	0	
15:00	9	86	0	8	0	13	0	102	10	0	0	0	
16:00	12	153	0	8	0	13	0	182	16	0	0	0	
17:00	15	155	0	10	0	15	0	185	20	0	0	0	
18:00	13	140	0	14	0	18	0	167	18	0	0	0	
Total	**97**	**934**	**0**	**67**	**0**	**138**	**0**	**1,108**	**82**	**0**	**0**	**0**	**0**

Justification 5: Collision Experience

Preceding Months	Number of Collisions*
1-12	
13-24	
25-36	

Note: If desired, Justification 5A can be calculated instead to determine expected safety improvement following signalization

* Include only collisions that are susceptable to correction through the installation of traffic signal control

Justification 6: Pedestrian Volume

a.- Please fill in table below summarizing total pedestrians crossing major roadway at the intersection (Zone 1) or in proximity to the intersection (Zones 2-4). Please reference Section 4.8 of the Manual for further explanation and graphical representation.

	Zone 1		Zone 2 (if needed)		Zone 3 (if needed)		Zone 4 (if needed)		Total
	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	
Total 8 hour pedestrian volume									
Factored 8 hour pedestrian volume	0		0		0		0		
% Assigned to crossing rate									
Net 8 Hour Pedestrian Volume at Crossing									0
Net 8 Hour Vehicular Volume on Street Being Crossed									

b.- Please fill in table below summarizing delay to pedestrians crossing major roadway at the intersection (Zone 1) or in proximity to the intersection (Zones 2-4). Please reference Section 4.8 of the Manual for further explanation and graphical representation.

	Zone 1		Zone 2 (if needed)		Zone 3 (if needed)		Zone 4 (if needed)		Total
	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	
Total 8 hour pedestrian volume	0	0	0	0	0	0	0	0	
Total 8 hour pedestrians delayed greater than 10 seconds									
Factored volume of total pedestrians	0		0		0		0		
Factored volume of delayed pedestrians	0		0		0		0		
% Assigned to Crossing Rate	0%		0%		0%		0%		
Net 8 Hour Volume of Total Pedestrians									0
Net 8 Hour Volume of Delayed Pedestrians									0

Justification 7 - Projected Volumes

Intersection: Street C & Street B - 2036 Conditions Count Date:

Return to Justifications 1 - 6

INPUT

PRIOR TO START - FILL OUT GEOMETRY INPUTS IN THE INPUT DATA SPREADSHEET - STEPS A to D

a.- Both Intersection Roads Exist? No

b.- What kind of count estimate available? 8-hour

Proceed to fill out Input Data tab step E with future projected condition, view results in D

c1.- 8-Hour Count Estimate

Hour Ending	Main Northbound Approach			Minor Eastbound Approach			Main Southbound Approach			Minor Westbound Approach			Pedestrians Crossing Main Road
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
07:00	7	116	0	10	0	18	0	137	4	0	0	0	0
08:00	10	135	0	10	0	20	0	160	5	0	0	0	0
09:00	12	79	0	5	0	17	0	93	4	0	0	0	0
10:00	19	70	0	2	0	24	0	82	5	0	0	0	0
15:00	9	86	0	8	0	13	0	102	10	0	0	0	0
16:00	12	153	0	8	0	13	0	182	16	0	0	0	0
17:00	15	155	0	10	0	15	0	185	20	0	0	0	0
18:00	13	140	0	14	0	18	0	167	18	0	0	0	0
Total	**97**	**934**	**0**	**67**	**0**	**138**	**0**	**1,108**	**82**	**0**	**0**	**0**	**0**

c2.- Peak Hour Estimate

Peak Hour	Main Northbound Approach			Minor Eastbound Approach			Main Southbound Approach			Minor Westbound Approach			Pedestrians Crossing Main Road
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
AM Peak Hour													
PM Peak Hour													
AHV	0	0	0	0	0	0	0	0	0	0	0	0	0
	Main Street AHV Sum			**Minor Street AHV Sum**									
	0			**0**									

c3.- AADT Estimate - can leave movements without data blank. If midblock reading, can assign demand to through movement.

