FUNCTIONAL SERVICING REPORT

659 BALM BEACH ROAD

TOWN OF MIDLAND
COUNTY OF SIMCOE

PREPARED FOR:

2798860 ONTARIO LIMTED

PREPARED BY:

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AUGUST 2025

CFCA FILE NO. 2774-7263

CROZIER

Revision Number	Date	Comments
Rev.1	August 6, 2025	Issued for First Submission OPA

TABLE OF CONTENTS

LIST OF APPENDICES

LIST OF FIGURES

1.0 Introduction

CF Crozier & Associates Inc. (Crozier) has been retained by 2798860 Ontario Limited (Developer) to prepare a Functional Servicing Report to support the Official Plan Amendment (OPA) for lands located at 659 Balm Beach Road in the Town of Midland (Town), within Simcoe County (County). The development will herein be referred to as the Subject Lands. Refer to **Figure 1** for the Site Location Plan.

The Subject Lands are approximately 20.7 ha (51.1 ac) in size and is legally described as Lot 105 Concession 1 West of Penetanguishene Road, in the Town of Midland. The proposed development is comprised of mixed-use high density (~320 units) and medium density residential (~575 units), in addition to park and stormwater management blocks. A 20m ROW is proposed with a single entrance through Balm Beach Road, with a potential second future access through Town development lands to the northeast of the site. There is also potential future access through lands to the west. Refer to **Figure 2** for the concept plan prepared by Innovative Planning Solutions Inc. (June 26, 2025).

The Owners of the Subject Lands have assembled a multi-disciplinary team, whose consultants have prepared studies/plans to support the planning application. This report should be read in conjunction with the following reports:

- Stormwater Management Report (C.F. Crozier & Associates, August 2025)
- Traffic Impact Study (JD Northcote Engineering Inc., July 2025)
- Environmental Impact Study (Cambium Inc, July 2025)

2.0 Background & Site Description

The Subject Lands cover an area of approximately 20.7 ha and currently consist of an existing building and parking area, with forests covering the majority of the site. The Subject Lands are designated 'Mixed Use Corridor' for area fronting Balm Beach Road, and 'Natural Heritage' for all other areas per the Town of Midland Official Plan Schedule C. The Subject Lands are bound by Balm Beach Road to the north and Highway 93 to the east. Adjacent to the property to the south and west are forested lands. The Subject Lands are characterized by steep slopes near the south and east property lines, where the average grade change is approximately 30%. Within the Subject Lands, the average slope is about 2% to 8%.

The Subject Lands are located within the jurisdiction of the Severn Sound Environmental Association (SSEA) and is located within the Midland Area Subwatershed (Severn Sound Watershed and Subwatershed Boundaries Figure 2-2, August 2010). Based on the Source Water Protection GIS mapping, a small portion near the southern boundary is within Wellhead Protection Area Zone D.

As per the Soil Survey GeoHub GIS, the general soil types found on the Subject Property are classified as Vasey Sandy Loam (hydrologic soil group B) to the west and Tioga Loamy Sand (hydrologic soil group AB) to the east.

3.0 Road Standard

Access to the Subject Lands will be provided by one (1) connection to Balm Beach Road and a potential second connection by a future access road through town owned lands to the east. Another potential road connection extends towards the west to adjacent lands subject to a proposed MZO request.

A 20.0 m turnaround has been provided at the eastern limit of Block E until this future connection is realized. The internal roadways will be constructed to Town of Midland standards for 20m R.O.W. Local Urban Residential Roads and will provide access to emergency vehicles. All roads will be urban cross sections complete with curb and gutter and sidewalks contained within the public right of way. A private condominium laneway will service Block C, and potentially service the mixed-use commercial developments in Blocks A and B.

The Traffic Impact Study prepared by JD Engineering (July 2025) for the Subject Lands identifies future operating conditions of the boundary road network surrounding the development. This is included in **Appendix A.**

4.0 Site Grading

The site grading will be governed by the existing elevations of the site boundary and overall drainage system for the proposed development. Based on the topographic survey, there are significant grade changes across the site, including multiple high points and low points which impacts the natural drainage patterns in the site. Given the existing noted grade changes across the site, substantial amounts of earthworks are anticipated to ensure maximum road gradients are not surpassed and to provide adequate stormwater conveyance routes throughout the site. The earthworks operations will result in an overall cut scenario for the development with excess soil anticipated to be hauled off-site. The internal roads will possess a longitudinal gradient as an overland flow route to the SWM facility located in the southeast part of the Subject Lands. The road network will have slopes at or greater than 0.5%, with a maximum road slope of 7.0%. The proposed road grading considers the future connection to the Town Owned lands to the north which identifies a ROW for potential future access to the site. Grading will be subject to refinement upon completion of a groundwater monitoring program as part of the detailed design process. Refer to **Figure 4** for the Preliminary Grading Plan.

5.0 Proposed Servicing Strategy

The following subsections provide a preliminary overview of the functional sanitary and water servicing strategies for the Subject Lands. Several documents/plans were reviewed during this engineering assessment which include:

- Town of Midland Water Servicing Master Plan Update Report (AECOM, August 2021)
- Town of Midland Wastewater Master Plan (J.L. Richards, June 2021)
- Town of Midland Wastewater Services Annual Report 2024
- Town of Midland Water Services Annual Summary Report 2024
- As-recorded drawings Phase 1 Plan and Profile Balm Beach Road STA 1+090 to STA 1+365 (WSP, June 2023)
- As-built 710 Balm Beach Road, 1277 and 1337 Sundowner Road (WSP, May 2023)

5.1 Sanitary Sewage System

5.1.1 Existing Sanitary Sewage System

Per the as-recorded Balm Beach Road drawings prepared by WSP, there is an existing 250mm dia. sanitary sewer installed at Sundowner Road, and a 375mm dia. sanitary sewer installed along Balm Beach Road. 150mm dia. sanitary service laterals extend from the 375mm dia. sewer to the Subject Lands. The nearest manhole to the Subject Property is Sanitary MH#52, located at the intersection of Sundowner Road and Balm Beach Road. The sanitary sewer connects to the Yonge Street trunk sewer and is conveyed to the Midland Wastewater Treatment Centre (WWTC).

As noted in the Wastewater Master Plan, the Yonge Street trunk sewer will be upsized from a 750mm dia. pipe to an 825mm dia. pipe to accommodate flows due to anticipated population growth. We have assumed that the trunk sewer has been sized to accommodate the future flows from the Subject Lands.

The Town of Midland is serviced by the Midland WWTC. The WWTC is located in the north-east end of Midland, and discharges to Midland Bay. According to the 2024 Wastewater Services Annual Report, the average daily flow for the WWTC was 6,565 m^3/day and the design capacity was 15,665 m^3/day. The Wastewater Master Plan completed a capacity assessment that determined the WWTC would be operating at 78% of its rated average day capacity by 2041, based on anticipated growth projections for the Town. About 20.6 ha is allocated for the WWTC as part of Balm Beach Road Phase 1 (2021-2041) commercial growth, and about 36.1 ha is allocated for Balm Beach Road Phase 2 (beyond 2041). It should be noted that a significant portion of the Subject Lands' developable area (13.5ha) is not considered part of the commercial growth area for 2021-2041, or beyond 2041. The proposed development is also largely residential, while the Wastewater Master Plan described the Subject Lands to be solely for commercial development. The OPA prepared by IPS aims to support the re-zoning of the Subject Lands as residential and its inclusion in the growth areas identified in the Wastewater Master Plan.

5.1.2 Proposed Sanitary Sewage System

Two sanitary pumping stations are proposed for the Subject Lands. Given the elevation and grading constraints, Pumping Station A is proposed at adjacent to the SWM block. Sanitary sewers for blocks A, B, D, E, and F will drain by gravity to Pumping Station A and will be pumped via forcemain to a proposed sanitary manhole located at the Site's road connection to Balm Beach Road. Pumping Station B will service Block C. This pumping station will pump sanitary flows from the Block C development up to the Block D gravity sewer, where it will drain to Pumping Station A. A new sanitary sewer will be required from the proposed sanitary manhole to drain site sanitary sewage by gravity to the existing 375mm dia. sanitary sewer located on Balm Beach Road. The proposed sanitary connection for the Site will be existing sanitary MH#52. Sanitary sewer, forcemain, and pumping station design will be completed at the detailed design stage. Please refer to **Figure 3** for the Preliminary Servicing Plan.

Preliminary sanitary flows for the site were estimated using the Ministry of Environment, Conservation and Parks (MECP) criteria and Town of Midland Engineering Standards:

- Average Residential Flow Rate – 450 L/cap/day
- Infiltration – 0.23 L/s/ha
- Residential Peaking Factor – 3.60 (Harmon)
- Commercial Sewage Flows – 2.5 L/day per m^2 of floor area
- Population Density
    - 2.5 persons/unit (Semi-Detached Residential)
    - 2.0 persons/unit (High Density Residential)

Based on the received Concept Plan from IPS, the approximate number of persons for this development is about 2,078 persons. it is estimated that peak sanitary flow from the site will be 43.30 L/s. Refer to **Appendix B** for the sanitary demand calculations. Refer to **Figure 3** for the Preliminary General Servicing Plan.

5.2 Potable Water Supply

5.2.1 Existing External Water Infrastructure

Per the as-recorded drawings prepared by WSP, there is an existing 300mm dia. watermain located along Balm Beach Road and a 150mm dia. watermain along Sundowner Road. The Sundowner Road Booster Pump Station is located north of the Subject Lands.

The Subject Lands are located within the West Pressure Zone as described in the Midland Water Servicing Master Plan Update (June, 2021). There are two water storage facilities for the West Pressure Zone: the Mountainview Tank (4.43 million litres) and the Montreal Standpipe (2.88 million litres). The estimated required storage requirement for 2041 is 4.00 million litres. Therefore, water capacity should exist for the proposed development.

In terms of pump capacity, the West Pressure zone has two pumps: Well 9 (1.96 million litres per day firm pump capacity) and Dominion Pump Station (3.00 million litres per day firm pump capacity). Note that the Dominion Pump Station transfers water from the East Pressure Zone. There is an anticipated groundwater supply deficiency of 1.40 million litres per day by 2041. The estimated required firm pumping capacity for 2041 is 4.62 million litres per day, which shows that the proposed development can potentially be accommodated by the existing pump capacity. However, to improve overall groundwater supply security, additional well supply for the west pressure zone is required. It should be confirmed with the Town if the 2041 build out scenario considers the Subject Lands as part of their evaluation of future available capacity for potable water servicing.

5.2.2 Proposed Water Servicing Strategy

Potable water for the development will be supplied by the Midland municipal water distribution system. The internal watermain layout will follow the alignment of the development's rights-of-way (ROW) and will service the development.

The watermain will connect to the existing 300mm dia. watermain on Balm Beach Road. A second connection through the town-owned lands via the potential future access may be considered in the future, in coordination with the Town. It is proposed that Block C will be serviced via a new watermain constructed along Highway 93 and connecting to the existing watermain located at the intersection of Balm Beach Road and Highway 93. Preliminary water demands for the Subject Development have been estimated in conjunction with Township Standards that concur with Table 3-1 of the MECP Design Guidelines for Drinking Water Systems.

Fire hydrants will be spaced as required to provide the necessary fire protection and to meet municipal standards. The watermain will be public and will be owned and operated by the Town, including through the private condominium laneways.

Domestic water demands for the site were estimated using the following criteria as specified in the Town of Midland Engineering Development Design Standards) and MECP Standards:

- Average Flow Rate – 450 L/cap/day
- Peak Factors:
    - Peak Day – 2.0
    - Peak Hour – 4.5
- Commercial Design Flows – 2.5 L/day per m^2 of floor area
- Population Density:
    - Semi-Detached – 2.5 persons/unit
    - High Density/Mixed Use Residential – 2.0 persons/unit

Based on these values it is estimated that water demands for the Subject Lands are as follows:

- Average Day – 10.82 L/s
- Max Day – 22.01 L/s
- Peak Hour – 49.52 L/s

Fire flows for the proposed development will be provided at the detailed design stage. Refer to **Appendix B** for potable water servicing demand calculations and **Figure 3** for the Preliminary General Servicing Plan. Internal watermain sizes will be confirmed through updates to the Town Water Model.

6.0 Utilities

The development will be serviced with natural gas, telephone, cable TV, and hydro. All such utilities are available in the area of development. Coordination for extension of and connection to existing services will be undertaken as development approvals advance. Utilities are proposed to follow the alignment of the internal road network, with individual service connections to each lot.

7.0 Conclusions and Recommendations

Based on the foregoing, we conclude that the proposed 659 Balm Beach Road Development can be adequately serviced.

- Access to the Subject Lands will be provided by one entrance along Balm Beach Road at the intersection with Sundowner Rad, with a potential future second entrance further east. The internal roadways will meet Town Standards and provide access for emergency vehicles.

- Blocks A, B, D, E and F will be serviced by a gravity sanitary sewer discharging to the proposed pumping station located in the southeast portion of the Subject Lands (Pumping Station A). Block C will have a sanitary pumping station (Pumping Station B) that lifts sewage to the sanitary sewer network in Block D, before draining by gravity to Pumping Station A. A forcemain will discharge the sewage from Pump Station A to a proposed manhole near the site entrance, before draining by gravity to the existing sanitary manhole on Balm Beach Road. Wastewater will then follow the existing sewer network, ultimately discharging to the Midland Wastewater Treatment Centre.

- An internal watermain system will be provided through the Subject Lands with one connection to the existing watermain on Balm Beach Road. A separate watermain is proposed for Block C through Highway 93.

- The development will be fully serviced by hydro, natural gas, cable, and telecommunications.

Respectfully submitted,

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APPENDIX A

Supplemental Information

659 Balm Beach Road East
Town of Midland

Traffic Impact Study for
2798860 Ontario Limited

Type of Document:
Final Report

Project Number:
JDE – 23042

Date Submitted:
July 18th, 2025

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Legal Notification

This report was prepared by **JD Northcote Engineering Inc.** for the account of **2798860 Ontario Limited.**

Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. **JD Northcote Engineering Inc.** accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this project.

Executive Summary

This report summarizes the traffic impact study for the proposed mixed-use development on a site municipally known as 659 Balm Beach Road East, located on the southwest corner of the County Road 93 / Balm Beach Road East intersection, Town of Midland [Town], County of Simcoe [County]. The report assesses the impact of traffic related to the development on the adjacent roadway and provides recommendations to accommodate this traffic in a safe and efficient manner.

The proposed development will include the following:

Block A-B
- 190 high-density units; and
- 3,800 m^2 (40,903 ft^2) of ground floor commercial area.

Block C
- 130 high-density units; and
- 2,600 m^2 (27,986 ft^2) of ground floor commercial area.

Block D-F
- 575 medium-density units.

Access to Blocks A-B and Blocks D-F will be provided via full-movement access onto County Road 25, opposite Sundowner Road (West) [West Access].

Access to Block C will be provided via full-movement access onto County Road 93 [East Access].

The scope of this analysis includes a review of the following intersections:

- County Road 93 / County Road 25 & Yonge Street;
- County Road 25 / Wilson Road & Marshall Road;
- County Road 25 / West Access & Sundowner Road; and
- County Road 93 / East Access.

Conclusions

1. The proposed development is estimated to generate 445 AM and 540 PM new peak hour vehicle trips in the study area.
2. Detailed traffic and pedestrian counts were conducted at the study intersections in November 2024.
3. An intersection operational analysis was completed at the study area intersections, using the existing (2025) and background (2028, 2033 and 2038) traffic volumes, without the proposed development traffic. This enabled a review of existing and future traffic deficiencies that would be present without the influence of the proposed development. The following improvements are recommended:

   County Road 93 / County Road 25 & Yonge Street

   Background (2038)

   - Traffic signal optimization and increased cycle length (100s to 110s)
4. An estimate of the amount of traffic that would be generated by the Subject Site was prepared and assigned to the study area roads and intersections.

5. An intersection operation analysis was completed under total (2028, 2033 and 2038) traffic volumes with the proposed development operational at the study area intersections. The following improvements are recommended:

   West Access & Sundowner Road / County Road 25

   First Phase of Construction

   - Provision of traffic signals with semi-actuated control (cycle length of 60 seconds);
   - The implementation of an exclusive westbound left turn lane with 30m storage and 60m taper length; and
   - The implementation of an exclusive eastbound left turn lane with 15m storage and 60m taper length.

   East Access / County Road 93

   Prior to Occupancy

   - Remedial line painting to remove the southbound merging lane through the intersection and maximize the northbound lanes approaching the intersection.
   - It is recommended that the County monitor traffic volumes on County Road 93 as the planned road widening approaches, to consider the need for traffic signals in the future.

6. The West Access will operate efficiently as the new south leg of the four-legged signalized intersection at County Road 25 / Sundowner Road. A single ingress and egress lane will provide the necessary capacity to service the proposed development.

7. The East Access will operate efficiently as a full-movement driveway, with one-way stop control for the egress movements. A single ingress and egress lane will provide the necessary capacity to service the proposed development. The optimal location will be confirmed through the detailed design process.

8. The location of the proposed site access intersections are considered appropriate with respect to minimum driveway spacing requirements.

9. The sight distance available for the proposed site access intersections are suitable for the intended use.

10. In summary the proposed development will not cause any operational issues and will not add significant delay or congestion to the local roadway network.

Table of Contents

List of Tables

List of Figures

List of Appendices

1 Introduction

1.1 Background

2798860 Ontario Limited [the Developer] is proposing a mixed-use development, on a site municipally known as 659 Balm Beach Road East, located on the southwest corner of the County Road 93 / Balm Beach Road East intersection, Town of Midland [Town], County of Simcoe [County]. The report assesses the impact of traffic related to the development on the adjacent roadway and provides recommendations to accommodate this traffic in a safe and efficient manner.

The proposed development will include the following:

Block A-B
- 190 high-density units; and
- 3,800 m^2 (40,903 ft^2) of ground floor commercial area.

Block C
- 130 high-density units; and
- 2,600 m^2 (27,986 ft^2) of ground floor commercial area.

Block D-F
- 575 medium-density units.

Access to Blocks A-B and Blocks D-F will be provided via full-movement access onto County Road 25, opposite Sundowner Road (West) [West Access].

Access to Block C will be provided via full-movement access onto County Road 93 [East Access].

The Developer has retained **JD Engineering Inc.** [JD Engineering] to prepare this traffic impact study in support of the proposed development.

1.2 Study Area

Figure 1 illustrates the location of the subject site and study area intersections, in relation to the surrounding area. The Concept Site Plan provided by Innovative Planning Solutions (IPS) Inc. is included in **Appendix A.**

The subject site is bound by County Road 25 and Town owned lands to the north, County Road 93 to the east and undeveloped lands to the south and west.

Through consultation with the Town and the County, the following intersections will be analysed as part of the study:

- County Road 93 / County Road 25 & Yonge Street;
- County Road 25 / Wilson Road & Marshall Road;
- County Road 25 / West Access & Sundowner Road; and
- County Road 93 / East Access.

Figure 1 – Proposed Site Location and Study Area

1.3 Study Scope and Objectives

The purpose of this study is to identify the potential impacts to traffic flow at the site accesses and on the surrounding roadway network. The study analysis includes the following tasks:

- Consult with the Town and County to address any traffic-related issues or concerns they have with the proposed development;
- Determine existing traffic volumes and circulation patterns;
- Estimate future traffic volumes if the proposed development was not constructed, including the impact of additional proposed developments in the area;
- Estimate the amount of traffic that would be generated by the proposed development and assign to the roadway network;
- Complete level-of-service [LOS] analysis of horizon year (without the proposed development) traffic conditions and identify operational deficiencies;
- Estimate the amount of traffic that would be generated by the proposed development and assign to the roadway network;
- Complete LOS analysis of horizon year (with the proposed development) traffic conditions and identify additional operational deficiencies;
- Identify improvement options to address operational deficiencies;
- Review the proposed configuration of the Site Access driveways; and
- Document findings and recommendations in a final report.

1.4 Horizon Year and Analysis Periods

Traffic scenarios for the existing (2025) year, buildout horizon year (2028), 5-year post buildout horizon year (2033), and 10-year post buildout horizon year (2038) were selected for analysis of traffic operations in the study area. The weekday morning [AM] and afternoon [PM] peak hours have been selected as the analysis periods for this study.

2 Information Gathering

2.1 Street and Intersection Characteristics

The study area road network is summarized in **Table 1**.

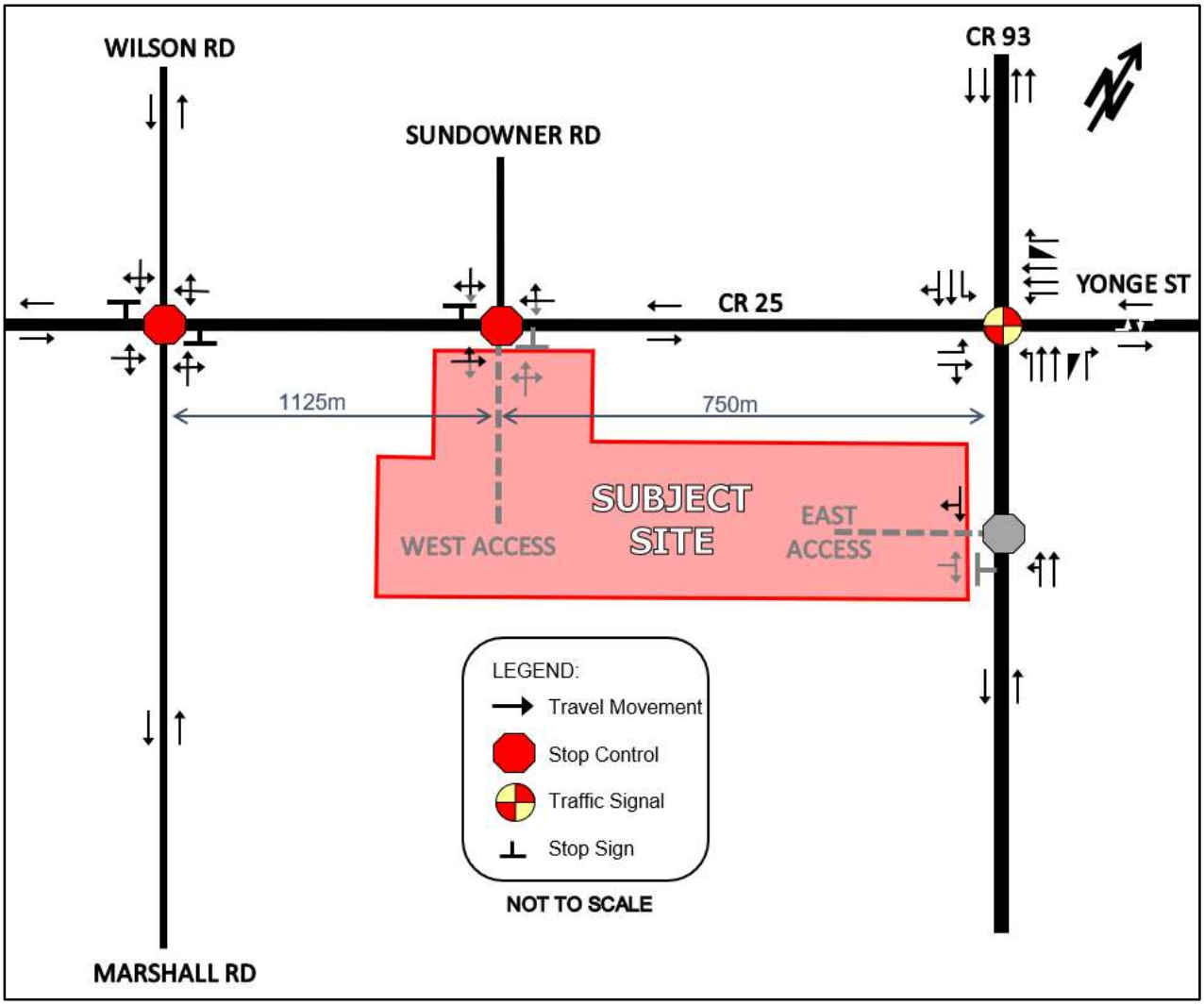
Table 1 – Study Area Road Network

Road	Classification	Cross-Section	Direction	Speed (km/h)	Sidewalk (side of road)	Jurisdiction
County Road 93	Primary Arterial	2/4-lane[1]	N-S	60	E & W[2]	County
County Road 25	Secondary	2-lane	E-W	60/80	N	County
Yonge Street	Arterial	3-lane	E-W	50	N	Town
Wilson Road	Local	2-lane	N-S	60	-	Town
Marshall Road	Local	2-lane	N-S	60	-	Town

[1]Approximately 550 metres south of County Road 25 / Yonge Street, County Road 93 transitions to a two-lane platform.
[2] County Road 93 has an urban cross-section with sidewalk on both sides of the road, north of County Road 25 / Yonge Street. To the south, County Road 93 has a rural cross-section with asphalt shoulders.

The existing intersection spacing and lane configuration within the study area is illustrated in **Figure 2**.

Figure 2 – Existing Intersection Lane Configuration within Study Area



2.2 Local Transportation Infrastructure Improvements

Based on our review of the County's Transportation Master Plan: Phase 3 (September 2023) [County TMP], the County's 2024 Capital Budget, the County's 2024 Asset Management Plan, the Town's 2025 Capital Budget, and the Town's Official Plan, the following infrastructure improvements have been identified within the study area:

County Road 93 (County Road 25 to Highway 12)

- Road widening from 2 to 4 lanes, including bicycle lanes (by 2041)

County Road 25 (west of Sundowner Road)

- Construction of multi-use trail (unknown timeline)

Yonge Street (County Road 93 to King Street)

- Reconstruction of the road, including dedicated bike lanes or multi use trail (2025 start date)

Sundowner Road

- Implement on-street bicycle route (sharrows)

There are no other planned infrastructure improvements within the study area that would impact the local traffic volumes or traffic distribution.