AADT	Main Northbound Approach			Minor Eastbound Approach			Main Southbound Approach			Minor Westbound Approach			Pedestrians Crossing Main Road
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
AHV	0	0	0	0	0	0	0	0	0	0	0	0	0
	Main Street AHV Sum			**Minor Street AHV Sum**									
	0			**0**									

d. Justification 7 Result

Justification	Description	Minimum Requirement 1 Lane Highways		Minimum Requirement 2 or more lanes		Compliance		Case?
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%	
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	-	720	-	-	202	28.1	**Case 3 - Warrant is Unlikely**
	B. Vehicle volume, along minor streets (average hour)	-	255	-	-	21	8.2	
2. Delay to cross Traffic	A. Vehicle volume, major street (average hour)	-	720	-	-	176	24.4	
	B. Combined vehicle and pedestrian volume crossing	-	75	-	-	2	2.7	

Appendix J:
Queueing Assessment

EXISTING CONDITIONS

Table J1 Synchro Intersections Queue Summary – Existing Conditions

Lane Groups	Available Storage Length (m)	Existing	
		50th Percentile Queue	95th Percentile Queue
Trafalgar Road / Burnhamthorpe Road E			
EBL	60	8.1 (4.7)	23.0 (16.4)
EBTR	> 1,000	20.4 (12.1)	48.4 (34.0)
WBL	35	7.6 (6.9)	22.0 (21.6)
WBTR	> 2,000	8.5 (10.1)	24.5 (28.4)
NBL	190	5.3 (3.2)	16.6 (14.9)
NBTR	> 2,000	44.4 (35.7)	72.1 (91.9)
SBL	215	2.5 (0.4)	7.4 (1.8)
SBTR	420	35.1 (20.2)	60.6 (34.8)

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

2031 HORIZON

Table J2 Synchro External & Internal Intersections Queue Summary – 2031 Horizon

Lane Groups	Available Storage Length (m)	Future Background		Future Total	
		50th Percentile Queue	95th Percentile Queue	50th Percentile Queue	95th Percentile Queue
Trafalgar Road / Burnhamthorpe Road E					
EBL	50	37.1 (37.1)	57.4 (63.1)	37.1 (37.1)	57.4 (63.1)
EBT	~ 250	32.7 (28.7)	46.1 (41.3)	32.7 (28.7)	46.1 (41.3)
EBR	30	0.0 (5.9)	12.6 (23.7)	0.0 (8.0)	14.0 (27.0)
WBL	50	38.1 (58.1)	59.0 (#103.0)	38.1 (58.1)	59.0 (#103.0)
WBT	~ 300	23.9 (25.8)	35.3 (36.7)	23.9 (25.8)	35.3 (36.7)
WBR	30	0.0 (0.0)	14.0 (12.8)	0.0 (0.0)	14.0 (12.8)
NBL	100	27.5 (11.7)	#78.0 (#45.6)	29.3 (12.4)	#83.4 (#49.3)
NBTR	~ 200	161.1 (184.7)	#284.9 (#266.4)	165.6 (188.9)	#291.5 (#271.8)
SBL	100	7.6 (14.9)	#37.5 (#55.6)	7.6 (14.9)	#37.1 (#55.6)
SBTR	~ 400	102.8 (143.8)	#181.5 (#200.5)	106.2 (148.2)	#183.9 (#216.0)
Trafalgar Road / Settlers Road					
EBL	60	26.5 (15.9)	52.0 (29.9)	31.1 (16.0)	52.6 (30.4)
EBT	~ 250	7.7 (11.7)	18.9 (23.0)	8.9 (13.6)	18.9 (25.8)
EBR	40	0.0 (0.0)	17.4 (15.0)	0.7 (0.0)	18.2 (15.0)
WBL	70	2.9 (--)	8.1 (--)	19.5 (11.9)	33.3 (23.8)
WBTR	205	14.3 (15.7)	28.9 (30.6)	18.1 (19.8)	35.4 (37.8)
NBL	90	4.4 (19.3)	24.0 (#73.4)	7.2 (19.5)	23.3 (#72.4)
NBT	~ 450	121.6 (102.9)	#281.6 (#254.8)	169.2 (112.2)	#281.6 (#253.7)
NBR	40	-- (--)	-- (--)	0.0 (2.7)	0.0 (15.4)
SBL	70	2.4 (6.7)	12.4 (34.0)	5.1 (15.3)	15.2 (48.0)
SBT	~ 250	75.9 (89.1)	169.0 (175.9)	105.7 (90.7)	169.0 (175.9)
SBR	30	1.5 (4.1)	14.7 (18.2)	2.1 (4.2)	14.7 (18.2)

Lane Groups	Available Storage Length (m)	Future Background		Future Total	
		50th Percentile Queue	95th Percentile Queue	50th Percentile Queue	95th Percentile Queue
Burnhamthorpe Road E / Street C					
EBL	30	0.0 (0.0)	6.7 (11.1)	0.0 (0.0)	6.7 (11.1)
EBTR	~ 300	0.0 (0.0)	48.5 (39.7)	0.0 (0.0)	48.5 (40.1)
WBTR	> 500	0.0 (0.0)	34.8 (45.2)	0.0 (0.0)	34.8 (45.2)
SBL	30	0.6 (0.6)	5.8 (5.6)	0.6 (0.6)	5.8 (5.6)
Settlers Road / Street A					
EBL	15	Not available for unsignalized intersections	0.0 (0.0)	Not available for unsignalized intersections	0.9 (2.6)
WBL	45		0.0 (0.0)		0.1 (0.1)
NBL	35		1.1 (0.8)		2.3 (2.0)
NBTR	240		0.4 (0.3)		1.0 (1.5)
SBLTR	155		0.0 (0.0)		8.0 (5.4)

Notes:
1. XX (XX): Weekday Morning Peak Hour (Weekday Afternoon Peak Hour)
95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

2036 HORIZON

Table J3 Synchro External Intersections Queue Summary – 2036 Horizon

Lane Groups	Available Storage Length (m)	Future Background		Future Total	
		50th Percentile Queue	95th Percentile Queue	50th Percentile Queue	95th Percentile Queue
Trafalgar Road / Burnhamthorpe Road E					
EBL	50	38.1 (27.4)	59.0 (44.3)	38.1 (27.4)	59.0 (44.3)
EBT	~ 250	32.7 (28.7)	46.1 (41.3)	33.8 (36.2)	47.3 (50.2)
EBR	30	0.0 (4.0)	15.2 (22.1)	0.0 (6.3)	15.2 (25.1)
WBL	50	35.1 (48.2)	55.0 (72.1)	35.1 (48.2)	55.0 (#78.0)
WBT	~ 300	23.3 (30.4)	34.6 (43.2)	24.4 (29.8)	36.0 (42.5)
WBR	30	0.0 (0.0)	15.2 (14.8)	0.0 (0.0)	15.2 (14.8)
NBL	100	29.5 (10.2)	#77.2 (#52.6)	36.1 (19.7)	#97.6 (#78.1)
NBTR	~ 200	160.2 (156.2)	#283.9 (#275.0)	168.3 (167.8)	#293.8 (#283.5)
SBL	100	7.6 (11.4)	#38.5 (#50.7)	10.0 (25.7)	#50.8 (#89.0)
SBTR	~ 400	108.1 (131.2)	#200.8 (#236.9)	117.9 (139.4)	#203.1 (#242.5)
Trafalgar Road / Main Street					
EBL	40	11.2 (8.1)	26.0 (20.1)	13.3 (9.4)	29.6 (20.4)
EBTR	~ 250	0.0 (0.0)	0.0 (0.0)	0.0 (6.5)	0.0 (17.5)
WBL	65	-- (--)	-- (--)	31.2 (32.9)	57.7 (55.0)
WBTR	95	-- (--)	-- (--)	2.7 (5.1)	14.8 (21.3)
NBL	30	0.8 (0.8)	5.6 (5.4)	1.5 (1.3)	7.0 (5.4)
NBTR	~ 250	71.2 (58.0)	198.2 (163.1)	126.2 (145.7)	#319.2 (#246.6)
SBL	30	-- (--)	-- (--)	0.6 (2.3)	3.7 (8.3)
SBTR	~ 200	45.7 (56.5)	164.7 (204.7)	79.7 (84.2)	#198.9 (201.8)