2.3 Transit Access

Mid-Pen Transit service provides one transit route within the subject area. The Midland bus route provides bus service to various points of interest within the Town travelling along Yonge Street (to downtown area), County Road 93 and provides connections to the Town's major destinations to the east and south along King Street.

LINX Transit provides one bus route within the subject site area. The Penetanguishene bus route provides service along county Road 93, Thompson Road and Robert Street and to major destinations in Penetanguishene.

Both bus routes are connected within a transfer zone at the Mountain Mall and Huronia Mall, east of the subject site, providing a shared service route that allows travelers to connect to LINX Transit service and to major urban hubs in the County (Georgian Bay General Hospital, Village Square Mall, Waypoint Centre Penetanguishene, etc.).

The Midland bus route operates between 07:15 – 17:45 on weekdays and 08:45 – 16:45 on Saturdays with service every 60 minutes. There is no bus service on Sundays or Holidays.

The Penetanguishene bus route operates between 06:25 – 17:25 on weekdays and 08:25 – 16:25 on Saturdays with service every 60 minutes. There is no bus service on Sundays or Holidays.

Both bus routes provide a "flag on" service where passengers are not required to be at a bus stop and can flag down the bus along its route to get on the bus.

Figure 3 illustrates the transit service within the study area.

Figure 3 – Study Area Transit Routes

2.4 Development Growth

In review of the Town's development information and through discussions with Town planning staff, the following developments have been noted for consideration with respect to impacts on the local traffic volumes / infrastructure capacity:

- 9281 County Road 93
  - Single-storey, 132m^2 (1,417 ft^2) commercial building;
- 710 Balm Beach Road
  - 3,706m^2 (39,996 ft^2) Office;
  - 889m^2 (9,566 ft^2) Medical Office;

- 2,726m^2 (29,337 ft^2) Retail;
- 484m^2 (5,208 ft^2) Daycare; and
- 68 Residential Units.

Figure 4 illustrates the location of the above developments in relation to the subject site.

Figure 4 – Adjacent Development Location

At the time of this study, the 9281 County Road 93 development is currently built-out and operational. Consequently, the traffic volumes generated by the development have captured in the conducted traffic counts. No additional consideration is required.

Traffic generated by the 710 Balm Beach Road development has been estimated based on the *Proposed Mixed-Use Development at 710 Balm Beach Road, Town of Midland – Traffic Impact Study* (WSP Inc., October, 2023) [710 Balm Beach TIS] (Excerpts provided in **Appendix B**).

Similar to the 9281 County Road 93 development, the 710 Balm Beach Road development is currently built-out and partially operational. At the time of this study, the development is estimated to be operating

at 50% occupancy. Consequently, the traffic generation estimated in the 710 Balm Beach TIS has been applied at a 50% reduction. It has been assumed that the remaining occupancy will occur by the 2028 horizon year.

The assignment of the adjacent development traffic volumes through the study area road network is illustrated in **Figure 5**.

2.5 Background Traffic Growth

2.5.1 Population Growth and Projections

The County TMP projected a population growth from 314,580 in 2016 to 555,020 in 2051, translating to an average annual increase of 1.6%. Over the same period the Town's population is projected to grow from 17,290 in 2016 to 24,290 in 2051, translating to an average annual increase of 1.0%.

2.5.2 Traffic Volume Growth

Historic traffic volumes were obtained from the County for the segments of County Road 93 between Highway 12 to County Road 25 and County Road 25 to Hugel Avenue. The Annual Average Daily Traffic (AADT) volumes on County Road 93 for the period of 2015 to 2021 show an annual increase of 1.6% to 1.9%.

Historic traffic volumes were obtained from the County for the segments of County Road 25 between County Road 93 and 2nd Concession Road 2. The Annual Average Daily Traffic (AADT) volumes on County Road 25 for the period of 2017 to 2022 show an annual increase of 1.6%.

2.5.3 Overall Background Growth Rate

Considering the above historical population and traffic growth and based, a background traffic growth rate of 2.0% per annum has been utilized for County Road 93, County Road 25 and Yonge Street. A growth rate of 1.0% per annum has been utilized for Wilson Road and Marshall Road. No growth has been applied to Sundowner Road.

2.6 Traffic Counts

Detailed turning movement traffic and pedestrian counts were commissioned and obtained by JD Engineering at the study intersections. **Table 2** summarizes the traffic count data collection information.

Table 2 – Traffic Count Data

Intersection (N-S Street / E-W Street)	Count Date	AM Peak Hour	PM Peak Hour	Source
County Road 93 / County Road 25 & Yonge Street	Tuesday, November 5th, 2024	07:45 – 08:45	16:00 – 17:00	JD Eng.*
County Road 25 / Wilson Road & Marshall Road		08:00 – 09:00	16:00 – 17:00	JD Eng.*
County Road 25 / West Access & Sundowner Road		08:00 – 09:00	16:00 – 17:00	JD Eng.*

*Counts were completed by Accu -Traffic Inc. on behalf of JD Engineering.

Detailed traffic count data can be found in **Appendix C**.

2.7 Existing Traffic Volumes

The 2025 existing AM and PM peak hour traffic volumes in the study area are illustrated in **Figure 6**, established based on the conducted traffic counts, adjusted to reflect the annual background growth rate noted in Section 2.5.

2.8 Horizon Year Traffic Volumes

The background (2028, 2033 and 2038) horizon year traffic volumes are illustrated in **Figure 7** through **Figure 9**. The background volumes are based on the conducted traffic counts noted in section 2.6, adjusted to reflect the annual background growth rate noted in Section 2.5 and the traffic volumes generated by the noted adjacent developments as noted in Section 2.4.

3 Intersection Operation without Proposed Development

3.1 Intersection Capacity Analysis Criteria

Intersection performance was measured using the traffic analysis software, Synchro 12, a deterministic model that employs Highway Capacity Manual and Intersection Capacity Utilization methodologies for analysing intersection operations. These procedures are accepted by provincial and municipal agencies throughout North America.

Synchro 12 enables the study area to be graphically defined in terms of streets and intersections, along with their geometric and traffic control characteristics. The user is able to evaluate both signalized and unsignalized intersections in relation to each other, thus not only providing level of service for the individual intersections, but also enabling an assessment of the impact the various intersections in a network have on each other in terms of spacing, traffic congestion, delay, and queuing.

The intersection operations were also evaluated in terms of the LOS. LOS is a common measure of the quality of performance at an intersection and is defined in terms of vehicular delay. This delay includes deceleration delay, queue move-up time, stopped delay, and acceleration delay. LOS is expressed on a scale of A through F, where LOS A represents very little delay (i.e. less than 10 seconds per vehicle) and LOS F represents very high delay (i.e. greater than 50 seconds per vehicle for a stop sign controlled intersection and greater than 80 seconds per vehicle for a signalized intersection).

The LOS criteria for signalized and stop sign-controlled intersections are shown in **Table 3**. A description of traffic performance characteristics is included for each LOS.

Table 3 – Level of Service Criteria for Intersections

LOS	LOS Description	Control Delay (seconds per vehicle)	
		Signalized Intersections	**Stop Controlled Intersections**
A	Very low delay; most vehicles do not stop (**Excellent**)	less than 10.0	less than 10.0
B	Higher delay; more vehicles stop (**Very Good**)	between 10.0 and 20.0	between 10.0 and 15.0
C	Higher level of congestion; number of vehicles stopping is significant, although many still pass through intersection without stopping **(Good**)	between 20.0 and 35.0	between 15.0 and 25.0
D	Congestion becomes noticeable; vehicles must sometimes wait through more than one red light; many vehicles stop (**Satisfactory**)	between 35.0 and 55.0	between 25.0 and 35.0
E	Vehicles must often wait through more than one red light; considered by many agencies to be the limit of **acceptable** delay	between 55.0 and 80.0	between 35.0 and 50.0
F	This level is considered to be unacceptable to most drivers; occurs when arrival flow rates exceed the capacity of the intersection (**Unacceptable**)	greater than 80.0	greater than 50.0

3.2 Existing (2025) Intersection Operation

The results of the LOS analysis under existing (2025) traffic volumes during the AM and PM peak hours can be found below in **Table 4**. Existing intersection geometry and traffic control have been utilized for this scenario. Detailed output of the Synchro analysis can be found in **Appendix D**.

Table 4 - Existing (2025) LOS

Location (N-S Street / E-W Street)	Weekday AM Peak Hour					Weekday PM Peak Hour				
	V/C	Delay (s)	LOS	95% Queue (m)		V/C	Delay (s)	LOS	95% Queue (m)	
				Storage	Model				Storage	Model
County Rd 93 / County Rd 25 & Yonge St (signalized)	0.41	18.3	B	-	-	0.59	19.9	B	-	-
EBL	0.43	22.5	C	70	26	0.46	22.1	C	70	28
EBTR	0.39	22.7	C	-	-	0.40	22.2	C	-	-
WBL	0.53	32.5	C	120	23	0.55	32.1	C	120	25
WBT	0.44	30.3	C	-	-	0.60	32.5	C	-	-
WBR	0.08	27.7	C	110	9	0.16	27.3	C	110	9
NBL	0.15	11.4	B	200	10	0.20	12.7	B	200	13
NBT	0.27	15.1	B	-	-	0.38	17.4	B	-	-
NBR	0.06	13.5	B	125	4	0.07	14.8	B	125	6
SBL	0.25	10.7	B	80	14	0.57	14.8	B	80	36
SBT	0.35	15.2	B	-	-	0.35	16.4	B	-	-
SBR	0.08	13.1	B	80	4	0.11	14.5	B	80	13
Wilson Rd & Marshall Rd / County Rd 25 (unsignalized)	-	5.1	A	-	-	-	5.2	A	-	-
EB	0.04	1.3	A	-	-	0.03	1.2	A	-	-
WB	0.00	0.3	A	-	-	0.01	0.2	A	-	-
NB	0.16	16.0	C	-	-	0.28	19.0	C	-	-
SB	0.31	18.0	C	-	-	0.33	19.2	C	-	-
West Access & Sundowner Rd / County Rd 25 (unsignalized)	-	0.8		-	-	-	1.2	A	-	-
EB	0.01	0.6	A	-	-	0.01	0.04	A	-	-
WB	0.00	0.0	A	-	-	0.00	0.0	-	-	-
NB	0.00	0.0	A	-	-	0.02	16.0	C	-	-
SB	0.04	11.9	B	-	-	0.09	11.2	B	-	-

The results of the LOS analysis indicate that the intersection movements are operating within the typical design limits noted in Section 3.1.

The anticipated 95th percentile queues for the turning movements at the County Road 93 / County Road 25 & Yonge Street intersection can be accommodated by the existing auxiliary lane storage lengths.

An analysis was completed for left turn movements at the unsignalized intersections, based on the criteria outlined in Appendix 9A of the Ontario Ministry of Transportation Design Supplement for TAC Geometric Design Guide for Canadian Roads June 2017 [MTO DS]. According to the above-noted criteria, left turn lanes are not warranted at the unsignalized intersections (results provided in **Appendix H**).

Based on the Ontario Traffic Manual Book 12 *Signal Justification*, traffic signals are not warranted at any of the unsignalized intersections (results are provided in **Appendix I**).

No infrastructure improvements are recommended within the study area.

3.3 Background (2028) Intersection Operation

The results of the LOS analysis under background (2028) traffic volumes during the AM and PM peak hours can be found below in **Table** 5 **5**. Existing intersection geometry and traffic control have been utilized for this scenario. Detailed output of the Synchro analysis can be found in **Appendix E**.

Table 5 - Background (2028) LOS

Location (N-S Street / E-W Street)	Weekday AM Peak Hour					Weekday PM Peak Hour				
	V/C	Delay (s)	LOS	95% Queue (m)		V/C	Delay (s)	LOS	95% Queue (m)	
				Storage	Model				Storage	Model
County Rd 93 / County Rd 25 & Yonge St (signalized)	0.47	18.8	B	-	-	0.69	21.1	C	-	-
EBL	0.55	24.3	C	70	32	0.63	26.7	C	70	35
EBTR	0.42	22.8	C	-	-	0.47	22.6	C	-	-
WBL	0.55	32.9	C	120	24	0.55	32.0	C	120	26
WBT	0.49	30.6	C	-	-	0.63	33.0	C	-	-
WBR	0.09	27.5	C	110	10	0.21	27.3	C	110	11
NBL	0.19	11.9	B	200	12	0.25	13.5	B	200	15
NBT	0.29	15.6	B	-	-	0.41	18.5	B	-	-
NBR	0.07	13.9	B	125	5	0.08	15.4	B	125	8
SBL	0.27	11.0	B	80	15	0.64	18.0	B	80	51
SBT	0.38	15.8	B	-	-	0.38	17.4	B	-	-
SBR	0.12	13.7	B	80	5	0.14	15.3	B	80	14
Wilson Rd & Marshall Rd / County Rd 25 (unsignalized)	-	5.6	A	-	-	-	5.8	A	-	-
EB	0.04	1.3	A	-	-	0.03	1.2	A	-	-
WB	0.00	0.2	A	-	-	0.01	0.3	A	-	-
NB	0.19	17.0	C	-	-	0.32	21.0	C	-	-
SB	0.36	19.9	C	-	-	0.39	22.2	C	-	-
West Access & Sundowner Rd / County Rd 25 (unsignalized)	-	1.4		-	-	-	2.1	A	-	-
EB	0.02	0.8	A	-	-	0.01	0.5	A	-	-
WB	0.00	0.0	A	-	-	0.00	0.0	-	-	-
NB	0.00	0.0	A	-	-	0.02	17.5	C	-	-
SB	0.11	15.0	C	-	-	0.21	14.7	B	-	-

The results of the LOS analysis indicate that the intersection movements are operating within the typical design limits noted in Section 3.1.

The anticipated 95th percentile queues for the turning movements at the County Road 93 / County Road 25 & Yonge Street intersection can be accommodated by the existing auxiliary lane storage lengths

An analysis was completed for left turn movements at the unsignalized intersections, based on the criteria outlined in Appendix 9A of the MTO DS. According to the above-noted criteria, left turn lanes are not warranted at the unsignalized intersections (results provided in **Appendix H**).

Based on the Ontario Traffic Manual Book 12 *Signal Justification*, traffic signals are not warranted at any of the unsignalized intersections (results are provided in **Appendix I**).

No infrastructure improvements are recommended within the study area.

3.4 Background (2033) Intersection Operation

The results of the LOS analysis under background (2033) traffic volumes during the AM and PM peak hours can be found below in **Table 6**. Existing intersection geometry and traffic control have been utilized for this scenario. Detailed output of the Synchro analysis can be found in **Appendix E**.

Table 6 - Background (2033) LOS

Location (N-S Street / E-W Street)	Weekday AM Peak Hour					Weekday PM Peak Hour				
	V/C	Delay (s)	LOS	95% Queue (m)		V/C	Delay (s)	LOS	95% Queue (m)	
				Storage	Model				Storage	Model
County Rd 93 / County Rd 25 & Yonge St (signalized)	0.51	19.4	B	-	-	0.80	22.8	C	-	-
EBL	0.58	25.1	C	70	34	0.69	30.3	C	70	37
EBTR	0.45	22.9	C	-	-	0.50	22.8	C	-	-
WBL	0.58	33.8	C	120	26	0.59	33.3	C	120	28
WBT	0.51	30.6	C	-	-	0.66	33.5	C	-	-
WBR	0.10	27.3	C	110	11	0.35	28.1	C	110	18
NBL	0.23	12.4	B	200	13	0.29	14.2	B	200	17
NBT	0.32	16.3	B	-	-	0.46	19.6	B	-	-
NBR	0.07	14.3	B	125	6	0.09	16.0	B	125	10
SBL	0.31	11.6	B	80	17	0.78	26.7	C	80	62
SBT	0.42	16.7	B	-	-	0.43	18.4	B	-	-
SBR	0.13	14.1	B	80	5	0.15	15.9	B	80	15
Wilson Rd & Marshall Rd / County Rd 25 (unsignalized)	-	6.2	A	-	-	-	6.7	A	-	-
EB	0.04	1.3	A	-	-	0.03	1.1	A	-	-
WB	0.00	0.2	A	-	-	0.01	0.3	A	-	-
NB	0.23	18.8	C	-	-	0.37	23.9	C	-	-
SB	0.42	23.0	C	-	-	0.47	26.9	D	-	-
West Access & Sundowner Rd / County Rd 25 (unsignalized)	-	1.4		-	-	-	2.1	A	-	-
EB	0.02	0.7	A	-	-	0.01	0.5	A	-	-
WB	0.00	0.0	A	-	-	0.00	0.0	-	-	-
NB	0.00	0.0	A	-	-	0.02	18.9	C	-	-
SB	0.12	16.0	C	-	-	0.23	15.8	C	-	-

The results of the LOS analysis indicate that the intersection movements are operating within the typical design limits noted in Section 3.1.

The anticipated 95th percentile queues for the turning movements at the County Road 93 / County Road 25 & Yonge Street intersection can be accommodated by the existing auxiliary lane storage lengths

An analysis was completed for left turn movements at the unsignalized intersections, based on the criteria outlined in Appendix 9A of the MTO DS. According to the above-noted criteria, an eastbound left turn lane is marginally warranted at the County Road 25 / Wilson Road & Marshall Road intersection (results provided in **Appendix H**). The trigger for the left turn lane improvement occurs as a result of the traffic growth on the County Road 25 corridor, as the advancing and opposing volumes at the intersection begin to exceed the nomograph threshold. In this case, it is recommended that the Town and County continue to monitor the traffic growth at the intersection to confirm the need and timing for the left turn lane improvement. For the purpose if this study, the current configuration has been carried through the future year analyses.

Based on the Ontario Traffic Manual Book 12 *Signal Justification*, traffic signals are not warranted at any of the unsignalized intersections (results are provided in **Appendix I**).

No infrastructure improvements are recommended within the study area.

3.5 Background (2038) Intersection Operation

The results of the LOS analysis under background (2038) traffic volumes during the AM and PM peak hours can be found below in **Table 7**. Existing intersection geometry and traffic control have been utilized for this scenario. Minor signal timing improvement (cycle length increase from 100s to 110s) and optimization has been applied to the PM peak hour, to ensure acceptable operations. Detailed output of the Synchro analysis can be found in **Appendix E**.

Table 7 - Background (2038) LOS

Location (N-S Street / E-W Street)	Weekday AM Peak Hour					Weekday PM Peak Hour				
	V/C	Delay (s)	LOS	95% Queue (m)		V/C	Delay (s)	LOS	95% Queue (m)	
				Storage	Model				Storage	Model
County Rd 93 / County Rd 25 & Yonge St (signalized)	0.56	20.1	C	-	-	0.82	27.8	C	-	-
EBL	0.61	26.3	C	70	37	0.77	39.2	D	70	46
EBTR	0.48	23.1	C	-	-	0.53	26.2	C	-	-
WBL	0.61	35.3	D	120	29	0.65	39.7	D	120	35
WBT	0.52	30.5	C	-	-	0.69	38.5	D	-	-
WBR	0.11	27.0	C	110	11	0.20	30.4	C	110	9
NBL	0.28	13.1	B	200	15	0.31	17.5	B	200	21
NBT	0.36	17.2	B	-	-	0.61	29.0	C	-	-
NBR	0.08	14.8	B	125	8	0.10	22.4	C	125	13
SBL	0.37	12.3	B	80	19	0.75	22.1	C	80	75
SBT	0.47	17.9	B	-	-	0.50	23.7	C	-	-
SBR	0.14	14.7	B	80	5	0.17	19.9	B	80	17
Wilson Rd & Marshall Rd / County Rd 25 (unsignalized)	-	7.1	A	-	-	-	8.2	A	-	-
EB	0.04	1.3	A	-	-	0.04	1.2	A	-	-
WB	0.01	0.2	A	-	-	0.01	0.3	A	-	-
NB	0.27	2.1	C	-	-	0.44	28.7	D	-	-
SB	0.50	27.7	D	-	-	0.57	34.8	D	-	-
West Access & Sundowner Rd / County Rd 25 (unsignalized)	-	1.4		-	-	-	2.1	A	-	-
EB	0.02	0.7	A	-	-	0.01	0.5	A	-	-
WB	0.00	0.0	A	-	-	0.00	0.0	-	-	-
NB	0.00	0.0	A	-	-	0.03	20.7	C	-	-
SB	0.13	17.2	C	-	-	0.25	17.2	C	-	-

The results of the LOS analysis indicate that the intersection movements are operating within the typical design limits noted in Section 3.1.

The anticipated 95th percentile queues for the turning movements at the County Road 93 / County Road 25 & Yonge Street intersection can be accommodated by the existing auxiliary lane storage lengths

An analysis was completed for left turn movements at the unsignalized intersections, based on the criteria outlined in Appendix 9A of the MTO DS. According to the above-noted criteria, an eastbound

left turn lane is marginally warranted at the County Road 25 / Wilson Road & Marshall Road intersection (results provided in **Appendix H**). The trigger for the left turn lane improvement occurs as a result of the traffic growth on the County Road 25 corridor, as the advancing and opposing volumes at the intersection begin to exceed the nomograph threshold. In this case, it is recommended that the Town and County continue to monitor the traffic growth at the intersection to confirm the need and timing for the left turn lane improvement. For the purpose if this study, the current configuration has been carried through the future year analyses.

Based on the Ontario Traffic Manual Book 12 *Signal Justification*, traffic signals are not warranted at any of the unsignalized intersections (results are provided in **Appendix I**).

No infrastructure improvements are recommended within the study area.

4 Proposed Development Traffic Generation and Assignment

4.1 Traffic Generation

The traffic generation for the proposed development has been based on data provided in the Institute of Transportation Engineers [ITE] *Trip Generation Manual* (11th Edition) [ITE Trip Generation Manual]. The following ITE land uses have been applied to estimate the traffic from the proposed development:

- ITE land use 220 (Multi-Family Housing Low-rise) – General Urban / Suburban Setting;
- ITE land use 221 (Multi-Family Housing Mid-rise) – General Urban / Suburban Setting; and
- ITE land use 822 (Strip Retail Plaza (<40k)) – General Urban / Suburban Setting.

At the time of this study, the proposed plan of development provides an overall residential density target for each development block. It is our understanding that the commercial/retail areas in Blocks A-B and Block C will be encompassed on the ground floor of each of the high-density residential buildings. Based on our review of similar mixed-use developments, ground floor commercial/retail area GFA is typically within the range of 10% to 15% of the total lot area. In order to provide a conservative approach, the total commercial/retail GFA of Blocks A-B and Block C have been estimated at 20% of the total lot areas.

The utilized traffic rates and estimated trip generation for the proposed development is illustrated below in **Table 8**.

Table 8 – Trip Generation Rates & Equations

Land Use	Trip Basis	AM Peak Hour			PM Peak Hour		
		IN	OUT	TOTAL	IN	OUT	TOTAL
Multi-Family Housing – Low Rise ITE Land Use: 220	equation (units)	T = 0.31(X) + 22.85			T = 0.43(X) + 20.55		
	distribution	24%	76%	100%	63%	37%	100%
Multi-Family Housing – Mid Rise ITE Land Use: 221	equation (units)	T = 0.44(X) - 11.61			T = 0.39(X) + 0.34		
	distribution	23%	77%	100%	61%	39%	100%
Strip Plaza (<40K) ITE Land Use: 822	equation (1,000 ft² GFA)	Ln(T) = 0.66 Ln(X) + 1.84			Ln(T) = 0.71 Ln(X) + 2.72		
	distribution	60%	40%	100%	50%	50%	100%

Table 9 – Estimated Trip Generation of Proposed Development

Land Use	Size	AM Peak Hour			PM Peak Hour		
		IN	OUT	TOTAL	IN	OUT	TOTAL
Block A-B							
Multifamily Housing (Mid-Rise) ITE Land Use: 221	190 units	17	55	72	45	29	74
Strip Plaza (<40K) ITE Land Use: 822	40,903 ft^2	44	29	73	106	106	212
Total Trip Generation		**61**	**84**	**145**	**151**	**135**	**286**
*Internal Recapture**		*-1*	*-1*	*-2*	*-32*	*-32*	*-64*
Net Vehicle Trip Generation		**60**	**83**	**143**	**119**	**103**	**222**
*Pass-by Trips***		-	-	-	*-36*	*-36*	*-70*
Primary Vehicle Trips		**60**	**83**	**143**	**83**	**57**	**150**
Block C							
Multifamily Housing (Mid-Rise) ITE Land Use: 221	130 units	10	36	46	31	20	51
Strip Plaza (<40K) ITE Land Use: 822	27,986 ft^2	34	23	57	81	81	162
Total Trip Generation		**44**	**59**	**103**	**112**	**101**	**213**
*Internal Recapture**		*-1*	*-1*	*-2*	*-32*	*-32*	*-64*
Net Vehicle Trip Generation		**43**	**58**	**101**	**80**	**69**	**149**
*Pass-by Trips***		*0*	*0*	*0*	*-26*	*-26*	*-52*
Primary Vehicle Trips		**43**	**58**	**101**	**54**	**43**	**97**
Block D-F							
Multifamily Housing (Low-Rise) ITE Land Use: 220	575 units	48	153	175	185	108	293
Primary Vehicle Trips		**48**	**153**	**175**	**185**	**108**	**293**
Subject Site - Total							
Primary Vehicle Trips		**151**	**294**	**445**	**322**	**218**	**540**

* The internal capture rates have been calculated using the National Cooperative Highway Research Program (NCHRP) 8-51 Estimation Tool. Internal capture reports are provided in **Appendix J**.
** Pass-by trips for the Clinic trips have been established based on data published in the ITE Trip Generation Manual, 11th Edition ITE for land use code 821 (Shopping Plaza (40-150K)). A 0% AM / 40% PM pass by rate has been utilized for the AM and PM peak hours, respectively.

No transportation modal split has been applied to the above-noted traffic generation calculation.

4.2 Traffic Assignment

The distribution of traffic for the residential component of the proposed development has been calculated based on the 2022 Transportation Tomorrow Survey [TTS] data for traffic zone 8577 retrieved using the TTS Internet Data Retrieval System [IDRS] (output attached as **Appendix F**). TTS data provides historical origin and destination trip percentages for specific areas within the Town and the GTHA.

Traffic distribution for the trips generated by the residential component of the proposed development during the AM and PM peak hour are expected to generally follow commuter travel patterns. Our analysis is based on egress traffic during the AM peak hour. Logically, the distribution of ingress traffic will follow the inverse of the exiting traffic distribution. For each of the individual areas identified in the TTS data, we have selected the probable route of travel, assuming that people will select their route primarily based on travel time.

The distribution of traffic for the residential component of the proposed development is illustrated in **Table 10** using the methodology outlined above.

Table 10 – Proposed Development Traffic Distribution - Residential

Travel Direction (to/from)	Percent of Total Traffic Generation
North via County Road 93	16%
South via County Road 93	38%
East via Yonge Street	23%
West via County Road 93	19%
North via Marshall Road	3%
South via Wilson Road	1%
Total	**100%**

The distribution of traffic for the commercial component of the proposed development is based on the distribution of the existing traffic volume patterns within the study area. **Table 11** summarizes the distribution of ingress and egress traffic for the commercial component of the proposed development.

Table 11 – Proposed Development Traffic Distribution - Commercial

Travel Direction (to / from)	Percent of Total Traffic Generation			
	AM		PM	
	IN	OUT	IN	OUT
North via County Road 93	31%	34%	37%	33%
South via County Road 93	27%	29%	27%	25%
East via Yonge Street	16%	20%	18%	21%
West via County Road 93	17%	9%	10%	14%
North via Marshall Road	2%	5%	4%	2%
South via Wilson Road	6%	4%	4%	5%
TOTAL	**100%**	**100%**	**100%**	**100%**

The site traffic assignment for the site trips during the AM and PM peak hour is illustrated in **Figure 10** through **Figure 15**.

4.3 Total Horizon Year Traffic Volumes with the Proposed Development

For the total (2028, 2033 and 2038) horizon year traffic volumes, the proposed development traffic was added to the background (2028, 2033 and 2038) traffic volumes. The resulting total (2028, 2033 and 2038) horizon year traffic volume for the AM and PM peak hour are illustrated in **Figure 16** through **Figure 18**.

5 Intersection Operation with Proposed Development

5.1 Total (2028) Intersection Operation

The results of the LOS analysis under total (2028) traffic volumes during the AM and PM peak hours can be found below in **Table 12**. Existing intersection geometry and traffic control have been utilized for this scenario. Stop control has been assumed for the Site Access egress movements. Detailed output of the Synchro analysis can be found in **Appendix G**.

Table 12 - Total (2028) LOS

Location (N-S Street / E-W Street)	Weekday AM Peak Hour					Weekday PM Peak Hour				
	V/C	Delay (s)	LOS	95% Queue (m)		V/C	Delay (s)	LOS	95% Queue (m)	
				Storage	Model				Storage	Model
County Rd 93 / County Rd 25 & Yonge St (signalized)	0.56	21.0	C	-	-	0.79	24.2	C	-	-
EBL	0.66	27.6	C	70	40	0.80	39.2	D	70	44
EBTR	0.69	27.4	C	-	-	0.61	23.9	C	-	-
WBL	0.60	34.8	C	120	27	0.57	31.1	C	120	29
WBT	0.50	29.6	C	-	-	0.69	33.3	C	-	-
WBR	0.09	26.5	C	110	10	0.24	26.0	C	110	14
NBL	0.34	12.9	B	200	20	0.59	19.1	B	200	35
NBT	0.31	16.8	B	-	-	0.45	21.0	C	-	-
NBR	0.07	14.9	B	125	6	0.08	17.4	B	125	10
SBL	0.27	12.5	B	80	16	0.71	24.3	C	80	53
SBT	0.42	18.0	B	-	-	0.44	20.8	C	-	-
SBR	0.14	15.5	B	80	5	0.18	18.4	B	80	17
Wilson Rd & Marshall Rd / County Rd 25 (unsignalized)	-	5.9	A	-	-	-	7.6	A	-	-
EB	0.04	1.3	A	-	-	0.03	1.1	A	-	-
WB	0.01	0.4	A	-	-	0.01	0.4	A	-	-
NB	0.21	18.5	C	-	-	0.39	25.3	D	-	-
SB	0.43	24.5	C	-	-	0.55	34.2	D	-	-
West Access & Sundowner Rd / County Rd 25 (unsignalized)	-	9.3		-	-	-	149.1	F	-	-
EB	0.02	0.8	A	-	-	0.01	0.4	A	-	-
WB	0.11	3.5	A	-	-	0.24	5.4	A	-	-
NB	0.61	25.5	D	-	-	1.97	490.6	F	-	240
SB	0.32	43.7	E	-	-	1.06	193.4	F	-	50
East Access / County Rd 93 (unsignalized)	-	1.8	A	-	-	-	2.1	A	-	-
EB	0.40	3.8	D	-	9	0.46	37.5	E	-	17
NBTL	0.02	0.9	A	-	1	0.03	1.0	A	-	1
NB	0.24	0.0	-	-	1	0.35	0.0	-	-	-
SB	0.52	0.0	-	-	-	0.47	0.0	-	-	-

The results of the LOS analysis indicate that the majority of the intersection movements at the study intersections are operating within the typical design limits noted in Section 3.1.

The anticipated 95th percentile queues for the turning movements at the County Road 93 / County Road 25 & Yonge Street intersection can be accommodated by the existing auxiliary lane storage lengths.

During the PM peak hour, the West Access & Sundowner Road / County Road 25 intersection will experience failing levels-of-service and long delays. Based on the Ontario Traffic Manual Book 12 Signal Justification, traffic signals are not warranted at the intersection (results are provided in **Appendix I**). Notwithstanding, given the long control delay for northbound and southbound movements, it is recommended that traffic signals be installed at the West Access & Sundowner Road / County Road 25 intersection during the first phase of construction. The implementation of traffic signals will also facilitate pedestrian connectivity for the Subject Site, giving residents the ability to cross County Road 25 and utilize the sidewalk on the north side of the road.

An analysis was completed for left turn movements at the unsignalized intersections, based on the criteria outlined in Appendix 9A of the MTO DS. According to the above-noted criteria, an eastbound left turn lane is marginally warranted at the County Road 25 / Wilson Road & Marshall Road intersection (results provided in **Appendix H**). The trigger for the left turn lane improvement occurs as a result of the traffic growth on the County Road 25 corridor, as the advancing and opposing volumes at the intersection begin to exceed the nomograph threshold. In this case, it is recommended that the Town and County continue to monitor the traffic growth at the intersection to confirm the need and timing for the left turn lane improvement. For the purpose if this study, the current configuration has been carried through the future year analyses.

Based on the Ontario Traffic Manual Book 12 *Signal Justification*, traffic signals are not warranted at any of the remaining unsignalized intersections (results are provided in **Appendix I**).

The total (2028) traffic volumes have been reanalyzed to consider the following improvements:

West Access & Sundowner Road / County Road 25

- Provision of traffic signals with semi-actuated control (cycle length of 60 seconds);
- The implementation of an exclusive westbound left turn lane with 30m storage and 60m taper length; and
- The implementation of an exclusive eastbound left turn lane with 15m storage and 60m taper length.

Table 13 illustrates the results of the LOS analysis with the above noted improvements. Detailed output of the Synchro analysis can be found in **Appendix E**.

Table 13 - Total (2028) LOS + Improvements

Location (N-S Street / E-W Street)	Weekday AM Peak Hour					Weekday PM Peak Hour				
	V/C	Delay (s)	LOS	95% Queue (m)		V/C	Delay (s)	LOS	95% Queue (m)	
				Storage	Model				Storage	Model
West Access & Sundowner Rd / County Rd 25 (signalized)	0.46	17.3	B	-	-	0.66	16.1	B	-	-
EBL	0.09	15.3	B	15	7	0.04	12.7	B	15	5
EBTR	0.79	25.6	C	-	-	0.59	19.4	B	-	-
WBL	0.41	12.1	B	30	11	0.52	7.9	A	30	27
WBR	0.36	11.5	B	-	-	0.35	7.4	A	-	-
NB	0.23	11.8	B	-	-	0.76	26.6	C	-	-
SB	0.04	10.2	B	-	-	0.08	15.1	B	-	-

The results of the LOS analysis indicate the West Access & Sundowner Road / County Road 25 intersection will operate within the typical design limits noted in Section 3.1, with the noted traffic signal improvements.

No additional infrastructure improvements are recommended within the study area.

5.2 Total (2033) Intersection Operation

The results of the LOS analysis under total (2033) traffic volumes during the AM and PM peak hours can be found below in **Table 14**. Existing intersection geometry and traffic control have been utilized for this scenario, in addition to the signalization and turn lane improvements noted in Section 5.2. Stop

control has been assumed for the East Access egress movement. Detailed output of the Synchro analysis can be found in **Appendix G**.

Table 14 - Total (2033) LOS

Location (N-S Street / E-W Street)	Weekday AM Peak Hour					Weekday PM Peak Hour				
	V/C	Delay (s)	LOS	95% Queue (m)		V/C	Delay (s)	LOS	95% Queue (m)	
				Storage	Model				Storage	Model
County Rd 93 / County Rd 25 & Yonge St (signalized)	0.62	21.9	C	-	-	0.92	27.4	C	-	-
EBL	0.70	29.4	C	70	42	0.87	50.0	D	70	53
EBTR	0.72	28.6	C	-	-	0.63	24.3	C	-	-
WBL	0.63	35.7	D	120	29	0.60	32.2	C	120	31
WBT	0.52	29.7	C	-	-	0.70	33.6	C	-	-
WBR	0.10	26.2	C	110	11	0.35	26.6	C	110	20
NBL	0.40	13.8	B	200	22	0.69	24.6	C	200	44
NBT	0.35	17.7	B	-	-	0.51	22.4	C	-	-
NBR	0.08	15.5	B	125	8	0.09	18.1	B	125	12
SBL	0.33	13.3	B	80	18	0.87	42.3	D	80	74
SBT	0.47	19.2	B	-	-	0.49	22.2	C	-	-
SBR	0.15	16.1	B	80	5	0.19	19.2	B	80	17
Wilson Rd & Marshall Rd / County Rd 25 (unsignalized)	-	7.5	A	-	-	-	9.5		-	-
EB	0.04	1.3	A	-	-	0.03	1.1	A	-	-
WB	0.01	0.4	A	-	-	0.01	0.4	A	-	-
NB	0.28	22.3	C	-	-	0.45	29.6	D	-	-
SB	0.55	32.7	D	-	-	0.66	46.0	E	-	-
West Access & Sundowner Rd / County Rd 25 (signalized)	0.48	19.0	B	-	-	0.68	16.4	B	-	-
EBL	0.09	15.0	B	15	7	0.04	12.7	B	15	5
EBTR	0.84	30.7	C	-	-	0.64	20.6	C	-	-
WBL	0.44	12.6	B	30	11	0.55	8.5	A	30	27
WBR	0.38	11.5	B	-	-	0.39	7.7	A	-	-
NB	0.23	12.3	B	-	-	0.76	26.6	C	-	-
SB	0.04	10.6	B	-	-	0.08	15.1	B	-	-
East Access / County Rd 93 (unsignalized)	-	2.1	A	-	-	-	2.5	A	-	-
EB	0.46	43.3	E	-	17	0.54	48.3	E	-	21
NBTL	0.02	0.8	A	-	1	0.03	1.0	A	-	1
NB	0.27	0.0	-	-	-	0.38	0.0	-	-	-
SB	0.56	0.0	-	-	-	0.51	0.0	-	-	-

The results of the LOS analysis indicate that the intersection movements are operating within the typical design limits noted in Section 3.1.

The anticipated 95th percentile queues for the turning movements at the signalized intersections can be accommodated by the existing auxiliary lane storage lengths.

An analysis was completed for left turn movements at the unsignalized intersections, based on the criteria outlined in Appendix 9A of the MTO DS. According to the above-noted criteria, an eastbound left turn lane is marginally warranted at the County Road 25 / Wilson Road & Marshall Road intersection (results provided in **Appendix H**). The trigger for the left turn lane improvement occurs as a result of

the traffic growth on the County Road 25 corridor, as the advancing and opposing volumes at the intersection begin to exceed the nomograph threshold. In this case, it is recommended that the Town and County continue to monitor the traffic growth at the intersection to confirm the need and timing for the left turn lane improvement. For the purpose if this study, the current configuration has been carried through the future year analyses.

Based on the Ontario Traffic Manual Book 12 *Signal Justification*, traffic signals are not warranted at any of the remaining unsignalized intersections (results are provided in **Appendix I**).

No infrastructure improvements are recommended within the study area.

5.3 Total (2038) Intersection Operation

The results of the LOS analysis under total (2038) traffic volumes during the AM and PM peak hours can be found below in **Table 15**. Existing intersection geometry and traffic control have been utilized for this scenario, in addition to the signalization and turn lane improvements noted in Section 5.2. The minor signal timing improvements noted in Section 3.5 have also been applied. Stop control has been assumed for the East Access egress movement. Detailed output of the Synchro analysis can be found in **Appendix G**.

Table 15 - Total (2038) LOS

Location (N-S Street / E-W Street)	Weekday AM Peak Hour					Weekday PM Peak Hour				
	V/C	Delay (s)	LOS	95% Queue (m)		V/C	Delay (s)	LOS	95% Queue (m)	
				Storage	Model				Storage	Model
County Rd 93 / County Rd 25 & Yonge St (signalized)	0.66	23.0	C	-	-	0.94	33.3	C	-	-
EBL	0.73	31.4	C	70	45	0.93	62.2	E	70	67
EBTR	0.74	28.8	C	-	-	0.65	27.8	C	-	-
WBL	0.69	39.3	D	120	32	0.71	43.2	D	120	39
WBT	0.51	29.1	C	-	-	0.74	39.9	D	-	-
WBR	0.11	25.7	C	110	11	0.22	29.4	C	110	10
NBL	0.48	15.2	B	200	25	0.67	24.2	C	200	47
NBT	0.39	19.0	B	-	-	0.65	32.3	C	-	-
NBR	0.09	16.3	B	125	10	0.10	24.6	D	125	14
SBL	0.40	14.4	B	80	21	0.86	36.8	D	80	91
SBT	0.53	20.9	C	-	-	0.61	30.4	C	-	-
SBR	0.16	17.0	B	80	5	0.20	25.1	C	80	21
Wilson Rd & Marshall Rd / County Rd 25 (unsignalized)	-	9.3	A	-	-	-	13.5		-	-
EB	0.05	1.4	A	-	-	0.04	1.1	A	-	-
WB	0.01	0.5	A	-	-	0.01	0.4	A	-	-
NB	0.33	25.7	D	-	-	0.54	37.2	D	-	-
SB	0.66	43.1	E	-	-	0.81	71.5	F	-	-
West Access & Sundowner Rd / County Rd 25 (signalized)	0.51	21.7	C	-	-	0.70	17.0	B	-	-
EBL	0.09	14.9	B	15	7	0.05	12.8	B	15	5
EBTR	0.90	36.7	D	-	-	0.70	22.6	C	-	-
WBL	0.44	12.8	B	30	11	0.58	9.3	A	30	27
WBR	0.40	11.6	B	-	-	0.43	8.1	A	-	-
NB	0.23	12.6	B	-	-	0.76	26.6	C	-	-
SB	0.04	11.0	B	-	-	0.08	15.1	B	-	-
East Access / County Rd 93 (unsignalized)	-	2.5	A	-	-	-	3.1	B	-	-
EB	0.54	56.7	F	-	21	0.64	66.5	F	-	27
NBTL	0.02	0.9	A	-	1	0.04	1.1	A	-	1
NB	0.30	0.0	-	-	-	0.42	0.0	-	-	-
SB	0.61	0.0	-	-	-	0.56	0.0	-	-	-

The results of the LOS analysis indicate that the intersection movements County Road 93 / County Road 25 & Yonge Street at the are operating within the typical design limits noted in Section 3.1.

The anticipated 95th percentile queues for the southbound left turn movement will exceed the existing auxiliary lane storage lengths. However, the queue length only marginally exceeds the storage length during a single peak hour. Consequently, no additional improvements are recommended to address the intersection queueing.

The eastbound (egress) movement at the East Access / County Road 93 intersection will experience a failing level-of-service as traffic growth compounds on County Road 93 through the horizon years. However, the delay only marginally exceeds the LOF threshold during the PM peak hour and all remaining movement operate at acceptable levels, well below capacity. It is further noted that based on the Ontario Traffic Manual Book 12 *Signal Justification*, traffic signals are not warranted at the

intersection (results are provided in **Appendix I**). Consequently, no improvements are recommended to address the minor delay exceedance. It is recommended that the County continue to monitor traffic signal warrants at the intersection as traffic volume increase and prior to the widening of on County Road 93. Based on our review, should traffic signals be required at the access, the spacing between the East Access and the County Road 93 / County Road 25 & Yonge Street is sufficient to accommodate queuing through the Total (2038) horizon year. Further discussion is provided in Section 5.4.

Similarly, the northbound movement at the Wilson Road & Marshall Road / County Road 25 intersection will begin to experience a failing level-of-service as traffic growth compounds on County Road 25 through the horizon years. However, the delay only marginally exceeds the LOF threshold during the PM peak hour and all remaining movement operate at acceptable levels, well below capacity. It is further noted that based on the Ontario Traffic Manual Book 12 *Signal Justification*, traffic signals are not warranted at the intersection (results are provided in **Appendix I**). Consequently, no improvements are recommended to address the minor delay exceedance.

An analysis was completed for left turn movements at the unsignalized intersections, based on the criteria outlined in Appendix 9A of the MTO DS. According to the above-noted criteria, an eastbound left turn lane is marginally warranted at the County Road 25 / Wilson Road & Marshall Road intersection (results provided in **Appendix H**). The trigger for the left turn lane improvement occurs as a result of the traffic growth on the County Road 25 corridor, as the advancing and opposing volumes at the intersection begin to exceed the nomograph threshold. In this case, it is recommended that the Town and County continue to monitor the traffic growth at the intersection to confirm the need and timing for the left turn lane improvement. For the purpose if this study, the current configuration has been carried through the future year analyses.

Based on the Ontario Traffic Manual Book 12 *Signal Justification*, traffic signals are not warranted at any of the remaining unsignalized intersections (results are provided in **Appendix I**).

No infrastructure improvements are recommended within the study area.

5.4 Site Access & Intersection Spacing

5.4.1 West Access

The West Access will operate efficiently as the new south leg of the four-legged signalized intersection at County Road 25 / Sundowner Road. A single ingress and egress lane will provide the necessary capacity to service the proposed development.

The proposed spacing between the West Access, Sundowner Road (E) to the east and Wilson Road / Marshall Road to the west (approximately 675 and 1,250 metres, respectively) is in excess of the typical minimum intersection spacing for an arterial road according to TAC Guidelines (Section 9.4.2.1) – 200 metres). The spacing between the West Access and the County Road 93 / County Road 25 & Yonge Street intersection to the east (approximately 750 metres) is also in excess of the typical desired spacing between signalized intersections (400 metres) along an arterial road.

5.4.2 East Access

At the time of this study, the proposed plan of development is a conceptual design, without a designated location for the East Access location.

Based on our review the sight lines on County Road 93, the East Access is recommended to be constructed within the first 120 metres north of the existing 9050 County Road 93 property limits.

Currently, a guiderail extends 100 metres north of the 9050 County Road 93 property line. The 20-metre separation from the end of the guiderail to the 120-metre sightline threshold is considered an optimal location for the East Access.

At this location, County Road 93 provides a road platform that includes a portion of the southbound merging taper lane, one southbound through lane and two northbound through lanes, with an approximate road width of 12.3 metres. **Figure 18** illustrates the optimal East Access location.

In order to remove the risk of a southbound vehicle merging through access intersection, it is recommended that the southbound merging lane be shifted to terminate prior to the East Access location.

As noted in the preceding sections, an exclusive northbound left turn lane is not warranted at the East Access based on the percentage of left turn vehicles (< 5% of the advancing volumes). In this case, the northbound median lane will act as a defacto left turn lane for the East Access, while the second northbound curb lane will allow northbound through volumes to maneuver past a left turning vehicle, should any queuing occur. A typical northbound left turn lane at this location would require a minimum of 15 metres of storage. Based on our review, the existing pavement width of County Road 93 provides a storage length of at least 40 metres. Consequently, the existing road platform can safely accommodate the northbound left turn movement with remedial line painting improvements and without additional road widening.

Based on our review of TAC Table 9.18.1, there is ample separation for the southbound merging lane and northbound diverging lane on County Road 93, downstream of the County Road 93 / Yonge Street intersection. Consequently, the necessary lane shifting required to remove the southbound merging lane through the East Access, and to maximize the northbound lane widths approaching East Access, can be completed while maintaining appropriate separation from the closest intersection.

A subsequent functional design drawing will confirm the extent of the necessary line painting improvements.

It is recommended that the County monitor traffic volumes on County Road 93 as the planned road widening approaches, to consider the need for traffic signals in the future. Based on our review of the Total (2038) traffic volumes, there are no queueing concerns between the upstream intersection (County Road / Yonge Street), should the East Access require signalization in the future.

5.5 Sight Distance Review

A review of the available sight distance for the proposed East Access and West Access was completed as part of this analysis.

The sight distance to the east and west of the West Access (greater than 300 metres in both directions) is greater than the minimum stopping sight distance requirements as identified in the County's Entrance By-Law #5544 – Section 3.2.2 – 230 meters for a posted speed of 80km/h.

Based on our on-site review, the optimal location of the East Access (as discussed in Section 5.4.2) provides a minimum stopping sight distance of 180 metres to the north and south, exceeding the County's Entrance By-Law #5544 – Section 3.2.2 – 180 meters for a posted speed of 60km/h, including an approximate downgrade of 6% from the north. The sight distance will be confirmed upon confirmation of the East Access location.

Consequently, there are no issues with the sight distance for East Access and West Access.

5.6 Emergency Access

A secondary emergency access is required for Block A-B and D-F, based on the level of proposed development (> 100 residential units).

Consideration was given to locating the secondary access at the subject site's southeast limits, connecting to County Road 93. However, considering the grading constraints and environmental impact required to construct an access at this location, it is not considered a feasible option.

As illustrated on the Site Plan, a secondary emergency access can be accommodated through the existing Town owned lands, connecting to County Road 25 east of the proposed West Access location.

6 Summary

2798860 Ontario Limited retained **JD Engineering** to prepare this traffic impact study in support of the proposed mixed-use development, on a site municipally known as 659 Balm Beach Road, in the Town of Midland, County of Simcoe.

This chapter summarizes the conclusions and recommendations from the study.

1. The proposed development is estimated to generate 445 AM and 540 PM new peak hour vehicle trips in the study area.
2. Detailed traffic and pedestrian counts were conducted at the study intersections in November 2024.
3. An intersection operational analysis was completed at the study area intersections, using the existing (2025) and background (2028, 2033 and 2038) traffic volumes, without the proposed development traffic. This enabled a review of existing and future traffic deficiencies that would be present without the influence of the proposed development. The following improvements are recommended:

   County Road 93 / County Road 25 & Yonge Street

   Background (2038)

   - Traffic signal optimization and increased cycle length (100s to 110s)
4. An estimate of the amount of traffic that would be generated by the Subject Site was prepared and assigned to the study area roads and intersections.
5. An intersection operation analysis was completed under total (2028, 2033 and 2038) traffic volumes with the proposed development operational at the study area intersections. The following improvements are recommended:

   West Access & Sundowner Road / County Road 25

   First Phase of Construction

   - Provision of traffic signals with semi-actuated control (cycle length of 60 seconds);
   - The implementation of an exclusive westbound left turn lane with 30m storage and 60m taper length; and
   - The implementation of an exclusive eastbound left turn lane with 15m storage and 60m taper length.

   East Access / County Road 93

Prior to Occupancy

- Remedial line painting to remove the southbound merging lane through the intersection and maximize the northbound lanes approaching the intersection.
- It is recommended that the County monitor traffic volumes on County Road 93 as the planned road widening approaches, to consider the need for traffic signals in the future.

6. The West Access will operate efficiently as the new south leg of the four-legged signalized intersection at County Road 25 / Sundowner Road. A single ingress and egress lane will provide the necessary capacity to service the proposed development.
7. The East Access will operate efficiently as a full-movement driveway, with one-way stop control for the egress movements. A single ingress and egress lane will provide the necessary capacity to service the proposed development. The optimal location will be confirmed through the detailed design process.
8. The location of the proposed site access intersections are considered appropriate with respect to minimum driveway spacing requirements.
9. The sight distance available for the proposed site access intersections are suitable for the intended use.
10. In summary the proposed development will not cause any operational issues and will not add significant delay or congestion to the local roadway network.