Lane Groups	Available Storage Length (m)	Future Background		Future Total	
		50th Percentile Queue	95th Percentile Queue	50th Percentile Queue	95th Percentile Queue
Trafalgar Road / Settlers Road					
EBL	60	30.9 (15.9)	52.1 (29.9)	31.0 (15.9)	52.4 (29.9)
EBT	~ 250	16.4 (12.6)	30.0 (24.4)	16.4 (18.3)	30.0 (32.6)
EBR	40	0.0 (0.0)	17.4 (15.0)	7.3 (0.0)	26.3 (15.0)
WBL	70	12.9 (6.7)	23.9 (14.5)	46.4 (35.5)	69.6 (55.2)
WBTR	205	17.5 (13.3)	32.6 (25.7)	22.5 (17.8)	39.2 (32.2)
NBL	90	7.1 (21.8)	23.7 (#83.8)	7.1 (21.7)	23.6 (#83.4)
NBT	~ 450	169.6 (132.9)	#284.6 (#263.3)	172.7 (150.7)	#288.0 (#292.1)
NBR	40	2.1 (0.0)	14.7 (0.0)	22.0 (20.4)	54.6 (59.0)
SBL	70	7.9 (10.9)	#31.9 (#60.1)	8.0 (11.9)	#31.4 (#63.3)
SBT	~ 250	103.5 (112.7)	167.3 (#220.9)	128.1 (129.0)	#218.7 (#250.8)
SBR	30	2.1 (1.4)	14.7 (14.4)	2.1 (1.4)	14.7 (14.4)
Burnhamthorpe Road E / Street C					
EBL	30	1.1 (2.1)	7.1 (15.0)	1.9 (4.5)	10.3 (18.3)
EBTR	~ 300	17.3 (14.1)	48.8 (53.2)	19.1 (28.1)	53.1 (65.5)
WBL	30	0.7 (1.6)	5.4 (8.4)	3.3 (6.7)	17.2 (24.3)
WBTR	> 500	12.0 (15.6)	35.2 (42.7)	12.0 (15.3)	35.0 (41.0)
NBL	40	-- (--)	-- (--)	0.6 (0.4)	3.0 (3.0)
NBTR	205	3.2 (2.8)	10.3 (12.0)	7.2 (5.4)	18.8 (19.1)
SBL	30	0.6 (0.6)	2.9 (3.8)	0.6 (0.9)	3.0 (4.6)
SBTR	~ 400	3.5 (4.0)	10.0 (14.4)	4.7 (11.0)	12.5 (27.2)
Burnhamthorpe Road E / Street A					
NBR	205	Not available for unsignalized intersections	2.8 (2.0)	Not available for unsignalized intersections	5.9 (4.8)