Figure 5: Adjacent Development Traffic Volumes – 710 Balm Beach Road (50%)

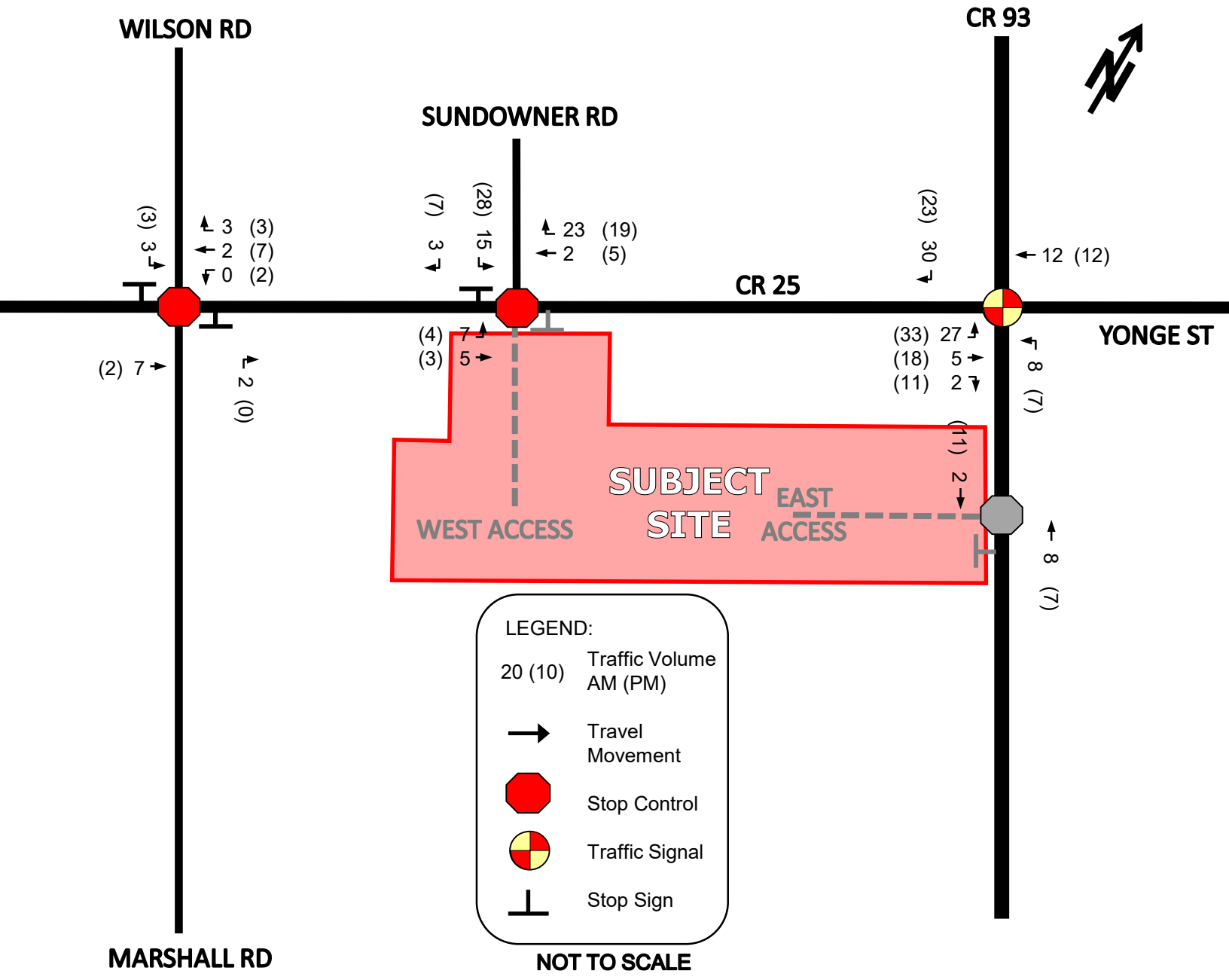


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Figure 6: Existing (2025) Traffic Volumes

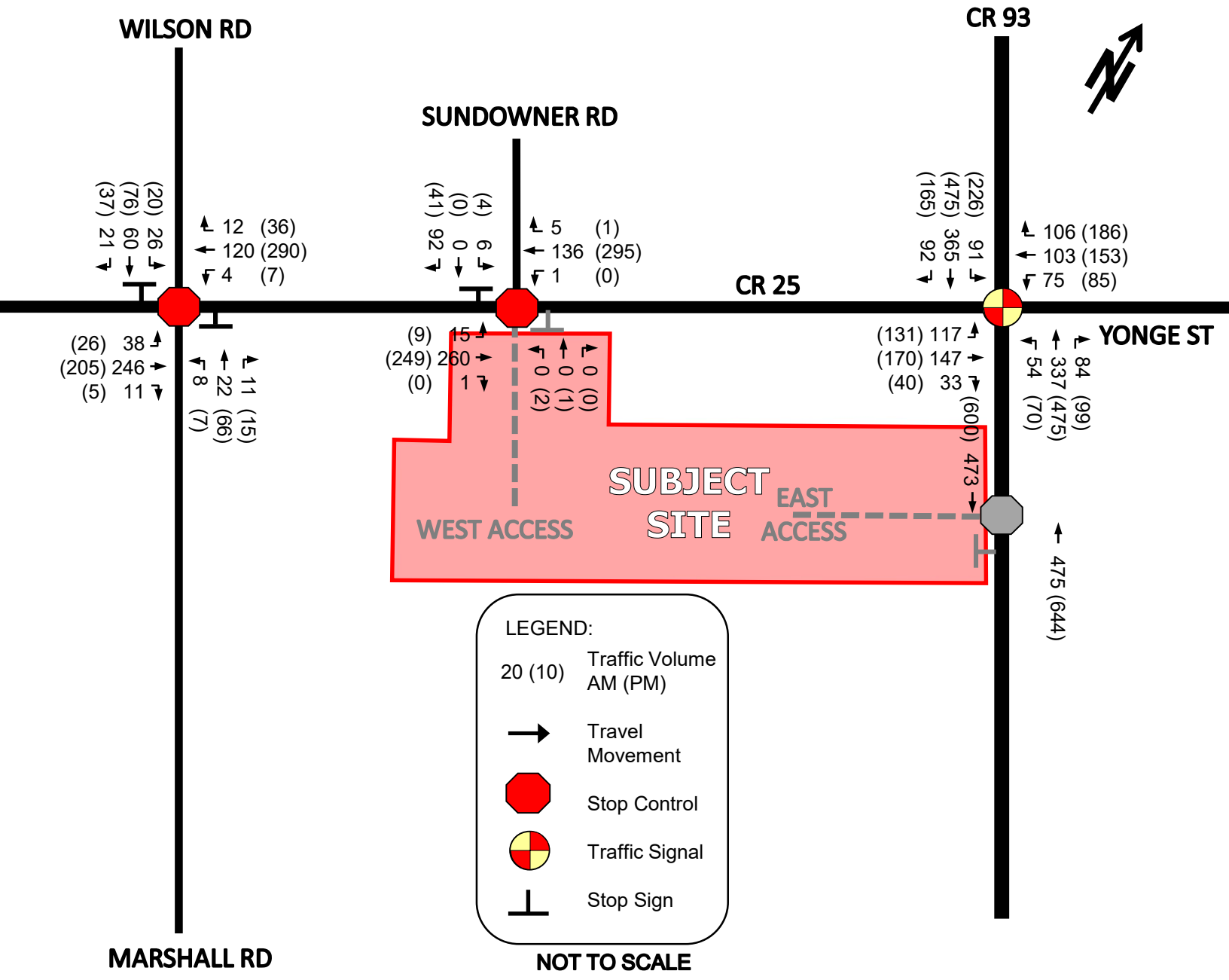

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Figure 7 Background (2028) Traffic Volumes

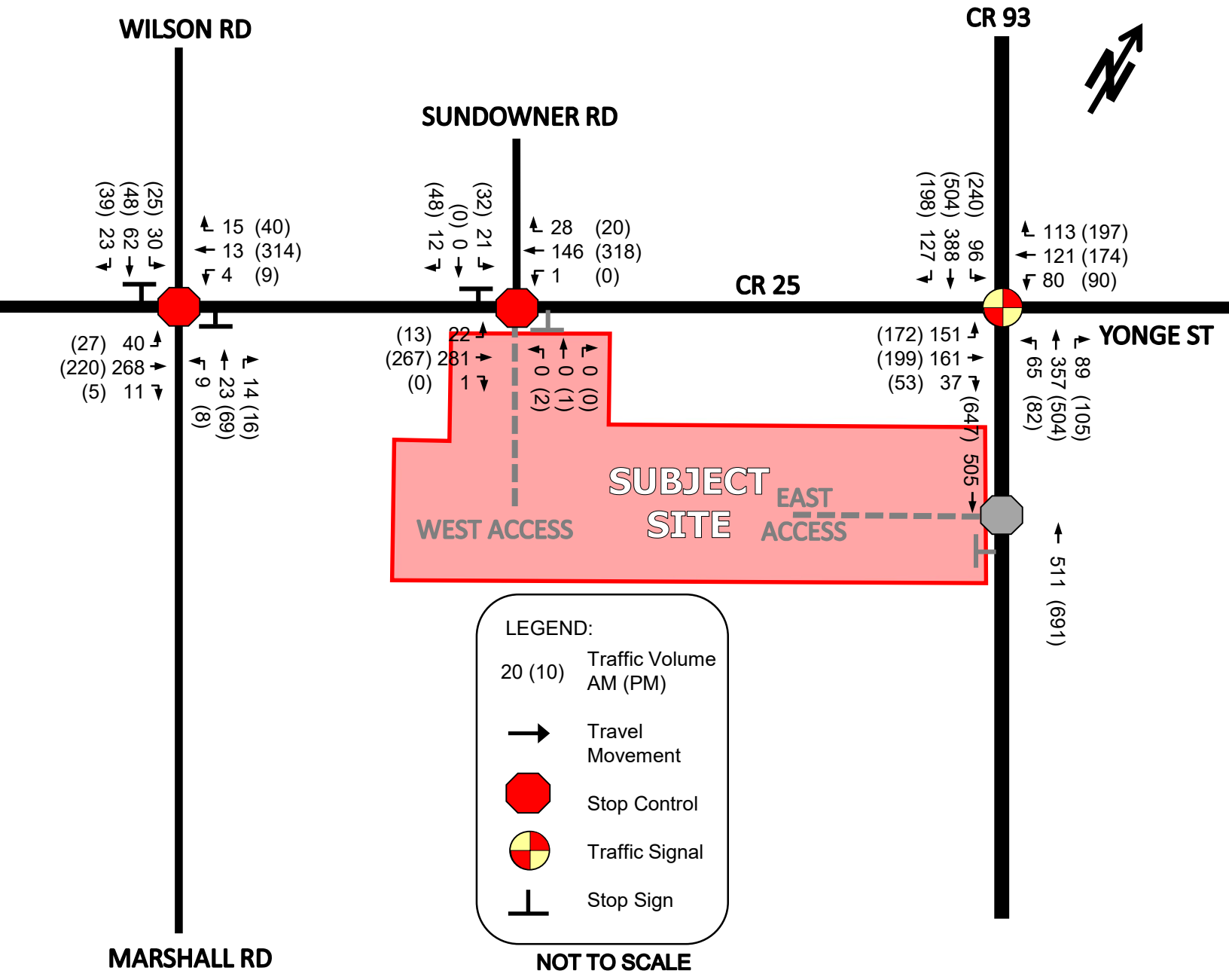

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Figure 8 Background (2033) Traffic Volumes

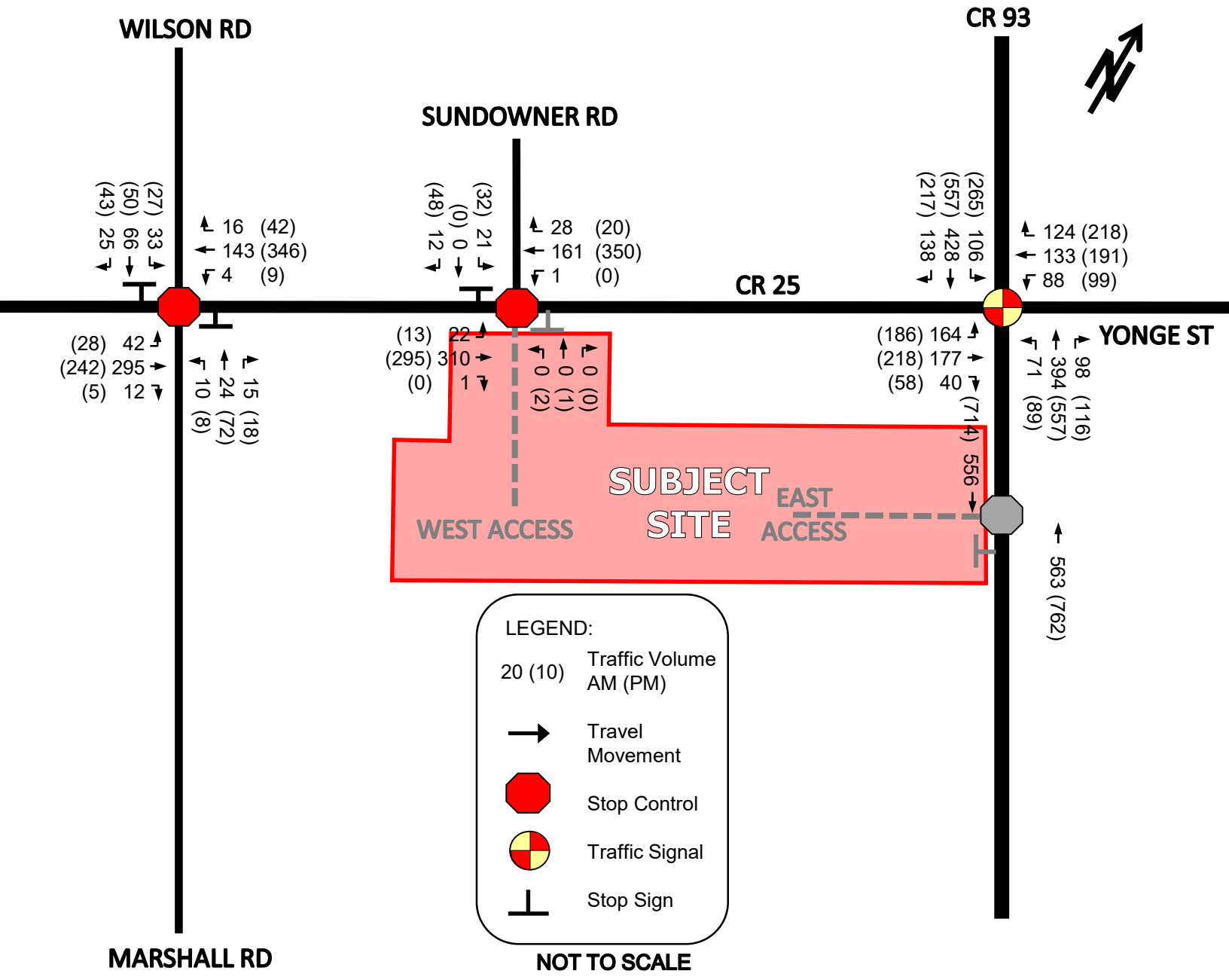

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Figure 9: Background (2038) Traffic Volumes

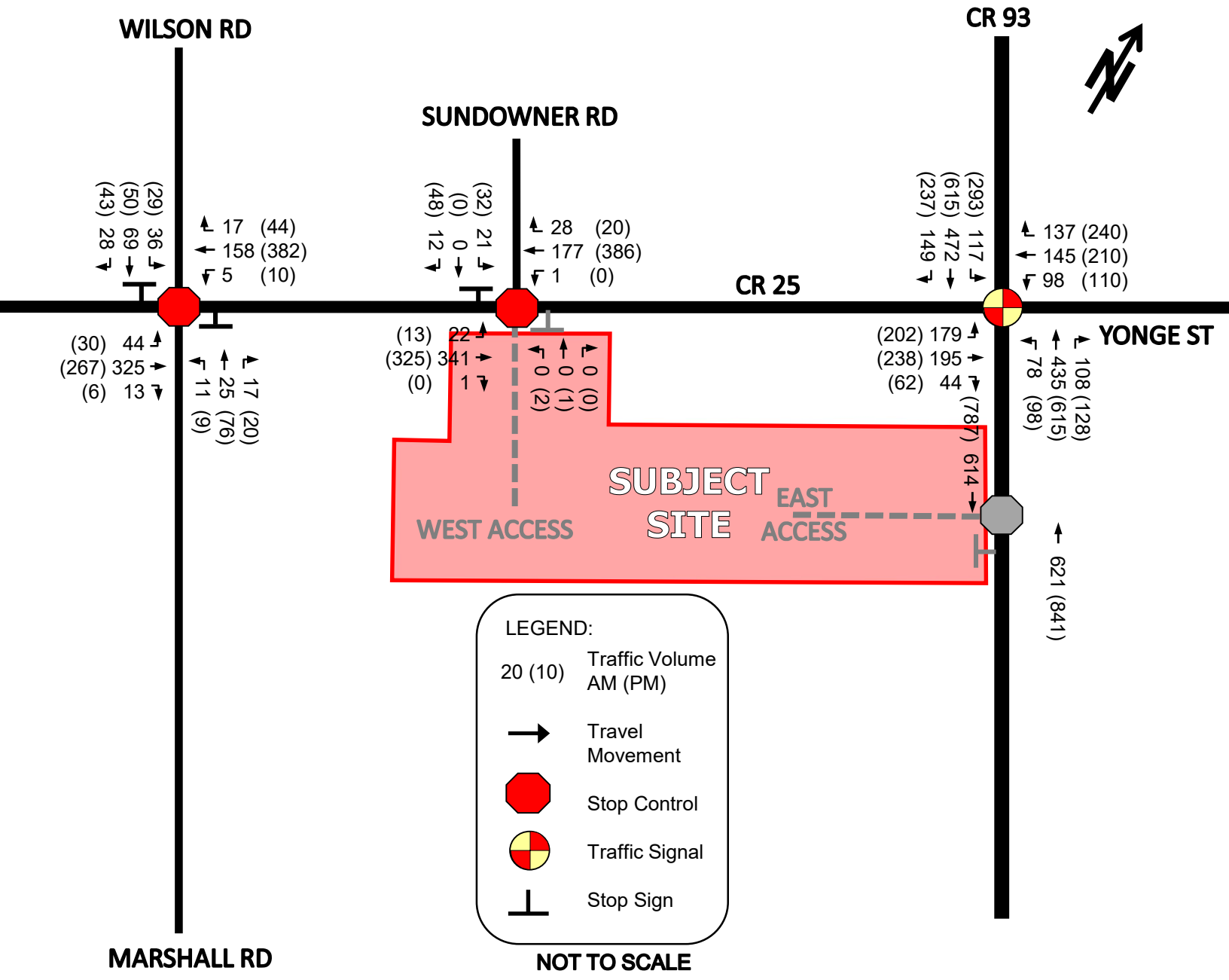

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Figure 10: Site Traffic Assignment - Block A-B (Residential)

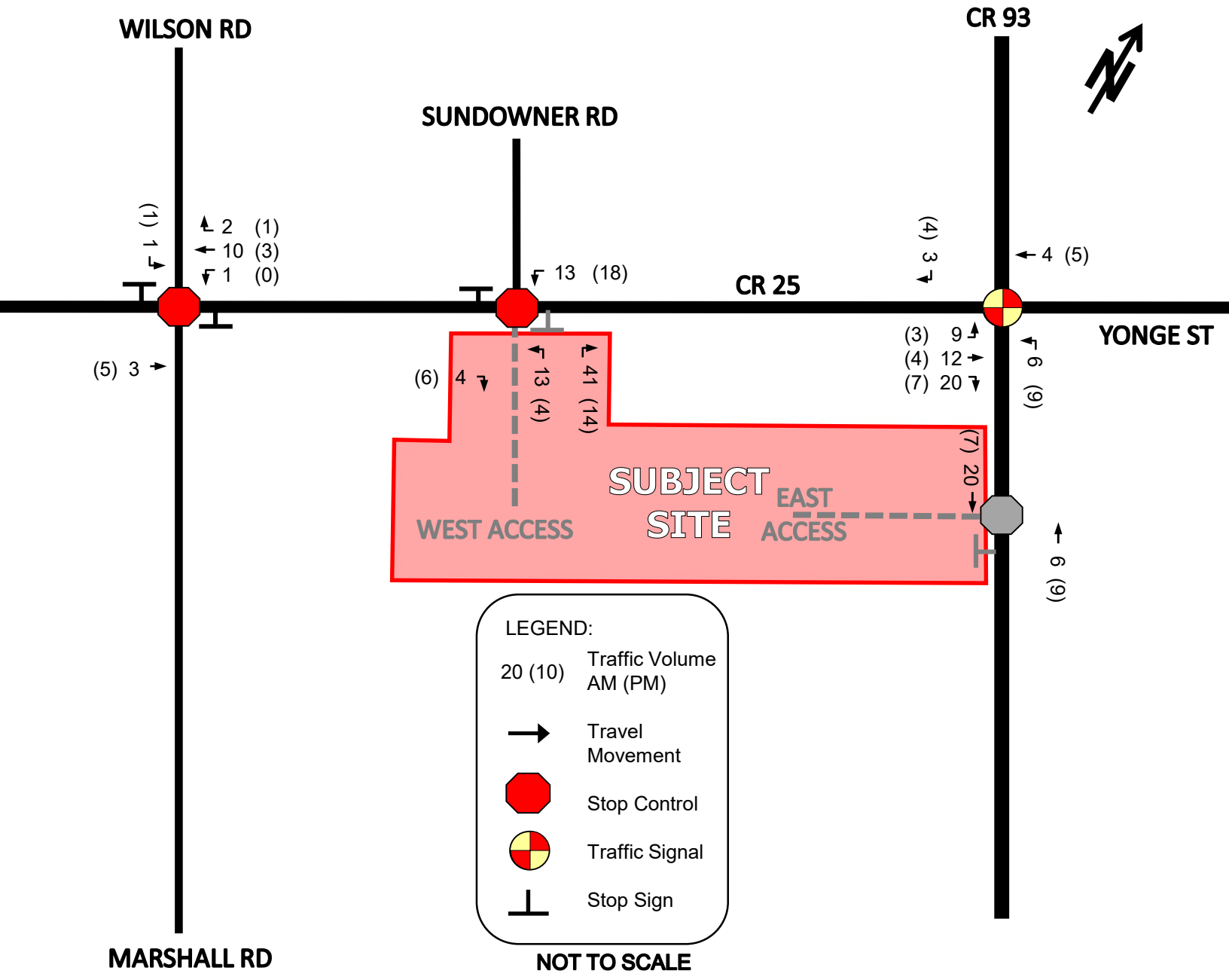

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Figure 11: Site Traffic Assignment - Block A-B (Commercial – NET)

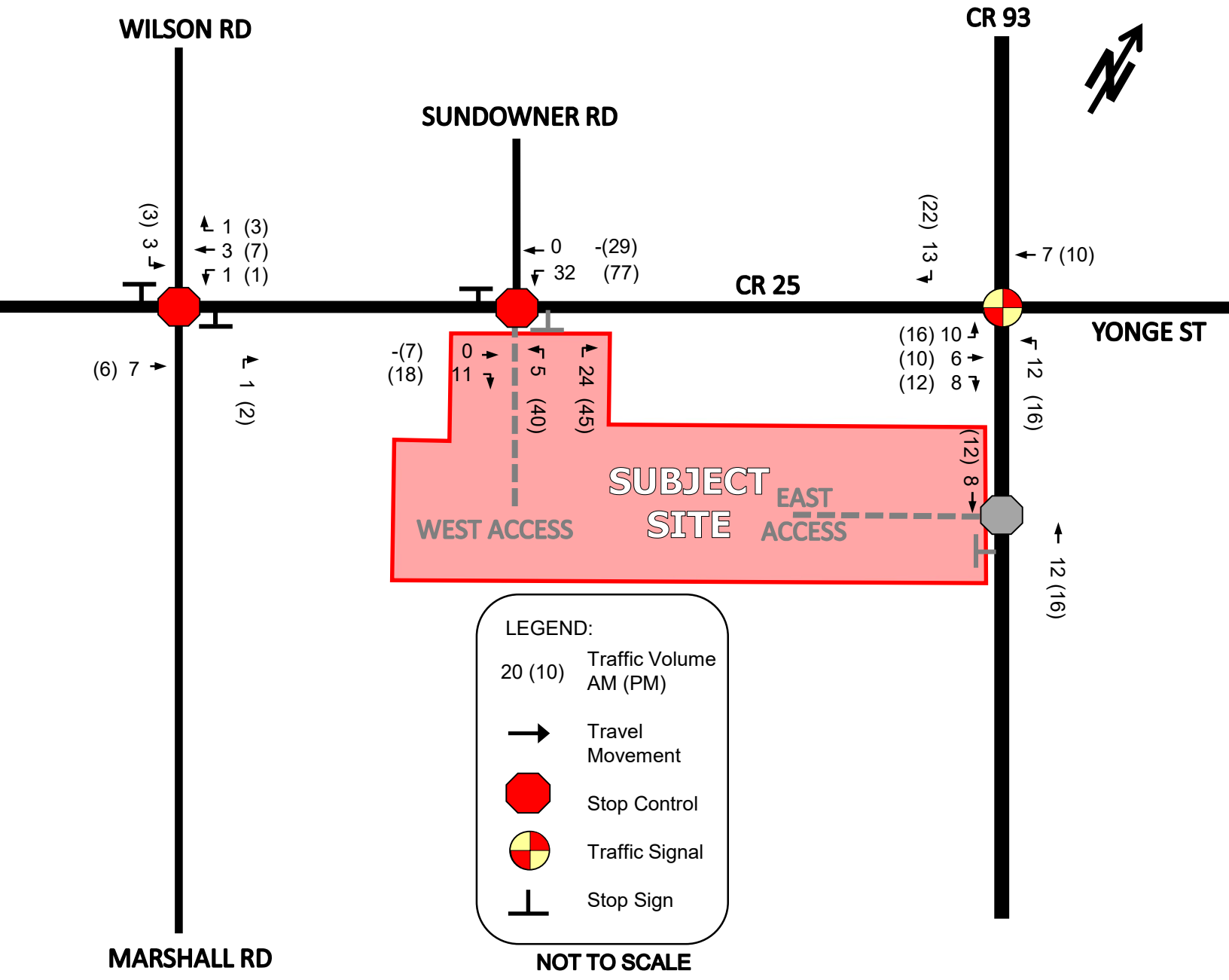

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Figure 12 Site Traffic Assignment - Block C (Residential)

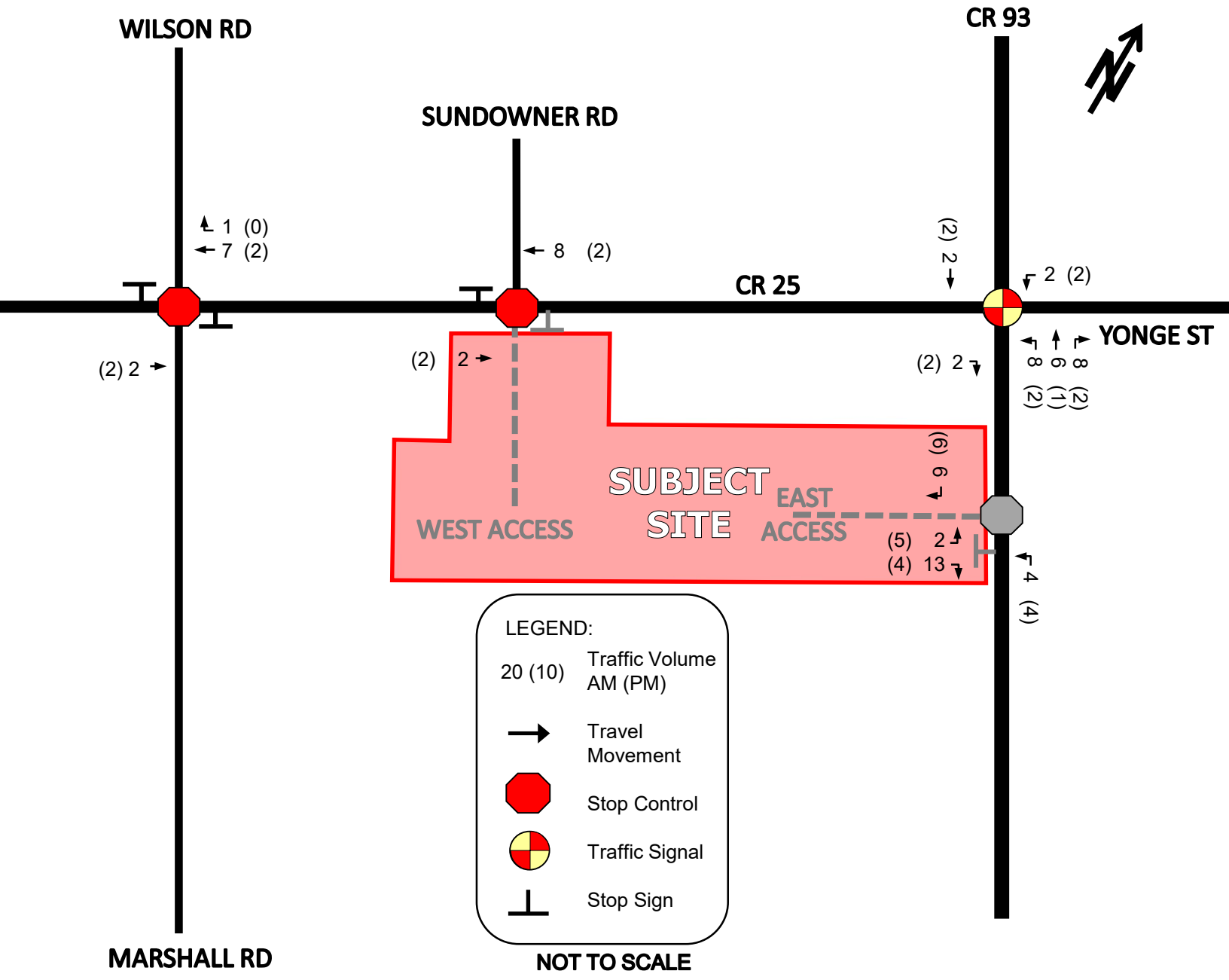

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Figure 13 Site Traffic Assignment - Block C (Commercial - NET)

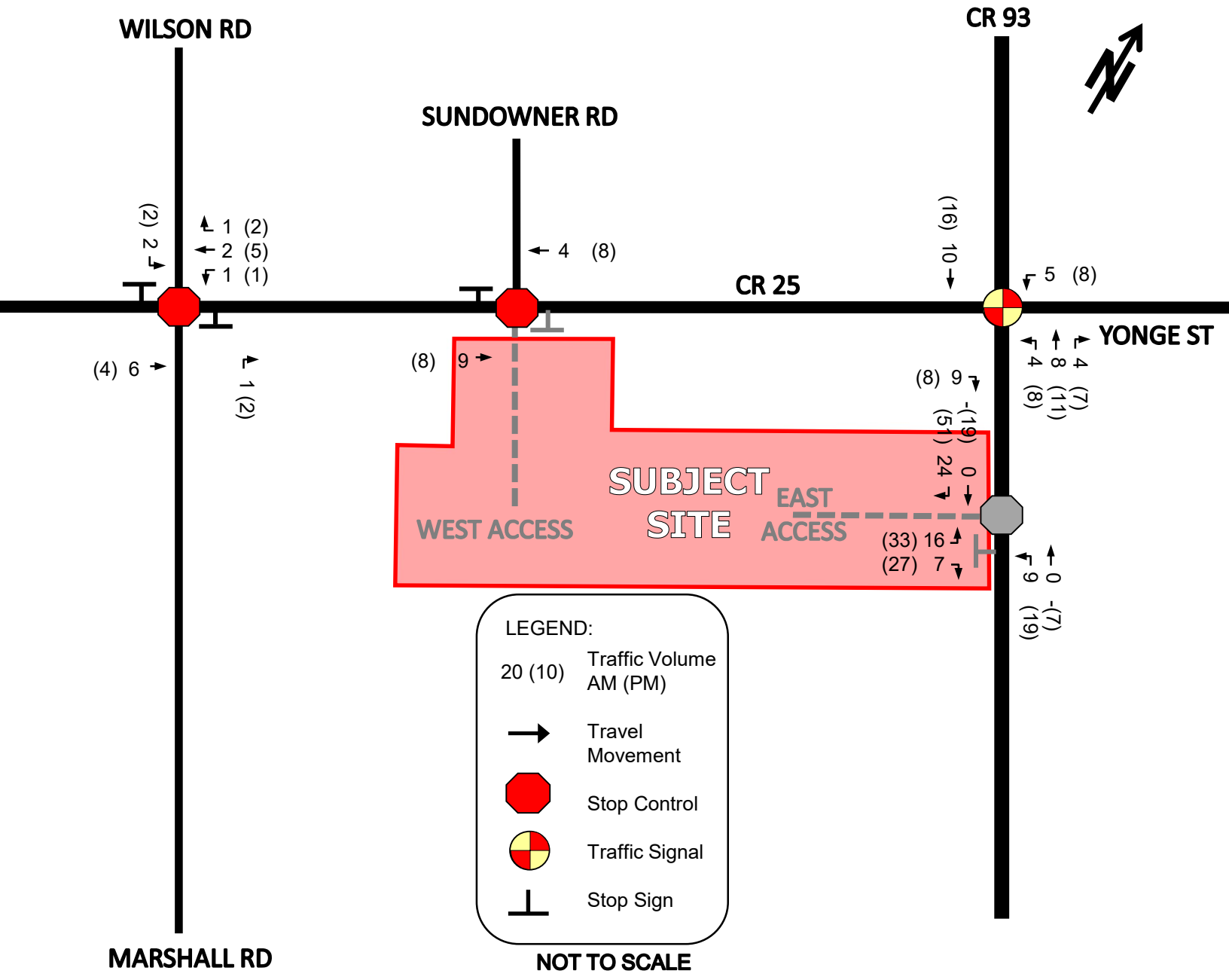

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Figure 14 Site Traffic Assignment - Block D-F (Residential)

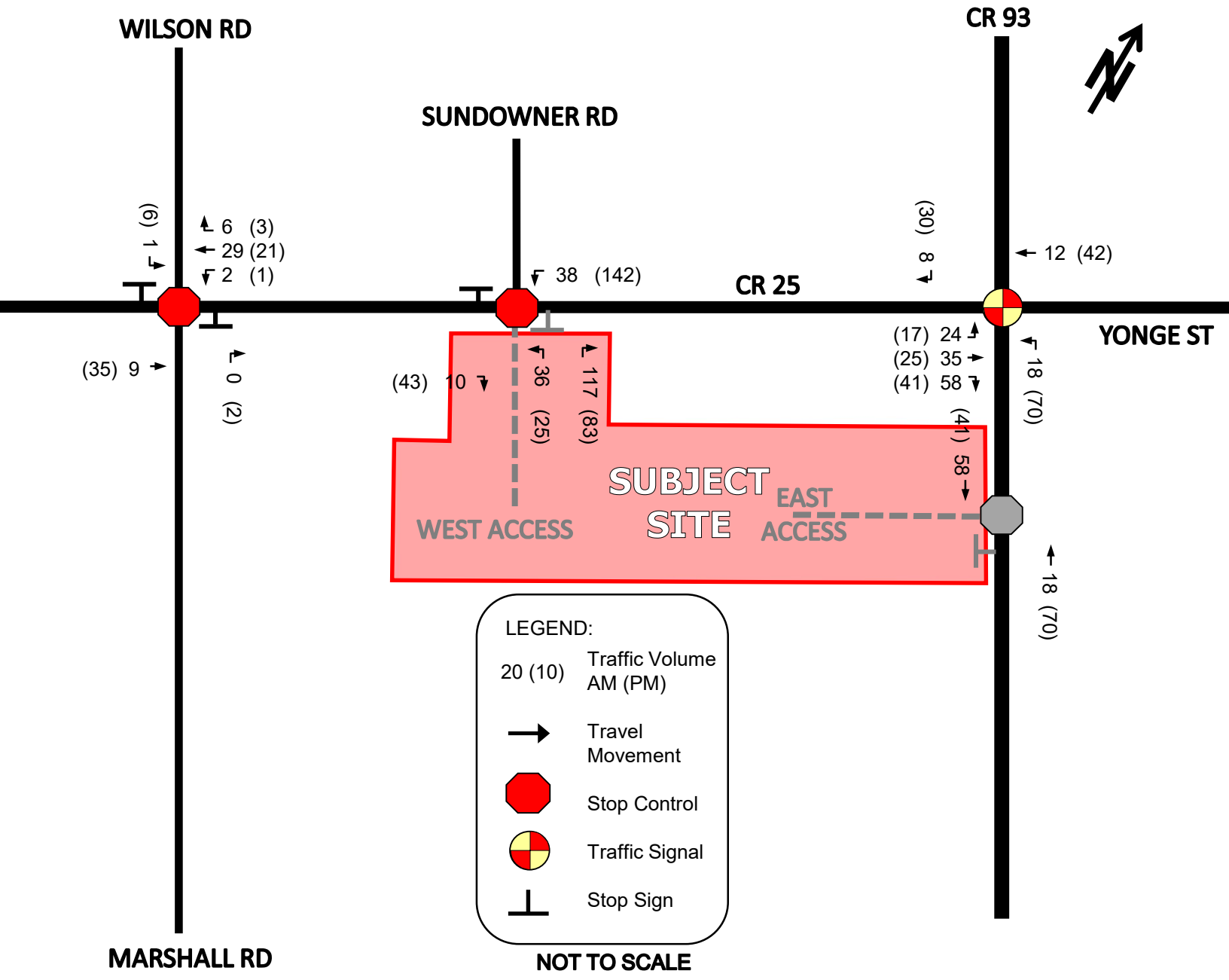

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Figure 15: Site Traffic Assignment - TOTAL

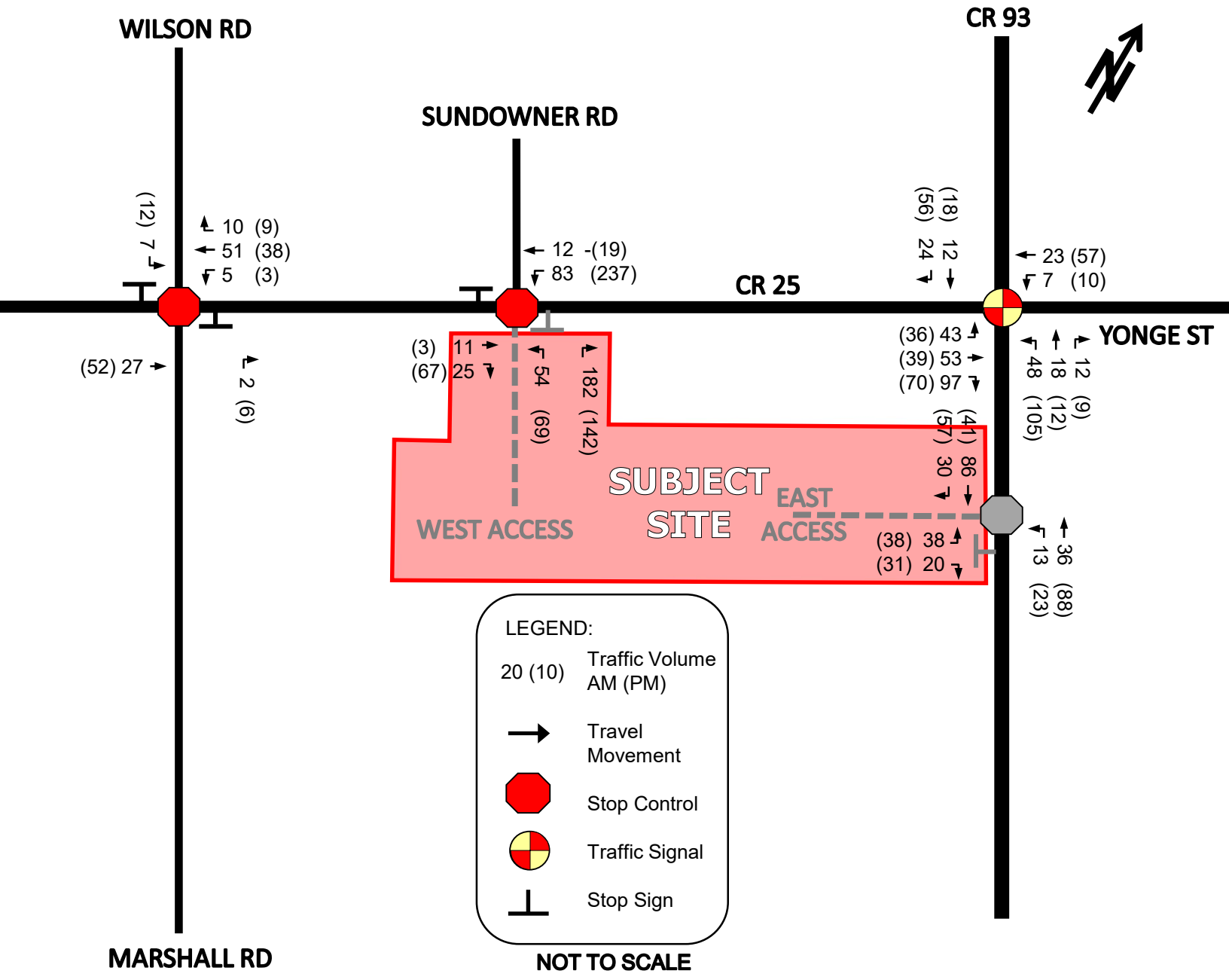

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Figure 16: Total (2028) Traffic Volumes

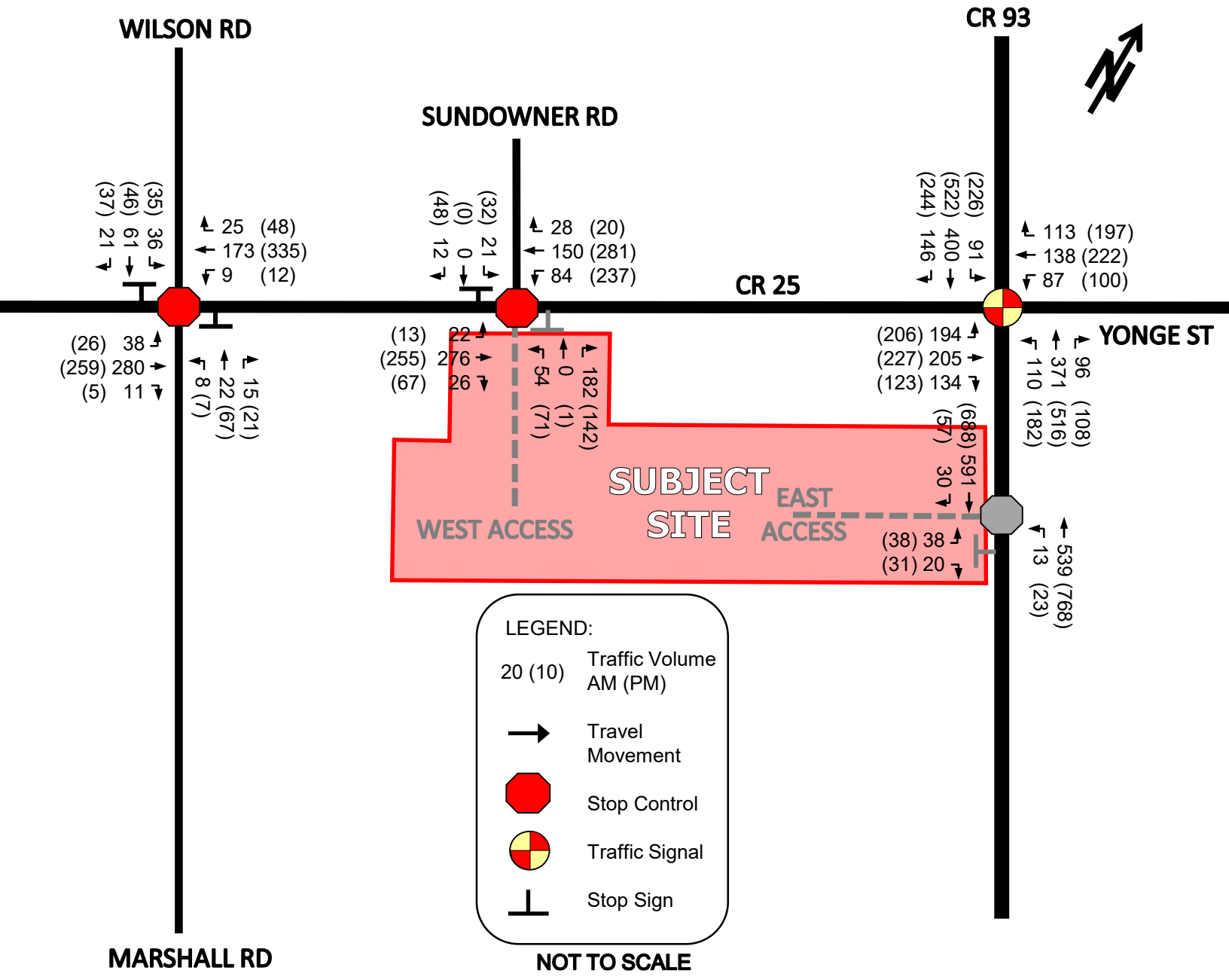

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Figure 17: Total (2033) Traffic Volumes

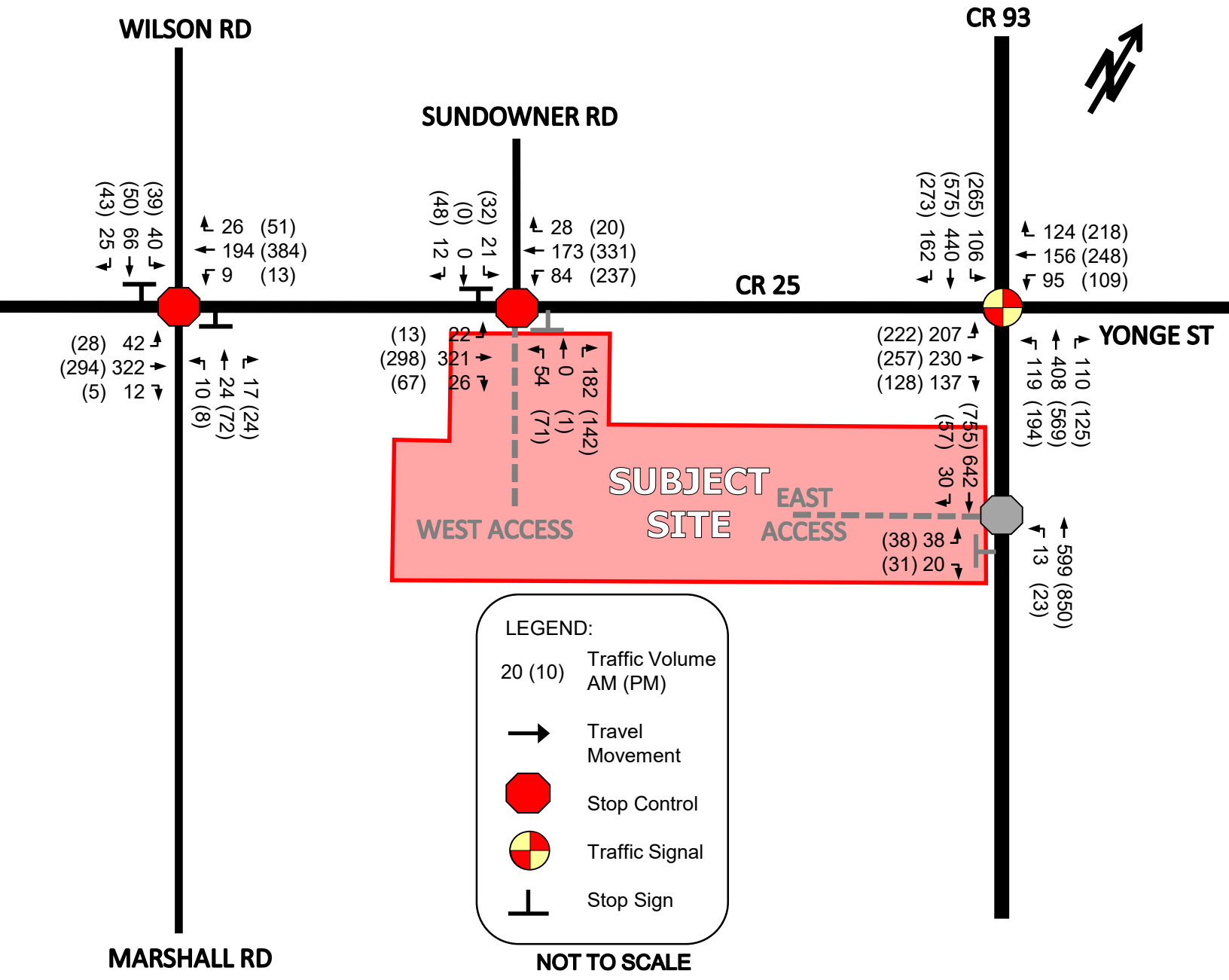

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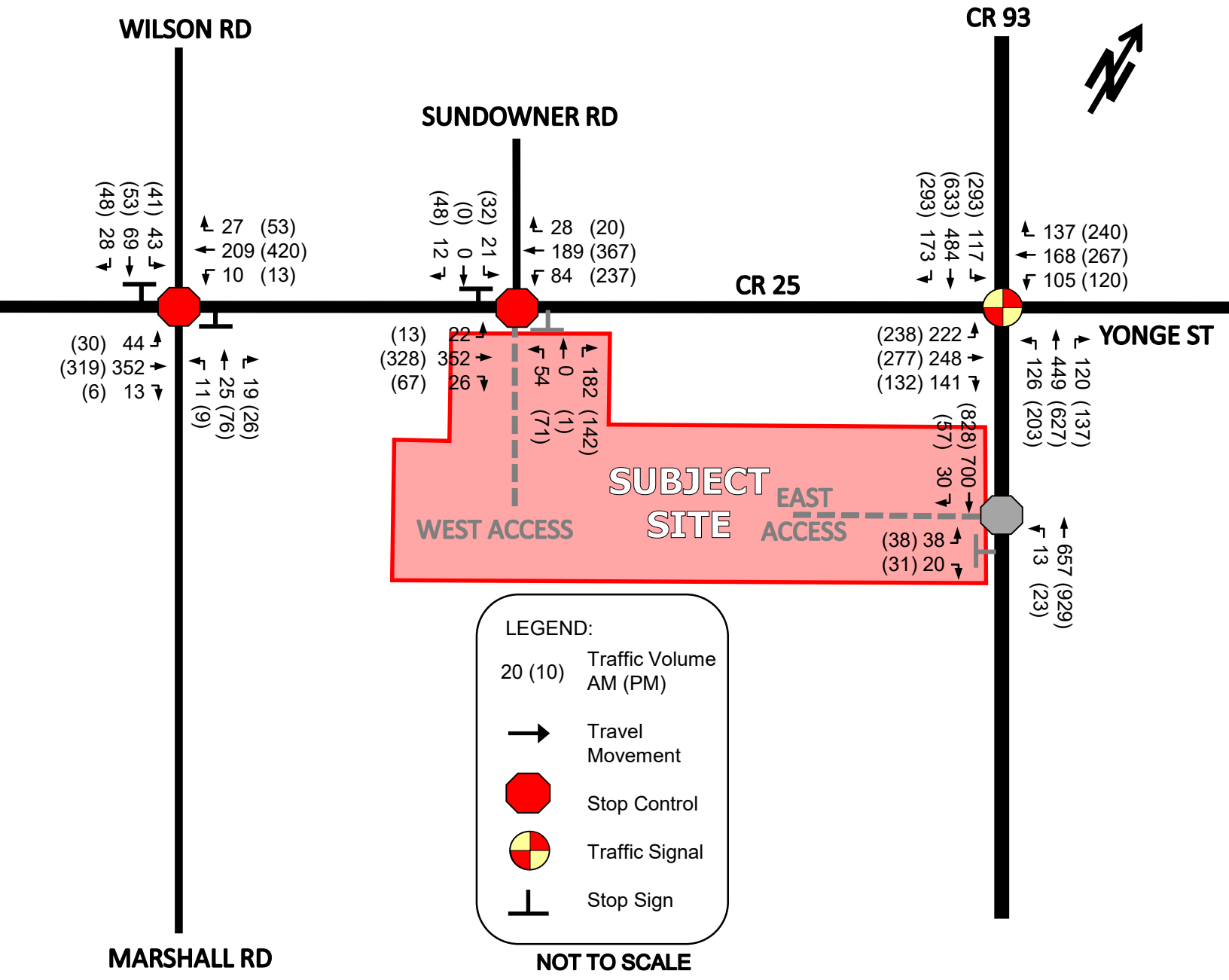
Figure 17: Total (2038) Traffic Volumes



ENGINEERING

Figure 18: East Access Optimal Location

Appendix A – Site Plan

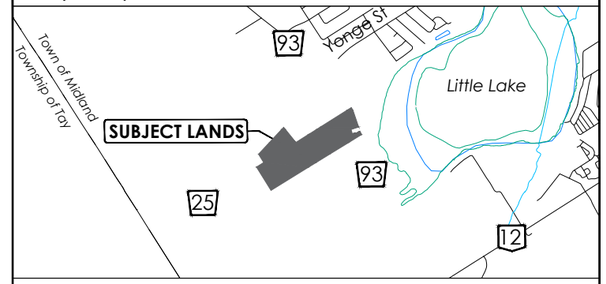
PROPOSED OFFICIAL PLAN AMENDMENT

659 BALM BEACH ROAD

SCHEDULE OF REVISIONS

No.	Date	Description	By
11	May 14, 2025	Revise land-use designations and road network;	A.S.
12	May 23, 2025	Revise land-use designations and road network;	A.S.
13	June 12, 2025	Add new parcel to block 'G' and 'C';	A.S.
14	June 26, 2025	Revise land-use designations;	A.S.