Lane Groups	Available Storage Length (m)	Future Background		Future Total	
		50th Percentile Queue	95th Percentile Queue	50th Percentile Queue	95th Percentile Queue
Settlers Road / Street C (2036 & 2041)					
EBL	45	-- (--)	-- (--)	0.7 (2.1)	4.3 (8.8)
EBTR	205	13.4 (4.3)	37.0 (15.5)	15.5 (6.4)	42.1 (20.3)
WBL	> 130	0.4 (1.1)	2.8 (5.5)	0.4 (1.1)	2.8 (5.5)
WBTR	> 130	7.8 (3.6)	23.9 (13.5)	9.9 (8.0)	29.3 (24.6)
NBLTR	240	4.6 (3.6)	12.8 (10.6)	9.2 (7.8)	20.9 (18.0)
SBLT	30	3.9 (4.5)	10.3 (11.2)	11.3 (8.1)	23.2 (17.6)
SBR	145	0.0 (0.0)	0.0 (3.1)	0.0 (0.0)	1.9 (5.6)
Main Street / Street C (2036 & 2041)					
EBLR	180	-- (--)	-- (--)	1.4 (2.6)	6.2 (8.3)
NBL	25	-- (--)	-- (--)	0.0 (0.0)	1.7 (1.8)
NBT	145	0.0 (0.0)	11.0 (9.1)	0.0 (0.0)	17.1 (17.8)
SBTR	205	0.0 (0.0)	9.5 (12.9)	0.0 (0.0)	20.3 (32.4)
Street B / Street C (2036 & 2041)					
EBLR	120	-- (--)	-- (--)	0.6 (0.6)	5.0 (5.0)
NBLT	105	0.0 (0.0)	11.0 (9.1)	0.0 (0.0)	17.4 (19.8)
SBTR	145	0.0 (0.0)	9.5 (12.9)	0.0 (0.0)	19.2 (22.3)
Settlers Road / Street A (2036 & 2041)					
EBL	15	Not available for unsignalized intersections	0.0 (0.0)	Not available for unsignalized intersections	2.9 (5.4)
WBL	45		0.4 (0.4)		0.8 (0.6)
NBL	35		1.4 (0.9)		7.3 (5.4)
NBTR	240		6.4 (3.1)		15.9 (26.0)
SBLTR	155		0.0 (0.0)		26.5 (42.9)

Lane Groups	Available Storage Length (m)	Future Background		Future Total	
		50th Percentile Queue	95th Percentile Queue	50th Percentile Queue	95th Percentile Queue
Main Street / Street A[2] (2036 & 2041)					
EBLTR	95	Not available for unsignalized intersections	0.0 (0.0)	Not available for unsignalized intersections	0.8 (20.0)
WBLTR	180		0.0 (0.0)		2.4 (8.0)
NBLTR	70		2.4 (1.6)		13.6 (29.6)
SBLTR	205		0.0 (0.0)		12.0 (36.0)
Street A / Street B / Block 2 Access North (2036 & 2041)					
EBLTR	75	Not available for unsignalized intersections	0.0 (0.0)	Not available for unsignalized intersections	4.8 (6.3)
WBLTR	120		0.0 (0.0)		2.4 (5.3)
NBLTR	155		0.0 (0.0)		0.5 (1.7)
SBLTR	70		0.0 (0.0)		0.1 (0.5)

Notes:
1. XX (XX): Weekday Morning Peak Hour (Weekday Afternoon Peak Hour)
2. Due to limitations of HCM 2000 methodology, HCM 2010 methodology has been adopted for queueing at all-way stop-controlled (AWSC) intersections.

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

2041 HORIZON

Table J4 Synchro External Intersections Queue Summary – 2041 Horizon

Lane Groups	Available Storage Length (m)	Future Background		Future Total	
		50th Percentile Queue	95th Percentile Queue	50th Percentile Queue	95th Percentile Queue
Trafalgar Road / Burnhamthorpe Road E					
EBL	50	43.1 (35.4)	65.4 (55.8)	43.1 (35.4)	65.4 (55.8)
EBT	~ 250	32.7 (28.7)	46.1 (41.3)	33.8 (36.2)	47.3 (50.2)
EBR	30	0.0 (7.0)	15.6 (25.8)	0.0 (8.9)	15.6 (28.4)
WBL	50	36.1 (~56.3)	56.3 (#81.9)	36.1 (~60.2)	56.3 (#96.8)
WBT	~ 300	23.3 (29.8)	34.6 (42.5)	24.4 (29.3)	36.0 (41.7)
WBR	30	7.6 (11.5)	27.4 (32.9)	7.8 (11.2)	27.6 (32.8)
NBL	100	31.3 (10.8)	#96.2 (#55.3)	39.9 (20.8)	#117.2 (#81.0)
NBT	~ 200	~284.6 (~263.2)	#423.3 (#400.3)	~296.3 (~280.8)	#435.3 (#411.2)
NBR		16.7 (9.4)	45.3 (30.2)	16.9 (9.8)	45.3 (30.2)
SBL	100	12.1 (29.0)	#58.5 (#97.5)	17.1 (~54.3)	#71.6 (#133.6)
SBT	~ 400	159.1 (~255.5)	#283.0 (#393.1)	162.0 (~269.8)	#286.0 (#399.5)
SBR		0.0 (27.9)	5.3 (69.1)	0.0 (29.2)	5.3 (69.1)