Key Map



659 Balm Beach Road East,
(Lot 105 Concession 1 West of Penetanguishene Road)
Town of Midland

LEGEND

- Subject Site (±20.6ha)
- A - C: Mixed-Use High Density:
  - 100 units / ha: ± 320 units
- D - F: Medium Density Residential
  - 50 units / ha: ± 575 units
- G - H: S.W.M. Area (1.7 ha)
- I: Potential Park Area (± 0.8 ha)
- Natural Heritage Area (± 3.3 ha)
- Potential Roads - 20.0m width

* TOTAL UNITS: ± 895 units

FOR DISCUSSION PURPOSES ONLY

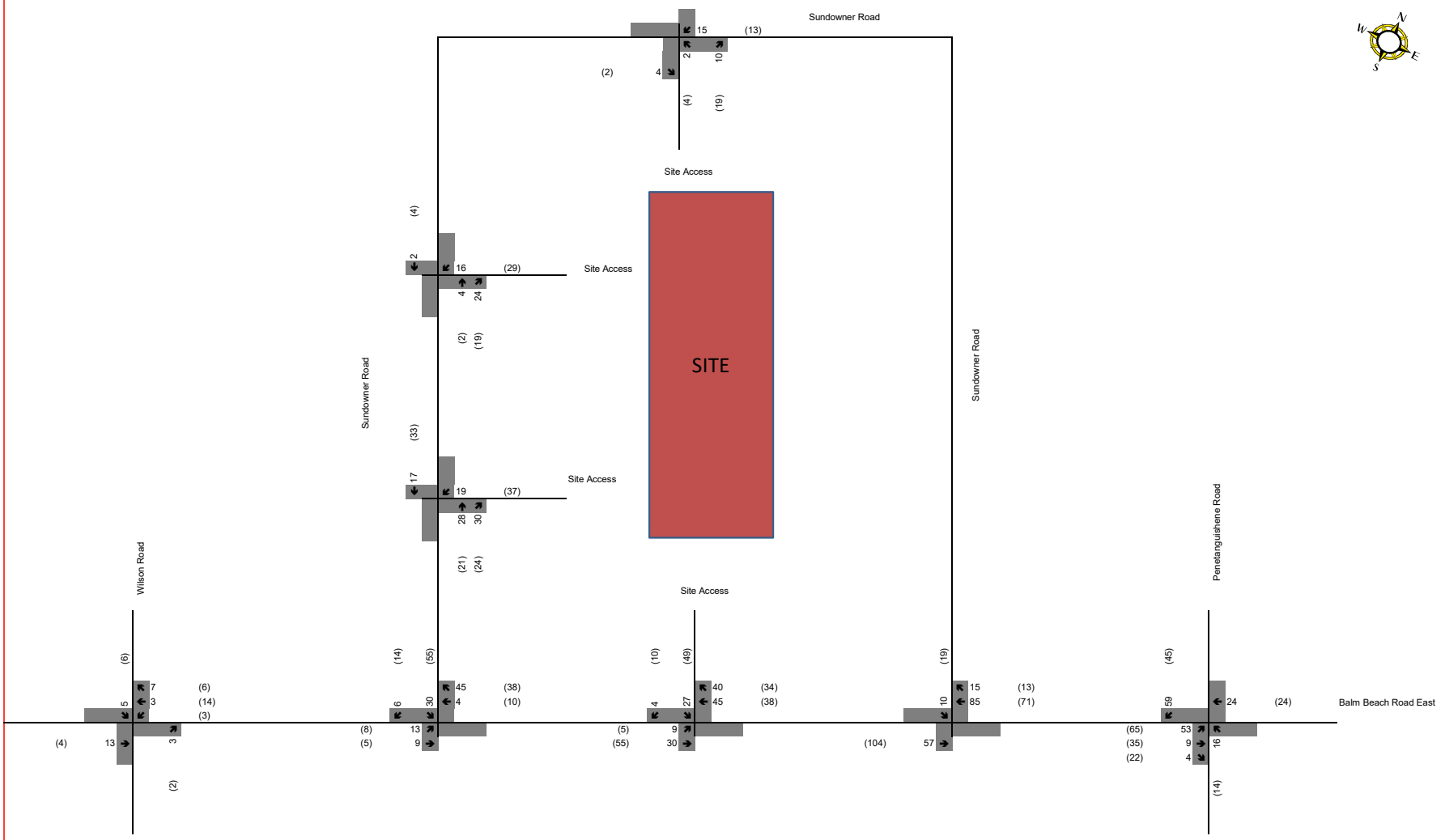
Note: This drawing is for discussion purposes only.
The information shown is approximate and subject to change.

0 100 200m N

Date:	October 1, 2021	Drawn By:	A.S.
File:	17-728	Checked By:	G.B.

IPS INNOVATIVE PLANNING SOLUTIONS
PLANNERS • PROJECT MANAGERS • LAND DEVELOPMENT
647 WELHAM ROAD, UNIT 9, BARRIE, ON, L4N 0B7 Tel: 705-812-3281
3800 STEELS AVE. W, SUITE 200W, VAUGHAN, ON, L4L 4G9 Tel: 905-291-7525
info@ipsconsultinginc.com / www.ipsconsultinginc.com

Appendix B –
Adjacent Development Excerpts



Legend

A.M. Peak Hour Traffic Volumes	xx
P.M. Peak Hour Traffic Volumes	(xx)

Figure 4

Total Site Generated Traffic Volumes

710 Balm Beach Road East

Appendix C –
Traffic Count Data

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Morning Peak Diagram

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

One Hour Peak
From: 7:45:00
To: 8:45:00

Municipality: Midland
Site #: 2419600001
Intersection: County Rd 93 & County Rd 25
TFR File #: 1
Count date: 5-Nov-24

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

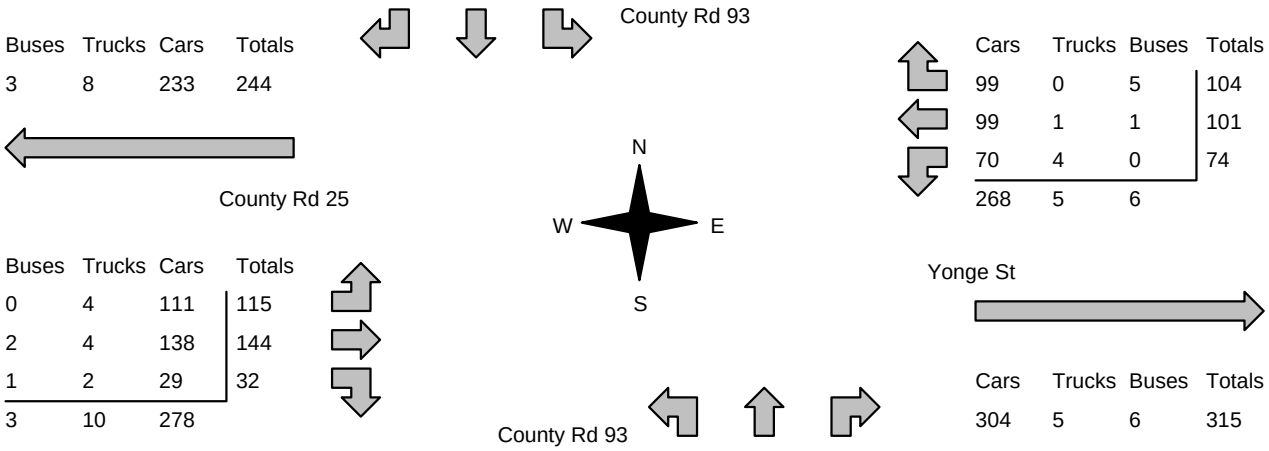
Major Road: County Rd 93 runs N/S

North Leg Total: 1086
North Entering: 537
North Peds: 0
Peds Cross: ⋈

Buses	1	6	2	9
Trucks	1	17	0	18
Cars	88	335	87	510
Totals	90	358	89	

Buses	9
Trucks	16
Cars	524
Totals	549

East Leg Total: 594
East Entering: 279
East Peds: 0
Peds Cross: ⧖



Buses	Trucks	Cars	Totals
3	8	233	244

Cars	Trucks	Buses	Totals
99	0	5	104
99	1	1	101
70	4	0	74
268	5	6	

Buses	Trucks	Cars	Totals
0	4	111	115
2	4	138	144
1	2	29	32
3	10	278	

Cars	Trucks	Buses	Totals
304	5	6	315

Peds Cross: ⧖
West Peds: 0
West Entering: 291
West Leg Total: 535

Cars	434			
Trucks	23			
Buses	7			
Totals	464			

Cars	46	314	79	439
Trucks	6	12	1	19
Buses	1	4	2	7
Totals	53	330	82	

Peds Cross: ⋈
South Peds: 0
South Entering: 465
South Leg Total: 929

Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Afternoon Peak Diagram

Specified Period
From: 16:00:00
To: 19:00:00

One Hour Peak
From: 16:00:00
To: 17:00:00

Municipality: Midland
Site #: 2419600001
Intersection: County Rd 93 & County Rd 25
TFR File #: 1
Count date: 5-Nov-24

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

Major Road: County Rd 93 runs N/S

North Leg Total: 1626
North Entering: 850
North Peds: 2
Peds Cross: ⋈

Buses	0	9	0	9
Trucks	0	8	1	9
Cars	162	449	221	832
Totals	162	466	222	

Buses	5
Trucks	6
Cars	765
Totals	776

East Leg Total: 901
East Entering: 415
East Peds: 2
Peds Cross: ⧗

County Rd 93

Buses	Trucks	Cars	Totals
0	7	374	381

Cars	Trucks	Buses	Totals
180	1	1	182
149	1	0	150
81	2	0	83
410	4	1	

County Rd 25

N
W E
S

Buses	Trucks	Cars	Totals
0	0	128	128
1	0	166	167
0	2	37	39
1	2	331	

Yonge St

Cars	Trucks	Buses	Totals
482	3	1	486

County Rd 93

Peds Cross: ⧗
West Peds: 0
West Entering: 334
West Leg Total: 715

Cars	567
Trucks	12
Buses	9
Totals	588

Cars	63	457	95	615
Trucks	6	5	2	13
Buses	0	4	0	4
Totals	69	466	97	

Peds Cross: ⋈
South Peds: 0
South Entering: 632
South Leg Total: 1220

Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Morning Peak Diagram

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

One Hour Peak
From: 8:00:00
To: 9:00:00

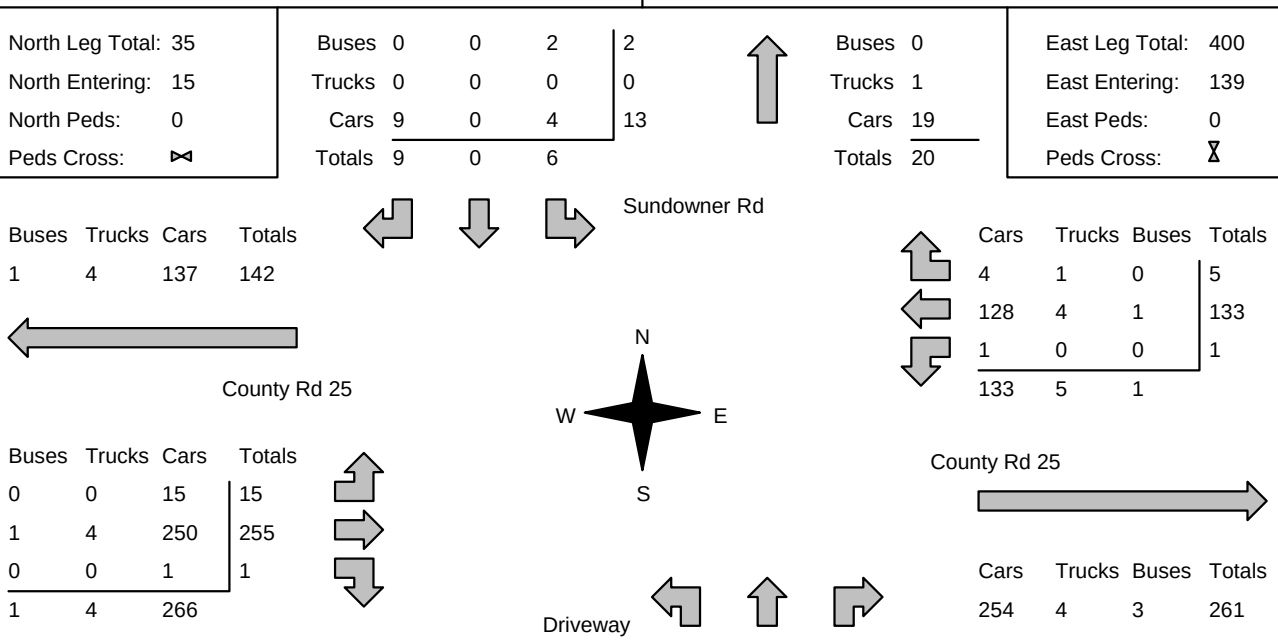
Municipality: Midland
Site #: 2419600002
Intersection: County Rd 25 & Sundowner Rd
TFR File #: 1
Count date: 5-Nov-24

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Non-Signalized Intersection ****

Major Road: County Rd 25 runs W/E



Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Afternoon Peak Diagram

Specified Period
From: 16:00:00
To: 19:00:00

One Hour Peak
From: 16:00:00
To: 17:00:00

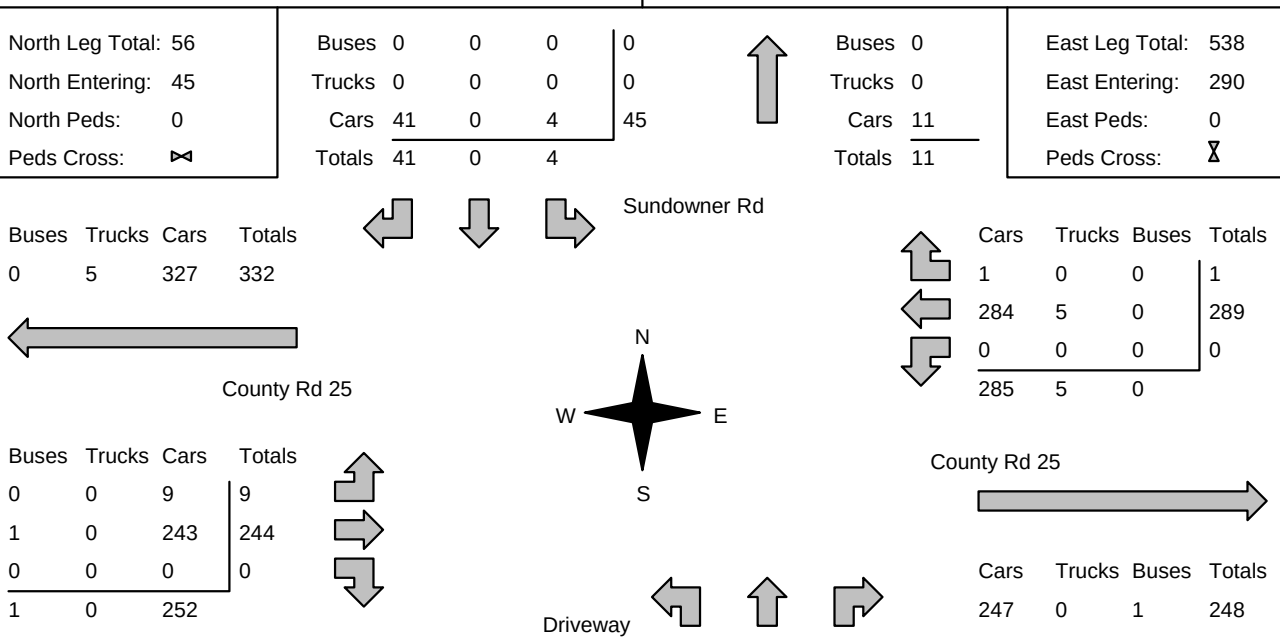
Municipality: Midland
Site #: 2419600002
Intersection: County Rd 25 & Sundowner Rd
TFR File #: 1
Count date: 5-Nov-24

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Non-Signalized Intersection ****

Major Road: County Rd 25 runs W/E



Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Morning Peak Diagram

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

One Hour Peak
From: 8:00:00
To: 9:00:00

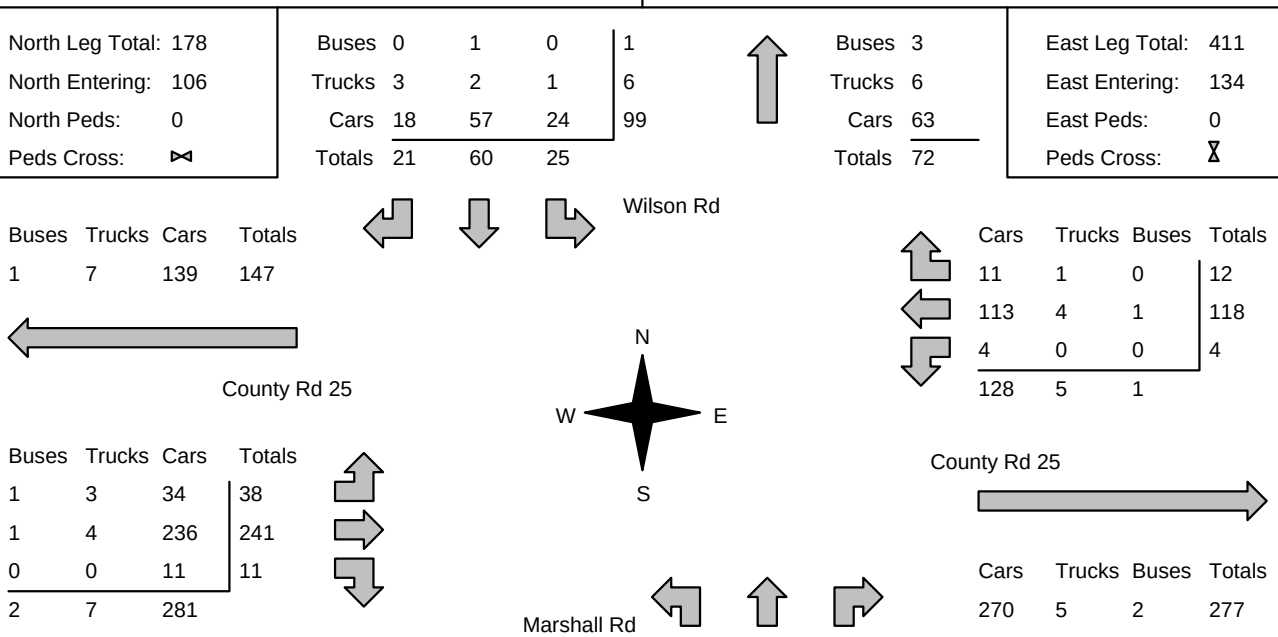
Municipality: Midland
Site #: 2419600003
Intersection: County Rd 25 & Wilson Rd
TFR File #: 1
Count date: 5-Nov-24

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Non-Signalized Intersection ****

Major Road: County Rd 25 runs W/E



Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Afternoon Peak Diagram

Specified Period
From: 16:00:00
To: 19:00:00

One Hour Peak
From: 16:00:00
To: 17:00:00

Municipality: Midland
Site #: 2419600003
Intersection: County Rd 25 & Wilson Rd
TFR File #: 1
Count date: 5-Nov-24

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Non-Signalized Intersection ****

Major Road: County Rd 25 runs W/E

North Leg Total: 230
North Entering: 102
North Peds: 0
Peds Cross: ⋈

Buses	0	1	0	1
Trucks	3	2	0	5
Cars	33	43	20	96
Totals	36	46	20	

Buses	0
Trucks	4
Cars	124
Totals	128

East Leg Total: 563
East Entering: 327
East Peds: 0
Peds Cross: ⧖

Wilson Rd

Buses	Trucks	Cars	Totals
1	6	320	327

Cars	Trucks	Buses	Totals
34	2	0	36
280	3	1	284
7	0	0	7
321	5	1	

County Rd 25

N
W E
S

Buses	Trucks	Cars	Totals
0	2	24	26
2	0	199	201
0	0	5	5
2	2	228	

County Rd 25

Cars	Trucks	Buses	Totals
234	0	2	236

Marshall Rd

Peds Cross: ⧖
West Peds: 0
West Entering: 232
West Leg Total: 559

Cars	55
Trucks	2
Buses	1
Totals	58

Cars	7	66	15	88
Trucks	0	0	0	0
Buses	0	0	0	0
Totals	7	66	15	

Peds Cross: ⋈
South Peds: 0
South Entering: 88
South Leg Total: 146

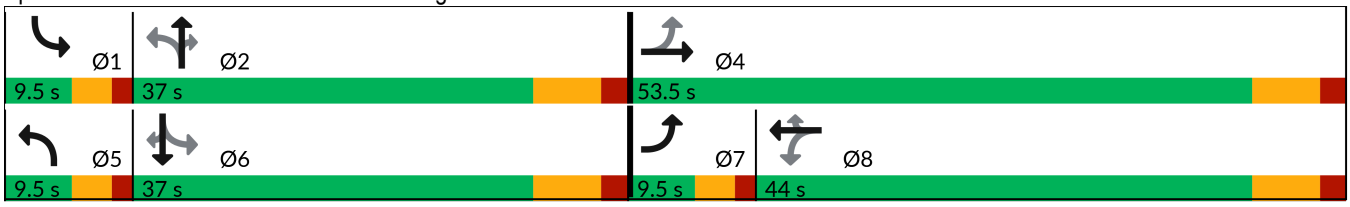
Comments

Appendix D –
Synchro Analysis Output –
Existing Traffic Volumes

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	117	147	75	103	106	54	337	84	91	365	92
Future Volume (vph)	117	147	75	103	106	54	337	84	91	365	92
Lane Group Flow (vph)	131	202	90	124	128	62	387	97	130	521	131
Turn Type	pm+pt	NA	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		8		5	2		1	6	
Permitted Phases	4		8		8	2		2	6		6
Detector Phase	7	4	8	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	5.0	5.0	5.0	5.0	30.0	30.0	5.0	30.0	30.0
Minimum Split (s)	9.5	44.0	44.0	44.0	44.0	9.5	37.0	37.0	9.5	37.0	37.0
Total Split (s)	9.5	53.5	44.0	44.0	44.0	9.5	37.0	37.0	9.5	37.0	37.0
Total Split (%)	9.5%	53.5%	44.0%	44.0%	44.0%	9.5%	37.0%	37.0%	9.5%	37.0%	37.0%
Yellow Time (s)	3.0	5.0	5.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0
All-Red Time (s)	1.5	2.0	2.0	2.0	2.0	1.5	2.0	2.0	1.5	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	7.0	7.0	7.0	7.0	4.5	7.0	7.0	4.5	7.0	7.0
Lead/Lag	Lead		Lag	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	Max	None	Max	Max
v/c Ratio	0.39	0.40	0.53	0.44	0.37	0.14	0.28	0.14	0.24	0.35	0.18
Control Delay (s/veh)	22.4	22.4	40.3	33.5	7.6	9.1	16.1	1.7	9.7	16.3	3.4
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 (s/veh)	22.4	22.4	40.3	33.5	7.6	9.1	16.1	1.7	9.7	16.3	3.4
Queue Length 50th (m)	13.4	21.0	11.8	16.0	0.0	3.5	18.4	0.0	7.7	25.8	0.0
Queue Length 95th (m)	25.1	37.1	22.7	27.7	8.6	9.4	29.7	3.5	13.1	31.0	3.7
Internal Link Dist (m)		736.8		238.4			326.5			186.5	
Turn Bay Length (m)	70.0		120.0		110.0	200.0		125.0	80.0		80.0
Base Capacity (vph)	338	1119	572	940	831	449	1407	696	545	1487	746
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	0.39	0.18	0.16	0.13	0.15	0.14	0.28	0.14	0.24	0.35	0.18

Intersection Summary
Cycle Length: 100
Actuated Cycle Length: 74.3
Natural Cycle: 100
Control Type: Semi Act-Uncoord

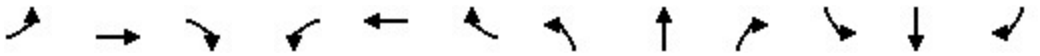
Splits and Phases: 1: CR 93 & CR 25/Yonge St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	117	147	33	75	103	106	54	337	84	91	365	92
Future Volume (vph)	117	147	33	75	103	106	54	337	84	91	365	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	7.0		7.0	7.0	7.0	4.5	7.0	7.0	4.5	7.0	7.0
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		1.00	1.00	0.98	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	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1768	1775		1730	1883	1527	1611	3476	1519	1783	3444	1549
Flt Permitted	0.48	1.00		0.63	1.00	1.00	0.46	1.00	1.00	0.51	1.00	1.00
Satd. Flow (perm)	899	1775		1149	1883	1527	779	3476	1519	948	3444	1549
Peak-hour factor, PHF	0.89	0.89	0.89	0.83	0.83	0.83	0.87	0.87	0.87	0.70	0.70	0.70
Adj. Flow (vph)	131	165	37	90	124	128	62	387	97	130	521	131
RTOR Reduction (vph)	0	11	0	0	0	109	0	0	57	0	0	75
Lane Group Flow (vph)	131	191	0	90	124	19	62	387	40	130	521	56
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Heavy Vehicles (%)	3%	4%	9%	5%	2%	5%	13%	5%	4%	2%	6%	2%
Turn Type	pm+pt	NA		Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8		8	2		2	6		6
Actuated Green, G (s)	20.7	20.7		11.2	11.2	11.2	34.9	31.0	31.0	37.1	32.1	32.1
Effective Green, g (s)	20.7	20.7		11.2	11.2	11.2	34.9	31.0	31.0	37.1	32.1	32.1
Actuated g/C Ratio	0.28	0.28		0.15	0.15	0.15	0.46	0.41	0.41	0.49	0.43	0.43
Clearance Time (s)	4.5	7.0		7.0	7.0	7.0	4.5	7.0	7.0	4.5	7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	305	488		171	280	227	404	1432	626	523	1470	661
v/s Ratio Prot	0.03	c0.11			0.07		0.01	0.11		c0.02	c0.15	
v/s Ratio Perm	0.09			c0.08		0.01	0.06		0.03	0.11		0.04
v/c Ratio	0.43	0.39		0.53	0.44	0.08	0.15	0.27	0.06	0.25	0.35	0.08
Uniform Delay, d1	21.5	22.1		29.6	29.2	27.6	11.2	14.6	13.3	10.4	14.6	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	1.0	0.5		2.9	1.1	0.2	0.2	0.5	0.2	0.3	0.7	0.3
Delay (s)	22.5	22.7		32.5	30.3	27.7	11.4	15.1	13.5	10.7	15.2	13.1
Level of Service	C	C		C	C	C	B	B	B	B	B	B
Approach Delay (s/veh)		22.6			29.9			14.4			14.1	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	18.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	75.2	Sum of lost time (s)	23.0
Intersection Capacity Utilization	71.3%	ICU Level of Service	C
Analysis Period (min)	15		

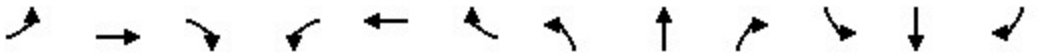
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	38	246	11	4	120	12	8	22	11	26	60	21
Future Volume (Veh/h)	38	246	11	4	120	12	8	22	11	26	60	21
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.80	0.80	0.80	0.74	0.74	0.74	0.64	0.64	0.64	0.85	0.85	0.85
Hourly flow rate (vph)	48	308	14	5	162	16	12	34	17	31	71	25
Pedestrians		10			10			10			10	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		1			1			1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	188			332			672	619	335	645	618	190
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	188			332			672	619	335	645	618	190
tC, single (s)	4.2			4.1			7.1	6.7	6.3	7.1	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.5	4.2	3.4	3.5	4.0	3.4
p0 queue free %	96			100			96	91	97	90	81	97
cM capacity (veh/h)	1321			1215			287	361	678	324	377	806

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	370	183	63	127
Volume Left	48	5	12	31
Volume Right	14	16	17	25
cSH	1321	1215	391	403
Volume to Capacity	0.04	0.00	0.16	0.31
Queue Length 95th (m)	0.9	0.1	4.3	10.1
Control Delay (s/veh)	1.3	0.3	16.0	18.0
Lane LOS	A	A	C	C
Approach Delay (s/veh)	1.3	0.3	16.0	18.0
Approach LOS			C	C

Intersection Summary				
Average Delay	5.1			
Intersection Capacity Utilization	44.8%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	260	1	1	136	5	0	0	0	6	0	9
Future Volume (Veh/h)	15	260	1	1	136	5	0	0	0	6	0	9
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.76	0.76	0.76	0.68	0.68	0.68	0.88	0.88	0.88	0.75	0.75	0.75
Hourly flow rate (vph)	20	342	1	1	200	7	0	0	0	8	0	12
Pedestrians								10			10	
Lane Width (m)								3.7			3.7	
Walking Speed (m/s)								1.1			1.1	
Percent Blockage								1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	217			353			610	612	353	598	609	214
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	217			353			610	612	353	598	609	214
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.4	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.8	4.0	3.3
p0 queue free %	99			100			100	100	100	98	100	99
cM capacity (veh/h)	1339			1194			386	394	684	359	396	818

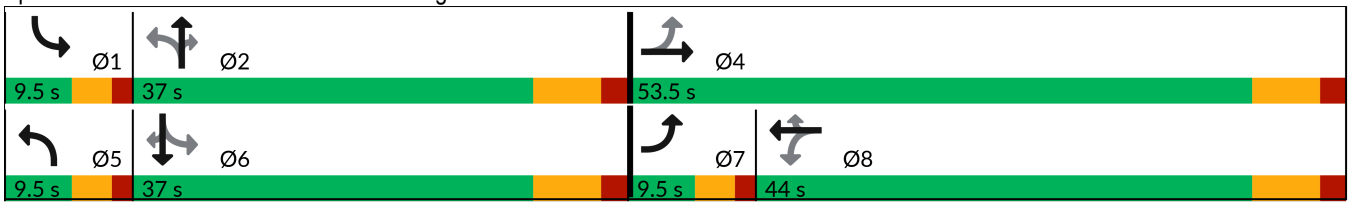
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	363	208	0	20
Volume Left	20	1	0	8
Volume Right	1	7	0	12
cSH	1339	1194	1700	541
Volume to Capacity	0.01	0.00	0.00	0.04
Queue Length 95th (m)	0.3	0.0	0.0	0.9
Control Delay (s/veh)	0.6	0.0	0.0	11.9
Lane LOS	A	A	A	B
Approach Delay (s/veh)	0.6	0.0	0.0	11.9
Approach LOS			A	B

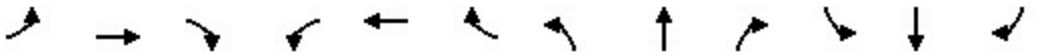
Intersection Summary				
Average Delay	0.8			
Intersection Capacity Utilization	34.0%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	131	170	85	153	186	70	475	99	226	475	165
Future Volume (vph)	131	170	85	153	186	70	475	99	226	475	165
Lane Group Flow (vph)	144	231	112	201	245	80	546	114	243	511	177
Turn Type	pm+pt	NA	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		8		5	2		1	6	
Permitted Phases	4		8		8	2		2	6		6
Detector Phase	7	4	8	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	5.0	5.0	5.0	5.0	30.0	30.0	5.0	30.0	30.0
Minimum Split (s)	9.5	44.0	44.0	44.0	44.0	9.5	37.0	37.0	9.5	37.0	37.0
Total Split (s)	9.5	53.5	44.0	44.0	44.0	9.5	37.0	37.0	9.5	37.0	37.0
Total Split (%)	9.5%	53.5%	44.0%	44.0%	44.0%	9.5%	37.0%	37.0%	9.5%	37.0%	37.0%
Yellow Time (s)	3.0	5.0	5.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0
All-Red Time (s)	1.5	2.0	2.0	2.0	2.0	1.5	2.0	2.0	1.5	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	7.0	7.0	7.0	7.0	4.5	7.0	7.0	4.5	7.0	7.0
Lead/Lag	Lead		Lag	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	Max	None	Max	Max
v/c Ratio	0.42	0.41	0.54	0.59	0.51	0.18	0.39	0.17	0.54	0.35	0.24
Control Delay (s/veh)	22.3	21.9	38.4	36.2	7.8	10.7	18.6	2.8	17.0	17.7	4.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	22.3	21.9	38.4	36.2	7.8	10.7	18.6	2.8	17.0	17.7	4.0
Queue Length 50th (m)	14.9	24.5	14.9	27.1	0.0	5.0	28.8	0.0	16.9	26.7	0.0
Queue Length 95th (m)	27.2	42.1	24.4	37.8	8.8	12.8	45.5	6.0	35.1	44.6	12.2
Internal Link Dist (m)		736.8		238.4			326.5			186.5	
Turn Bay Length (m)	70.0		120.0		110.0	200.0		125.0	80.0		80.0
Base Capacity (vph)	340	1102	554	906	882	451	1396	688	446	1462	745
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.21	0.20	0.22	0.28	0.18	0.39	0.17	0.54	0.35	0.24

Intersection Summary
Cycle Length: 100
Actuated Cycle Length: 77.1
Natural Cycle: 100
Control Type: Semi Act-Uncoord

Splits and Phases: 1: CR 93 & CR 25/Yonge St

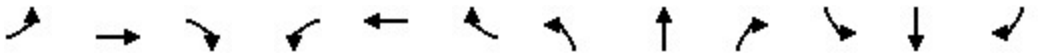




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	131	170	40	85	153	186	70	475	99	226	475	165
Future Volume (vph)	131	170	40	85	153	186	70	475	99	226	475	165
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	7.0		7.0	7.0	7.0	4.5	7.0	7.0	4.5	7.0	7.0
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		1.00	1.00	0.98	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	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1786	1813		1781	1883	1572	1670	3579	1548	1785	3510	1548
Flt Permitted	0.44	1.00		0.61	1.00	1.00	0.46	1.00	1.00	0.41	1.00	1.00
Satd. Flow (perm)	830	1813		1152	1883	1572	815	3579	1548	763	3510	1548
Peak-hour factor, PHF	0.91	0.91	0.91	0.76	0.76	0.76	0.87	0.87	0.87	0.93	0.93	0.93
Adj. Flow (vph)	144	187	44	112	201	245	80	546	114	243	511	177
RTOR Reduction (vph)	0	11	0	0	0	201	0	0	69	0	0	104
Lane Group Flow (vph)	144	220	0	112	201	44	80	546	45	243	511	73
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Heavy Vehicles (%)	2%	2%	5%	2%	2%	2%	9%	2%	2%	2%	4%	2%
Turn Type	pm+pt	NA		Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8		8	2		2	6		6
Actuated Green, G (s)	23.4	23.4		13.9	13.9	13.9	34.9	31.0	31.0	37.1	32.1	32.1
Effective Green, g (s)	23.4	23.4		13.9	13.9	13.9	34.9	31.0	31.0	37.1	32.1	32.1
Actuated g/C Ratio	0.30	0.30		0.18	0.18	0.18	0.45	0.40	0.40	0.48	0.41	0.41
Clearance Time (s)	4.5	7.0		7.0	7.0	7.0	4.5	7.0	7.0	4.5	7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	310	544		205	335	280	407	1424	616	428	1446	637
v/s Ratio Prot	0.03	c0.12			c0.11		0.01	0.15		c0.04	0.15	
v/s Ratio Perm	0.11			0.10		0.03	0.08		0.03	c0.23		0.05
v/c Ratio	0.46	0.40		0.55	0.60	0.16	0.20	0.38	0.07	0.57	0.35	0.11
Uniform Delay, d1	21.0	21.7		29.1	29.4	27.0	12.5	16.7	14.5	13.1	15.8	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	1.1	0.5		3.0	3.0	0.3	0.2	0.8	0.2	1.7	0.7	0.4
Delay (s)	22.1	22.2		32.1	32.5	27.3	12.7	17.4	14.8	14.8	16.4	14.5
Level of Service	C	C		C	C	C	B	B	B	B	B	B
Approach Delay (s/veh)		22.1			30.1			16.5			15.6	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	19.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	77.9	Sum of lost time (s)	23.0
Intersection Capacity Utilization	80.5%	ICU Level of Service	D
Analysis Period (min)	15		

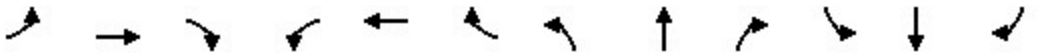
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	26	205	5	7	290	36	7	66	15	20	46	37
Future Volume (Veh/h)	26	205	5	7	290	36	7	66	15	20	46	37
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.84	0.84	0.84	0.86	0.86	0.86	0.88	0.88	0.88	0.85	0.85	0.85
Hourly flow rate (vph)	31	244	6	8	337	42	8	75	17	24	54	44
Pedestrians		10			10			10			10	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		1			1			1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	389			260			774	724	267	758	706	378
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	389			260			774	724	267	758	706	378
tC, single (s)	4.2			4.1			7.1	6.5	6.2	7.1	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.5	4.0	3.3	3.5	4.1	3.4
p0 queue free %	97			99			97	78	98	90	84	93
cM capacity (veh/h)	1126			1292			243	334	757	247	336	643

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	281	387	100	122
Volume Left	31	8	8	24
Volume Right	6	42	17	44
cSH	1126	1292	357	374
Volume to Capacity	0.03	0.01	0.28	0.33
Queue Length 95th (m)	0.6	0.1	8.6	10.6
Control Delay (s/veh)	1.2	0.2	19.0	19.2
Lane LOS	A	A	C	C
Approach Delay (s/veh)	1.2	0.2	19.0	19.2
Approach LOS			C	C

Intersection Summary				
Average Delay	5.2			
Intersection Capacity Utilization	43.5%	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)	9	249	0	0	295	1	2	1	0	4	0	41
Future Volume (Veh/h)	9	249	0	0	295	1	2	1	0	4	0	41
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.85	0.85	0.85	0.50	0.50	0.50	0.80	0.80	0.80
Hourly flow rate (vph)	10	271	0	0	347	1	4	2	0	5	0	51
Pedestrians								10			10	
Lane Width (m)								3.7			3.7	
Walking Speed (m/s)								1.1			1.1	
Percent Blockage								1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	358			281			700	659	281	650	659	358
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	358			281			700	659	281	650	659	358
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			99	99	100	99	100	92
cM capacity (veh/h)	1189			1269			318	373	750	369	373	680

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	281	348	6	56
Volume Left	10	0	4	5
Volume Right	0	1	0	51
cSH	1189	1269	334	632
Volume to Capacity	0.01	0.00	0.02	0.09
Queue Length 95th (m)	0.2	0.0	0.4	2.2
Control Delay (s/veh)	0.4	0.0	16.0	11.2
Lane LOS	A		C	B
Approach Delay (s/veh)	0.4	0.0	16.0	11.2
Approach LOS			C	B

Intersection Summary				
Average Delay	1.2			
Intersection Capacity Utilization	30.4%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	644	600	0
Future Volume (Veh/h)	0	0	0	644	600	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.75	0.75	0.87	0.87	0.93	0.93
Hourly flow rate (vph)	0	0	0	740	645	0
Pedestrians	10					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	1					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)					397	
pX, platoon unblocked						
vC, conflicting volume	1395	655	655			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1395	655	655			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	154	462	923			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	0	740	645
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	923	1700
Volume to Capacity	0.00	0.00	0.38
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s/veh)	0.0	0.0	0.0
Lane LOS	A		
Approach Delay (s/veh)	0.0	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	43.9%	ICU Level of Service	A
Analysis Period (min)	15		

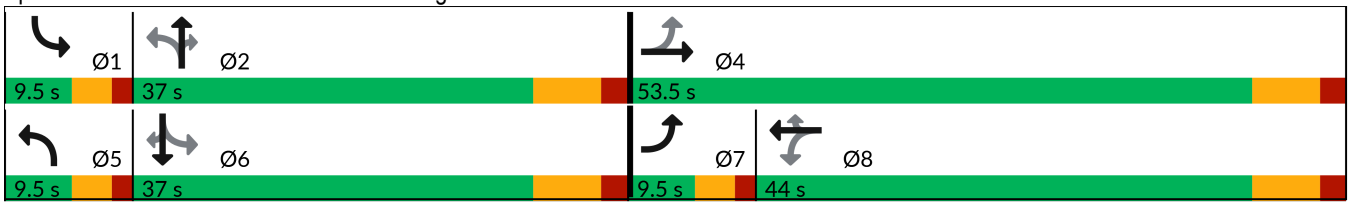
Intersection Sign configuration not allowed in HCM analysis.

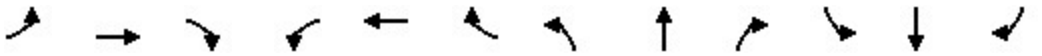
Appendix E –
Synchro Analysis Output –
Background Traffic Volumes

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	151	161	80	121	113	65	357	89	96	388	127
Future Volume (vph)	151	161	80	121	113	65	357	89	96	388	127
Lane Group Flow (vph)	170	223	96	146	136	75	410	102	137	554	181
Turn Type	pm+pt	NA	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		8		5	2		1	6	
Permitted Phases	4		8		8	2		2	6		6
Detector Phase	7	4	8	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	5.0	5.0	5.0	5.0	30.0	30.0	5.0	30.0	30.0
Minimum Split (s)	9.5	44.0	44.0	44.0	44.0	9.5	37.0	37.0	9.5	37.0	37.0
Total Split (s)	9.5	53.5	44.0	44.0	44.0	9.5	37.0	37.0	9.5	37.0	37.0
Total Split (%)	9.5%	53.5%	44.0%	44.0%	44.0%	9.5%	37.0%	37.0%	9.5%	37.0%	37.0%
Yellow Time (s)	3.0	5.0	5.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0
All-Red Time (s)	1.5	2.0	2.0	2.0	2.0	1.5	2.0	2.0	1.5	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	7.0	7.0	7.0	7.0	4.5	7.0	7.0	4.5	7.0	7.0
Lead/Lag	Lead		Lag	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	Max	None	Max	Max
v/c Ratio	0.50	0.43	0.54	0.49	0.38	0.17	0.29	0.15	0.26	0.38	0.24
Control Delay (s/veh)	24.6	22.7	40.2	34.2	8.1	9.8	16.7	2.0	10.4	17.0	3.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	24.6	22.7	40.2	34.2	8.1	9.8	16.7	2.0	10.4	17.0	3.8
Queue Length 50th (m)	17.9	23.6	12.7	19.0	0.0	4.4	19.9	0.0	8.3	28.3	0.0
Queue Length 95th (m)	31.5	40.6	23.8	31.7	9.8	11.4	32.8	4.2	14.6	34.1	4.8
Internal Link Dist (m)		736.8		238.4			326.5			186.5	
Turn Bay Length (m)	70.0		120.0		110.0	200.0		125.0	80.0		80.0
Base Capacity (vph)	343	1106	556	930	824	429	1392	690	531	1472	762
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	0.50	0.20	0.17	0.16	0.17	0.17	0.29	0.15	0.26	0.38	0.24

Intersection Summary
Cycle Length: 100
Actuated Cycle Length: 75.1
Natural Cycle: 100
Control Type: Semi Act-Uncoord

Splits and Phases: 1: CR 93 & CR 25/Yonge St

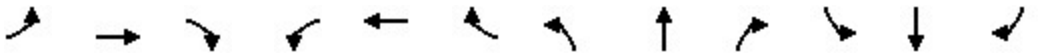




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	151	161	37	80	121	113	65	357	89	96	388	127
Future Volume (vph)	151	161	37	80	121	113	65	357	89	96	388	127
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	7.0		7.0	7.0	7.0	4.5	7.0	7.0	4.5	7.0	7.0
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		1.00	1.00	0.98	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	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1768	1773		1730	1883	1527	1611	3476	1519	1783	3444	1548
Flt Permitted	0.48	1.00		0.62	1.00	1.00	0.44	1.00	1.00	0.49	1.00	1.00
Satd. Flow (perm)	897	1773		1128	1883	1527	745	3476	1519	927	3444	1548
Peak-hour factor, PHF	0.89	0.89	0.89	0.83	0.83	0.83	0.87	0.87	0.87	0.70	0.70	0.70
Adj. Flow (vph)	170	181	42	96	146	136	75	410	102	137	554	181
RTOR Reduction (vph)	0	11	0	0	0	115	0	0	60	0	0	104
Lane Group Flow (vph)	170	212	0	96	146	21	75	410	42	137	554	77
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Heavy Vehicles (%)	3%	4%	9%	5%	2%	5%	13%	5%	4%	2%	6%	2%
Turn Type	pm+pt	NA		Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8		8	2		2	6		6
Actuated Green, G (s)	21.4	21.4		11.9	11.9	11.9	34.9	31.0	31.0	37.1	32.1	32.1
Effective Green, g (s)	21.4	21.4		11.9	11.9	11.9	34.9	31.0	31.0	37.1	32.1	32.1
Actuated g/C Ratio	0.28	0.28		0.16	0.16	0.16	0.46	0.41	0.41	0.49	0.42	0.42
Clearance Time (s)	4.5	7.0		7.0	7.0	7.0	4.5	7.0	7.0	4.5	7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	310	499		176	295	239	387	1419	620	509	1456	654
v/s Ratio Prot	c0.04	0.12			0.08		0.01	0.12		c0.02	c0.16	
v/s Ratio Perm	c0.12			0.09		0.01	0.08		0.03	0.11		0.05
v/c Ratio	0.55	0.42		0.55	0.49	0.09	0.19	0.29	0.07	0.27	0.38	0.12
Uniform Delay, d1	22.3	22.2		29.5	29.3	27.4	11.6	15.1	13.7	10.8	15.1	13.3
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	2.0	0.6		3.4	1.3	0.2	0.2	0.5	0.2	0.3	0.8	0.4
Delay (s)	24.3	22.8		32.9	30.6	27.5	11.9	15.6	13.9	11.0	15.8	13.7
Level of Service	C	C		C	C	C	B	B	B	B	B	B
Approach Delay (s/veh)		23.5			30.1			14.8			14.6	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	18.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	75.9	Sum of lost time (s)	23.0
Intersection Capacity Utilization	72.6%	ICU Level of Service	C
Analysis Period (min)	15		

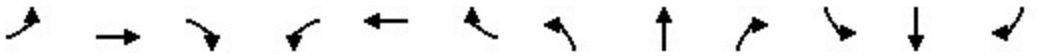
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	268	11	4	130	15	9	23	14	30	62	23
Future Volume (Veh/h)	40	268	11	4	130	15	9	23	14	30	62	23
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.80	0.80	0.80	0.74	0.74	0.74	0.64	0.64	0.64	0.85	0.85	0.85
Hourly flow rate (vph)	50	335	14	5	176	20	14	36	22	35	73	27
Pedestrians		10			10			10			10	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		1			1			1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	206			359			722	668	362	698	665	206
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	206			359			722	668	362	698	665	206
tC, single (s)	4.2			4.1			7.1	6.7	6.3	7.1	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.5	4.2	3.4	3.5	4.0	3.4
p0 queue free %	96			100			95	89	97	88	79	97
cM capacity (veh/h)	1301			1188			260	337	654	293	354	789

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	399	201	72	135
Volume Left	50	5	14	35
Volume Right	14	20	22	27
cSH	1301	1188	371	375
Volume to Capacity	0.04	0.00	0.19	0.36
Queue Length 95th (m)	0.9	0.1	5.4	12.2
Control Delay (s/veh)	1.3	0.2	17.0	19.9
Lane LOS	A	A	C	C
Approach Delay (s/veh)	1.3	0.2	17.0	19.9
Approach LOS			C	C

Intersection Summary				
Average Delay	5.6			
Intersection Capacity Utilization	47.3%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	281	1	1	146	28	0	0	0	21	0	12
Future Volume (Veh/h)	22	281	1	1	146	28	0	0	0	21	0	12
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.76	0.76	0.76	0.68	0.68	0.68	0.88	0.88	0.88	0.75	0.75	0.75
Hourly flow rate (vph)	29	370	1	1	215	41	0	0	0	28	0	16
Pedestrians								10			10	
Lane Width (m)								3.7			3.7	
Walking Speed (m/s)								1.1			1.1	
Percent Blockage								1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	266			381			692	707	381	676	687	246
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	266			381			692	707	381	676	687	246
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.4	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.8	4.0	3.3
p0 queue free %	98			100			100	100	100	91	100	98
cM capacity (veh/h)	1285			1166			336	345	660	315	354	786

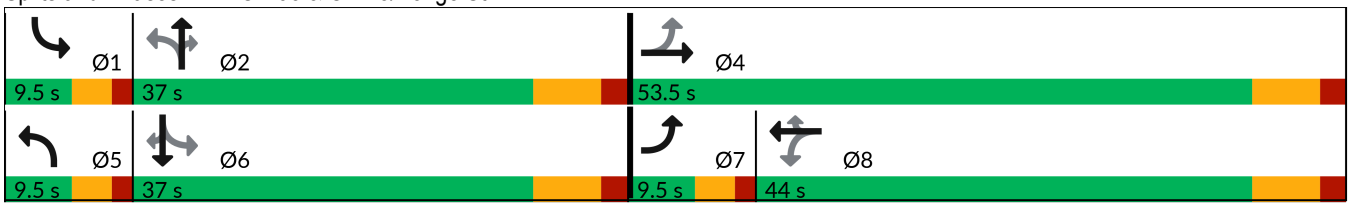
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	400	257	0	44
Volume Left	29	1	0	28
Volume Right	1	41	0	16
cSH	1285	1166	1700	403
Volume to Capacity	0.02	0.00	0.00	0.11
Queue Length 95th (m)	0.5	0.0	0.0	2.8
Control Delay (s/veh)	0.8	0.0	0.0	15.0
Lane LOS	A	A	A	C
Approach Delay (s/veh)	0.8	0.0	0.0	15.0
Approach LOS			A	C