Lane Groups	Available Storage Length (m)	Future Background		Future Total	
		50th Percentile Queue	95th Percentile Queue	50th Percentile Queue	95th Percentile Queue
Trafalgar Road / Main Street					
EBL	40	13.2 (10.1)	26.0 (20.1)	15.4 (9.4)	29.6 (20.4)
EBTR	~ 250	0.0 (0.0)	0.0 (6.7)	0.0 (10.2)	0.0 (21.6)
WBL	65	-- (--)	-- (--)	37.2 (32.9)	57.7 (55.0)
WBTR	95	-- (--)	-- (--)	15.5 (26.2)	28.4 (44.9)
NBL	30	1.1 (1.3)	10.6 (#18.6)	2.0 (1.8)	#17.1 (#17.2)
NBT	~ 250	187.1 (127.6)	#425.1 (#375.4)	~321.3 (182.9)	#491.1 (#363.2)
NBR		-- (--)	-- (--)	0.0 (7.5)	0.0 (22.4)
SBL	30	-- (--)	-- (--)	0.7 (4.6)	5.4 (#19.0)
SBT	~ 200	78.1 (152.0)	#232.0 (#409.0)	136.3 (224.9)	#302.2 (#404.9)
SBR		0.0 (2.0)	0.9 (11.1)	0.0 (3.0)	0.8 (11.1)
Trafalgar Road / Settlers Road					
EBL	60	30.9 (15.9)	52.1 (29.9)	31.0 (15.9)	52.4 (29.9)
EBT	~ 250	16.4 (12.6)	30.0 (24.4)	16.4 (18.3)	30.0 (32.6)
EBR	40	0.0 (0.0)	17.4 (15.0)	7.3 (0.0)	26.3 (15.0)
WBL	70	12.9 (6.7)	23.9 (14.5)	46.4 (35.5)	69.6 (55.2)
WBTR	205	17.5 (13.3)	32.6 (25.7)	22.5 (17.8)	39.2 (32.2)
NBL	90	7.1 (23.1)	23.7 (#94.8)	7.1 (23.2)	23.6 (#94.8)
NBT	~ 450	~354.8 (~282.8)	#495.3 (#451.1)	~360.0 (~312.9)	#499.4 (#487.4)
NBR	40	2.1 (0.0)	14.7 (0.0)	22.0 (21.2)	54.6 (60.2)
SBL	70	7.9 (11.3)	#31.9 (#60.2)	8.0 (12.3)	#31.4 (#63.3)
SBT	~ 250	176.2 (~278.3)	#304.0 (#445.4)	~241.7 (~309.4)	#362.1 (#482.6)
SBR	30	2.1 (1.3)	14.7 (13.8)	2.1 (1.3)	14.7 (13.8)

Lane Groups	Available Storage Length (m)	Future Background		Future Total	
		50th Percentile Queue	95th Percentile Queue	50th Percentile Queue	95th Percentile Queue
Burnhamthorpe Road E / Street C					
EBL	30	1.1 (3.6)	7.1 (15.0)	1.9 (4.5)	10.4 (18.5)
EBTR	~ 300	18.5 (27.7)	51.6 (61.0)	20.4 (32.5)	56.1 (74.5)
WBL	30	0.7 (1.6)	5.3 (8.3)	3.3 (6.7)	17.5 (24.1)
WBTR	> 500	13.7 (18.3)	39.6 (48.9)	13.7 (18.0)	39.3 (47.1)
NBL	40	-- (--)	-- (--)	0.6 (0.4)	3.1 (3.0)
NBTR	205	3.2 (4.0)	10.7 (12.8)	7.2 (5.4)	19.4 (20.0)
SBL	30	0.6 (0.9)	3.0 (4.1)	0.6 (0.9)	3.1 (4.7)
SBTR	~ 400	3.5 (5.7)	10.3 (15.4)	4.7 (11.0)	12.8 (28.6)
Burnhamthorpe Road E / Street A					
NBR	205	Not available for unsignalized intersections	2.9 (2.2)	Not available for unsignalized intersections	6.2 (5.2)

Notes:
1. XX (XX): Weekday Morning Peak Hour (Weekday Afternoon Peak Hour)
95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.

2041 MODE SHIFT SENSITIVITY

Table J5 Synchro External Intersections Queue Summary – 2041 Mode Shift Sensitivity

Lane Groups	Available Storage Length (m)	2041 Future Total (Sensitivity)	
		50th Percentile Queue	95th Percentile Queue
Trafalgar Road / Burnhamthorpe Road E			
EBL	50	43.1 (33.9)	65.4 (53.3)
EBT	~ 250	33.8 (36.2)	47.3 (50.2)
EBR	30	0.0 (4.8)	15.6 (23.2)
WBL	50	36.1 (49.3)	56.3 (#79.6)
WBT	~ 300	24.4 (29.3)	36.0 (41.7)
WBR	30	6.5 (0.0)	25.9 (18.6)
NBL	100	29.6 (20.9)	#92.4 (#81.3)
NBT	~ 200	130.7 (154.3)	#242.2 (#268.7)
NBR		16.9 (6.5)	45.3 (25.7)
SBL	100	16.1 (42.8)	#71.4 (#122.0)
SBT	~ 400	95.7 (126.6)	159.9 (#227.6)
SBR		0.0 (28.9)	5.6 (69.0)

Lane Groups	Available Storage Length (m)	2041 Future Total (Sensitivity)	
		50th Percentile Queue	95th Percentile Queue
Trafalgar Road / Main Street			
EBL	40	15.4 (8.5)	29.6 (20.3)
EBTR	~ 250	0.0 (6.0)	0.0 (17.7)
WBL	65	37.2 (29.7)	57.7 (55.0)
WBTR	95	14.3 (19.4)	27.1 (40.0)
NBL	30	1.8 (1.6)	9.5 (10.0)
NBT	~ 250	135.0 (89.5)	#299.7 (173.8)
NBR		0.0 (6.1)	0.0 (19.7)
SBL	30	0.7 (3.3)	5.4 (19.6)
SBT	~ 200	78.6 (99.1)	166.1 (192.6)
SBR		0.0 (2.6)	0.8 (10.5)

Lane Groups	Available Storage Length (m)	2041 Future Total (Sensitivity)	
		50th Percentile Queue	95th Percentile Queue
Trafalgar Road / Settlers Road			
EBL	60	31.0 (15.9)	52.4 (29.9)
EBT	~ 250	16.4 (18.3)	30.0 (32.6)
EBR	40	6.2 (0.0)	25.0 (15.0)
WBL	70	46.4 (35.5)	69.6 (55.2)
WBTR	205	22.5 (17.8)	39.2 (32.2)
NBL	90	7.1 (22.2)	23.6 (#87.2)
NBT	~ 450	179.7 (163.9)	#307.2 (#322.1)
NBR	40	22.0 (20.9)	54.6 (59.8)
SBL	70	8.0 (12.2)	#31.4 (#63.0)
SBT	~ 250	130.4 (156.7)	#231.7 (#307.5)
SBR	30	2.1 (1.4)	14.7 (14.2)

Notes:
1. XX (XX): Weekday Morning Peak Hour (Weekday Afternoon Peak Hour)
95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.