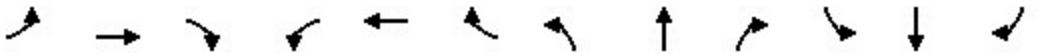
Intersection Summary				
Average Delay	1.4			
Intersection Capacity Utilization	40.1%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	172	199	90	174	197	82	504	105	240	504	198
Future Volume (vph)	172	199	90	174	197	82	504	105	240	504	198
Lane Group Flow (vph)	189	277	118	229	259	94	579	121	258	542	213
Turn Type	pm+pt	NA	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		8		5	2		1	6	
Permitted Phases	4		8		8	2		2	6		6
Detector Phase	7	4	8	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	5.0	5.0	5.0	5.0	30.0	30.0	5.0	30.0	30.0
Minimum Split (s)	9.5	44.0	44.0	44.0	44.0	9.5	37.0	37.0	9.5	37.0	37.0
Total Split (s)	9.5	53.5	44.0	44.0	44.0	9.5	37.0	37.0	9.5	37.0	37.0
Total Split (%)	9.5%	53.5%	44.0%	44.0%	44.0%	9.5%	37.0%	37.0%	9.5%	37.0%	37.0%
Yellow Time (s)	3.0	5.0	5.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0
All-Red Time (s)	1.5	2.0	2.0	2.0	2.0	1.5	2.0	2.0	1.5	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	7.0	7.0	7.0	7.0	4.5	7.0	7.0	4.5	7.0	7.0
Lead/Lag	Lead		Lag	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	Max	None	Max	Max
v/c Ratio	0.58	0.48	0.55	0.63	0.52	0.22	0.42	0.18	0.62	0.38	0.28
Control Delay (s/veh)	26.5	22.8	38.4	36.7	8.7	11.6	19.7	3.3	20.7	18.7	4.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	26.5	22.8	38.4	36.7	8.7	11.6	19.7	3.3	20.7	18.7	4.0
Queue Length 50th (m)	20.1	30.4	15.9	31.4	2.1	6.4	32.6	0.0	19.4	30.2	0.0
Queue Length 95th (m)	34.5	50.6	25.6	42.4	11.0	15.0	49.7	7.2	#40.6	48.7	13.4
Internal Link Dist (m)		736.8		238.4			326.5			186.5	
Turn Bay Length (m)	70.0		120.0		110.0	200.0		125.0	80.0		80.0
Base Capacity (vph)	328	1080	521	890	869	425	1372	679	419	1437	757
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	0.58	0.26	0.23	0.26	0.30	0.22	0.42	0.18	0.62	0.38	0.28

Intersection Summary
Cycle Length: 100
Actuated Cycle Length: 78.5
Natural Cycle: 100
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: CR 93 & CR 25/Yonge St

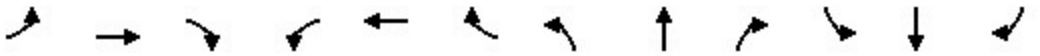




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	172	199	53	90	174	197	82	504	105	240	504	198
Future Volume (vph)	172	199	53	90	174	197	82	504	105	240	504	198
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	7.0		7.0	7.0	7.0	4.5	7.0	7.0	4.5	7.0	7.0
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		1.00	1.00	0.98	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	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1786	1806		1781	1883	1572	1670	3579	1547	1786	3510	1547
Flt Permitted	0.40	1.00		0.59	1.00	1.00	0.44	1.00	1.00	0.38	1.00	1.00
Satd. Flow (perm)	758	1806		1105	1883	1572	771	3579	1547	715	3510	1547
Peak-hour factor, PHF	0.91	0.91	0.91	0.76	0.76	0.76	0.87	0.87	0.87	0.93	0.93	0.93
Adj. Flow (vph)	189	219	58	118	229	259	94	579	121	258	542	213
RTOR Reduction (vph)	0	12	0	0	0	195	0	0	74	0	0	127
Lane Group Flow (vph)	189	265	0	118	229	64	94	579	47	258	542	86
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Heavy Vehicles (%)	2%	2%	5%	2%	2%	2%	9%	2%	2%	2%	4%	2%
Turn Type	pm+pt	NA		Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8		8	2		2	6		6
Actuated Green, G (s)	24.8	24.8		15.3	15.3	15.3	34.9	31.0	31.0	37.1	32.1	32.1
Effective Green, g (s)	24.8	24.8		15.3	15.3	15.3	34.9	31.0	31.0	37.1	32.1	32.1
Actuated g/C Ratio	0.31	0.31		0.19	0.19	0.19	0.44	0.39	0.39	0.47	0.40	0.40
Clearance Time (s)	4.5	7.0		7.0	7.0	7.0	4.5	7.0	7.0	4.5	7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	301	564		213	363	303	383	1399	604	402	1420	626
v/s Ratio Prot	c0.04	0.15			0.12		0.01	0.16		c0.04	0.15	
v/s Ratio Perm	c0.16			0.11		0.04	0.10		0.03	c0.26		0.06
v/c Ratio	0.63	0.47		0.55	0.63	0.21	0.25	0.41	0.08	0.64	0.38	0.14
Uniform Delay, d1	22.6	21.9		28.9	29.4	26.9	13.2	17.5	15.2	14.5	16.6	14.9
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	4.1	0.6		3.1	3.6	0.3	0.3	0.9	0.3	3.5	0.8	0.5
Delay (s)	26.7	22.6		32.0	33.0	27.3	13.5	18.5	15.4	18.0	17.4	15.3
Level of Service	C	C		C	C	C	B	B	B	B	B	B
Approach Delay (s/veh)		24.2			30.3			17.4			17.1	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	21.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	79.3	Sum of lost time (s)	23.0
Intersection Capacity Utilization	83.2%	ICU Level of Service	E
Analysis Period (min)	15		

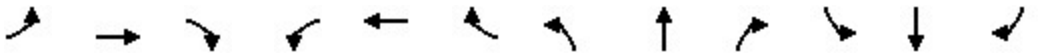
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	220	5	9	314	40	8	69	16	25	48	39
Future Volume (Veh/h)	27	220	5	9	314	40	8	69	16	25	48	39
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.84	0.84	0.84	0.86	0.86	0.86	0.88	0.88	0.88	0.85	0.85	0.85
Hourly flow rate (vph)	32	262	6	10	365	47	9	78	18	29	56	46
Pedestrians		10			10			10			10	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		1			1			1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	422			278			832	781	285	815	761	409
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	422			278			832	781	285	815	761	409
tC, single (s)	4.2			4.1			7.1	6.5	6.2	7.1	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.5	4.0	3.3	3.5	4.1	3.4
p0 queue free %	97			99			96	75	98	87	82	93
cM capacity (veh/h)	1095			1272			216	308	739	219	311	618

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	300	422	105	131
Volume Left	32	10	9	29
Volume Right	6	47	18	46
cSH	1095	1272	329	339
Volume to Capacity	0.03	0.01	0.32	0.39
Queue Length 95th (m)	0.7	0.2	10.2	13.5
Control Delay (s/veh)	1.2	0.3	21.0	22.2
Lane LOS	A	A	C	C
Approach Delay (s/veh)	1.2	0.3	21.0	22.2
Approach LOS			C	C

Intersection Summary				
Average Delay	5.8			
Intersection Capacity Utilization	45.0%	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)	13	267	0	0	318	20	2	1	0	32	0	48
Future Volume (Veh/h)	13	267	0	0	318	20	2	1	0	32	0	48
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.85	0.85	0.85	0.50	0.50	0.50	0.80	0.80	0.80
Hourly flow rate (vph)	14	290	0	0	374	24	4	2	0	40	0	60
Pedestrians								10			10	
Lane Width (m)								3.7			3.7	
Walking Speed (m/s)								1.1			1.1	
Percent Blockage								1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	408			300			774	736	300	715	724	396
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	408			300			774	736	300	715	724	396
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			99	99	100	88	100	91
cM capacity (veh/h)	1140			1249			277	336	732	333	341	647

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	304	398	6	100
Volume Left	14	0	4	40
Volume Right	0	24	0	60
cSH	1140	1249	294	469
Volume to Capacity	0.01	0.00	0.02	0.21
Queue Length 95th (m)	0.3	0.0	0.5	6.1
Control Delay (s/veh)	0.5	0.0	17.5	14.7
Lane LOS	A		C	B
Approach Delay (s/veh)	0.5	0.0	17.5	14.7
Approach LOS			C	B

Intersection Summary				
Average Delay	2.1			
Intersection Capacity Utilization	36.2%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	691	647	0
Future Volume (Veh/h)	0	0	0	691	647	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.75	0.75	0.87	0.87	0.93	0.93
Hourly flow rate (vph)	0	0	0	794	696	0
Pedestrians	10					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	1					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)					397	
pX, platoon unblocked						
vC, conflicting volume	1500	706	706			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1500	706	706			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	133	432	883			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	0	794	696
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	883	1700
Volume to Capacity	0.00	0.00	0.41
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s/veh)	0.0	0.0	0.0
Lane LOS	A		
Approach Delay (s/veh)	0.0	0.0	0.0
Approach LOS	A		

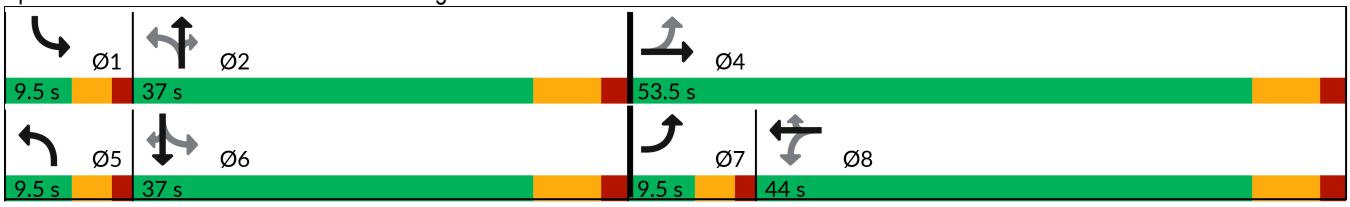
Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	46.4%	ICU Level of Service	A
Analysis Period (min)	15		

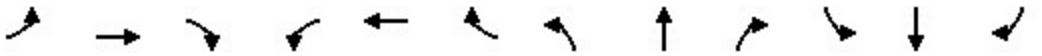
Intersection Sign configuration not allowed in HCM analysis.

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	164	177	88	133	124	71	394	98	106	428	138
Future Volume (vph)	164	177	88	133	124	71	394	98	106	428	138
Lane Group Flow (vph)	184	244	106	160	149	82	453	113	151	611	197
Turn Type	pm+pt	NA	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		8		5	2		1	6	
Permitted Phases	4		8		8	2		2	6		6
Detector Phase	7	4	8	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	5.0	5.0	5.0	5.0	30.0	30.0	5.0	30.0	30.0
Minimum Split (s)	9.5	44.0	44.0	44.0	44.0	9.5	37.0	37.0	9.5	37.0	37.0
Total Split (s)	9.5	53.5	44.0	44.0	44.0	9.5	37.0	37.0	9.5	37.0	37.0
Total Split (%)	9.5%	53.5%	44.0%	44.0%	44.0%	9.5%	37.0%	37.0%	9.5%	37.0%	37.0%
Yellow Time (s)	3.0	5.0	5.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0
All-Red Time (s)	1.5	2.0	2.0	2.0	2.0	1.5	2.0	2.0	1.5	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	7.0	7.0	7.0	7.0	4.5	7.0	7.0	4.5	7.0	7.0
Lead/Lag	Lead		Lag	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	Max	None	Max	Max
v/c Ratio	0.52	0.46	0.57	0.51	0.39	0.21	0.33	0.17	0.30	0.42	0.26
Control Delay (s/veh)	25.2	23.3	41.4	34.2	8.2	10.6	17.5	2.7	11.3	18.0	3.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	25.2	23.3	41.4	34.2	8.2	10.6	17.5	2.7	11.3	18.0	3.8
Queue Length 50th (m)	19.5	26.5	14.1	21.1	0.0	5.0	22.8	0.0	9.6	32.4	0.0
Queue Length 95th (m)	33.6	44.5	26.0	34.2	10.8	12.7	37.2	5.7	16.4	38.7	4.8
Internal Link Dist (m)		736.8		238.4			326.5			186.5	
Turn Bay Length (m)	70.0		120.0		110.0	200.0		125.0	80.0		80.0
Base Capacity (vph)	351	1094	539	920	820	395	1377	684	509	1457	766
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	0.52	0.22	0.20	0.17	0.18	0.21	0.33	0.17	0.30	0.42	0.26

Intersection Summary
Cycle Length: 100
Actuated Cycle Length: 75.9
Natural Cycle: 100
Control Type: Semi Act-Uncoord

Splits and Phases: 1: CR 93 & CR 25/Yonge St

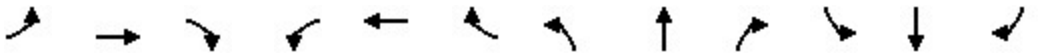




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	164	177	40	88	133	124	71	394	98	106	428	138
Future Volume (vph)	164	177	40	88	133	124	71	394	98	106	428	138
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	7.0		7.0	7.0	7.0	4.5	7.0	7.0	4.5	7.0	7.0
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		1.00	1.00	0.98	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	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1768	1774		1730	1883	1527	1612	3476	1518	1784	3444	1548
Flt Permitted	0.49	1.00		0.61	1.00	1.00	0.40	1.00	1.00	0.47	1.00	1.00
Satd. Flow (perm)	903	1774		1106	1883	1527	676	3476	1518	889	3444	1548
Peak-hour factor, PHF	0.89	0.89	0.89	0.83	0.83	0.83	0.87	0.87	0.87	0.70	0.70	0.70
Adj. Flow (vph)	184	199	45	106	160	149	82	453	113	151	611	197
RTOR Reduction (vph)	0	11	0	0	0	124	0	0	67	0	0	115
Lane Group Flow (vph)	184	233	0	106	160	25	82	453	46	151	611	82
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Heavy Vehicles (%)	3%	4%	9%	5%	2%	5%	13%	5%	4%	2%	6%	2%
Turn Type	pm+pt	NA		Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8		8	2		2	6		6
Actuated Green, G (s)	22.3	22.3		12.8	12.8	12.8	34.9	31.0	31.0	37.1	32.1	32.1
Effective Green, g (s)	22.3	22.3		12.8	12.8	12.8	34.9	31.0	31.0	37.1	32.1	32.1
Actuated g/C Ratio	0.29	0.29		0.17	0.17	0.17	0.45	0.40	0.40	0.48	0.42	0.42
Clearance Time (s)	4.5	7.0		7.0	7.0	7.0	4.5	7.0	7.0	4.5	7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	318	515		184	313	254	354	1403	612	487	1439	647
v/s Ratio Prot	c0.04	0.13			0.08		0.01	0.13		c0.02	c0.18	
v/s Ratio Perm	c0.13			0.10		0.02	0.09		0.03	0.13		0.05
v/c Ratio	0.58	0.45		0.58	0.51	0.10	0.23	0.32	0.07	0.31	0.42	0.13
Uniform Delay, d1	22.6	22.3		29.5	29.2	27.1	12.1	15.7	14.1	11.2	15.8	13.7
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.5	0.6		4.3	1.4	0.2	0.3	0.6	0.2	0.4	0.9	0.4
Delay (s)	25.1	22.9		33.8	30.6	27.3	12.4	16.3	14.3	11.6	16.7	14.1
Level of Service	C	C		C	C	C	B	B	B	B	B	B
Approach Delay (s/veh)		23.9			30.2			15.5			15.4	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	19.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	76.8	Sum of lost time (s)	23.0
Intersection Capacity Utilization	74.3%	ICU Level of Service	D
Analysis Period (min)	15		

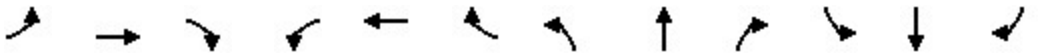
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	42	295	12	4	143	16	10	24	15	33	66	25
Future Volume (Veh/h)	42	295	12	4	143	16	10	24	15	33	66	25
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.80	0.80	0.80	0.74	0.74	0.74	0.64	0.64	0.64	0.85	0.85	0.85
Hourly flow rate (vph)	52	369	15	5	193	22	16	38	23	39	78	29
Pedestrians		10			10			10			10	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		1			1			1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	225			394			783	726	397	757	722	224
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	225			394			783	726	397	757	722	224
tC, single (s)	4.2			4.1			7.1	6.7	6.3	7.1	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.5	4.2	3.4	3.5	4.0	3.4
p0 queue free %	96			100			93	88	96	85	76	96
cM capacity (veh/h)	1280			1153			229	311	625	262	327	771

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	436	220	77	146
Volume Left	52	5	16	39
Volume Right	15	22	23	29
cSH	1280	1153	337	344
Volume to Capacity	0.04	0.00	0.23	0.42
Queue Length 95th (m)	1.0	0.1	6.6	15.5
Control Delay (s/veh)	1.3	0.2	18.8	23.0
Lane LOS	A	A	C	C
Approach Delay (s/veh)	1.3	0.2	18.8	23.0
Approach LOS			C	C

Intersection Summary				
Average Delay	6.2			
Intersection Capacity Utilization	49.9%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	310	1	1	161	28	0	0	0	21	0	12
Future Volume (Veh/h)	22	310	1	1	161	28	0	0	0	21	0	12
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.76	0.76	0.76	0.68	0.68	0.68	0.88	0.88	0.88	0.75	0.75	0.75
Hourly flow rate (vph)	29	408	1	1	237	41	0	0	0	28	0	16
Pedestrians								10			10	
Lane Width (m)								3.7			3.7	
Walking Speed (m/s)								1.1			1.1	
Percent Blockage								1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	288			419			752	767	419	736	747	268
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	288			419			752	767	419	736	747	268
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.4	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.8	4.0	3.3
p0 queue free %	98			100			100	100	100	90	100	98
cM capacity (veh/h)	1261			1129			306	318	628	286	327	764

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	438	279	0	44
Volume Left	29	1	0	28
Volume Right	1	41	0	16
cSH	1261	1129	1700	370
Volume to Capacity	0.02	0.00	0.00	0.12
Queue Length 95th (m)	0.5	0.0	0.0	3.0
Control Delay (s/veh)	0.7	0.0	0.0	16.0
Lane LOS	A	A	A	C
Approach Delay (s/veh)	0.7	0.0	0.0	16.0
Approach LOS			A	C

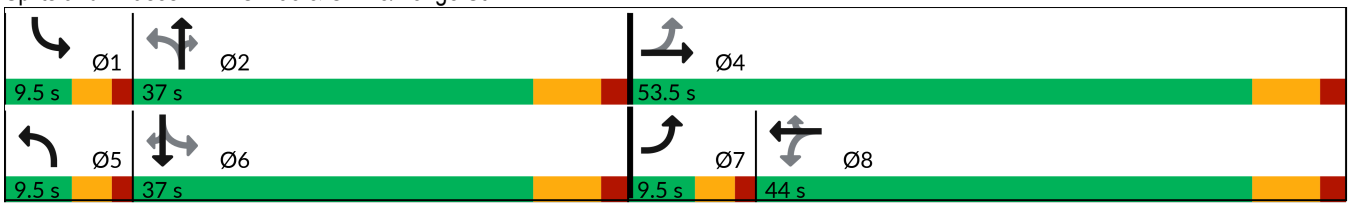
Intersection Summary				
Average Delay	1.4			
Intersection Capacity Utilization	42.1%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	186	218	99	191	218	89	557	116	265	557	217
Future Volume (vph)	186	218	99	191	218	89	557	116	265	557	217
Lane Group Flow (vph)	204	304	130	251	287	102	640	133	285	599	233
Turn Type	pm+pt	NA	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		8		5	2		1	6	
Permitted Phases	4		8		8	2		2	6		6
Detector Phase	7	4	8	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	5.0	5.0	5.0	5.0	30.0	30.0	5.0	30.0	30.0
Minimum Split (s)	9.5	44.0	44.0	44.0	44.0	9.5	37.0	37.0	9.5	37.0	37.0
Total Split (s)	9.5	53.5	44.0	44.0	44.0	9.5	37.0	37.0	9.5	37.0	37.0
Total Split (%)	9.5%	53.5%	44.0%	44.0%	44.0%	9.5%	37.0%	37.0%	9.5%	37.0%	37.0%
Yellow Time (s)	3.0	5.0	5.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0
All-Red Time (s)	1.5	2.0	2.0	2.0	2.0	1.5	2.0	2.0	1.5	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	7.0	7.0	7.0	7.0	4.5	7.0	7.0	4.5	7.0	7.0
Lead/Lag	Lead		Lag	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	Max	None	Max	Max
v/c Ratio	0.64	0.51	0.59	0.65	0.58	0.26	0.47	0.20	0.75	0.42	0.31
Control Delay (s/veh)	29.1	23.3	39.5	36.9	12.3	12.8	21.0	4.1	29.9	19.8	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	29.1	23.3	39.5	36.9	12.3	12.8	21.0	4.1	29.9	19.8	4.1
Queue Length 50th (m)	21.9	34.3	17.8	34.9	8.3	7.2	37.6	0.0	22.6	34.8	0.0
Queue Length 95th (m)	37.1	55.6	27.9	46.1	17.5	16.9	57.5	9.1	#61.4	56.1	14.3
Internal Link Dist (m)		736.8		238.4			326.5			186.5	
Turn Bay Length (m)	70.0		120.0		110.0	200.0		125.0	80.0		80.0
Base Capacity (vph)	319	1064	502	878	849	389	1353	671	380	1418	761
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	0.64	0.29	0.26	0.29	0.34	0.26	0.47	0.20	0.75	0.42	0.31

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 79.6
Natural Cycle: 100
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

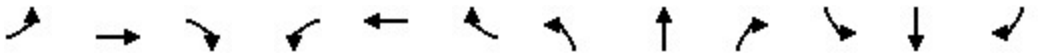
Splits and Phases: 1: CR 93 & CR 25/Yonge St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	186	218	58	99	191	218	89	557	116	265	557	217
Future Volume (vph)	186	218	58	99	191	218	89	557	116	265	557	217
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	7.0		7.0	7.0	7.0	4.5	7.0	7.0	4.5	7.0	7.0
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		1.00	1.00	0.98	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	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1787	1806		1782	1883	1571	1671	3579	1547	1786	3510	1547
Flt Permitted	0.38	1.00		0.57	1.00	1.00	0.40	1.00	1.00	0.34	1.00	1.00
Satd. Flow (perm)	707	1806		1078	1883	1571	697	3579	1547	638	3510	1547
Peak-hour factor, PHF	0.91	0.91	0.91	0.76	0.76	0.76	0.87	0.87	0.87	0.93	0.93	0.93
Adj. Flow (vph)	204	240	64	130	251	287	102	640	133	285	599	233
RTOR Reduction (vph)	0	12	0	0	0	176	0	0	82	0	0	140
Lane Group Flow (vph)	204	292	0	130	251	111	102	640	51	285	599	93
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Heavy Vehicles (%)	2%	2%	5%	2%	2%	2%	9%	2%	2%	2%	4%	2%
Turn Type	pm+pt	NA		Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8		8	2		2	6		6
Actuated Green, G (s)	25.9	25.9		16.4	16.4	16.4	35.0	31.1	31.1	37.2	32.2	32.2
Effective Green, g (s)	25.9	25.9		16.4	16.4	16.4	35.0	31.1	31.1	37.2	32.2	32.2
Actuated g/C Ratio	0.32	0.32		0.20	0.20	0.20	0.43	0.39	0.39	0.46	0.40	0.40
Clearance Time (s)	4.5	7.0		7.0	7.0	7.0	4.5	7.0	7.0	4.5	7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	294	581		219	383	320	350	1382	597	366	1404	618
v/s Ratio Prot	c0.04	0.16			0.13		0.01	0.18		c0.05	0.17	
v/s Ratio Perm	c0.18			0.12		0.07	0.11		0.03	c0.31		0.06
v/c Ratio	0.69	0.50		0.59	0.66	0.35	0.29	0.46	0.09	0.78	0.43	0.15
Uniform Delay, d1	23.4	22.1		29.0	29.5	27.5	13.7	18.5	15.7	16.7	17.5	15.4
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.9	0.7		4.3	4.0	0.7	0.5	1.1	0.3	10.0	1.0	0.5
Delay (s)	30.3	22.8		33.3	33.5	28.1	14.2	19.6	16.0	26.7	18.4	15.9
Level of Service	C	C		C	C	C	B	B	B	C	B	B
Approach Delay (s/veh)		25.8			31.1			18.4			20.0	
Approach LOS		C			C			B			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	22.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	80.5	Sum of lost time (s)	23.0
Intersection Capacity Utilization	86.1%	ICU Level of Service	E
Analysis Period (min)	15		

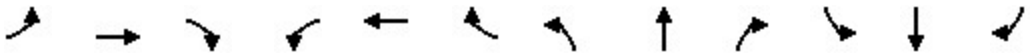
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	242	5	10	346	42	8	72	18	27	50	43
Future Volume (Veh/h)	28	242	5	10	346	42	8	72	18	27	50	43
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.84	0.84	0.84	0.86	0.86	0.86	0.88	0.88	0.88	0.85	0.85	0.85
Hourly flow rate (vph)	33	288	6	12	402	49	9	82	20	32	59	51
Pedestrians		10			10			10			10	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		1			1			1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	461			304			908	852	311	889	831	447
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	461			304			908	852	311	889	831	447
tC, single (s)	4.2			4.1			7.1	6.5	6.2	7.1	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.5	4.0	3.3	3.5	4.1	3.4
p0 queue free %	97			99			95	71	97	83	79	91
cM capacity (veh/h)	1059			1245			184	279	715	186	282	588

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	327	463	111	142
Volume Left	33	12	9	32
Volume Right	6	49	20	51
cSH	1059	1245	300	304
Volume to Capacity	0.03	0.01	0.37	0.47
Queue Length 95th (m)	0.7	0.2	12.5	17.9
Control Delay (s/veh)	1.1	0.3	23.9	26.9
Lane LOS	A	A	C	D
Approach Delay (s/veh)	1.1	0.3	23.9	26.9
Approach LOS			C	D

Intersection Summary				
Average Delay	6.7			
Intersection Capacity Utilization	47.5%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	295	0	0	350	20	2	1	0	32	0	48
Future Volume (Veh/h)	13	295	0	0	350	20	2	1	0	32	0	48
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.85	0.85	0.85	0.50	0.50	0.50	0.80	0.80	0.80
Hourly flow rate (vph)	14	321	0	0	412	24	4	2	0	40	0	60
Pedestrians								10			10	
Lane Width (m)								3.7			3.7	
Walking Speed (m/s)								1.1			1.1	
Percent Blockage								1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	446			331			843	805	331	784	793	434
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	446			331			843	805	331	784	793	434
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			98	99	100	87	100	90
cM capacity (veh/h)	1103			1216			247	306	704	299	311	616

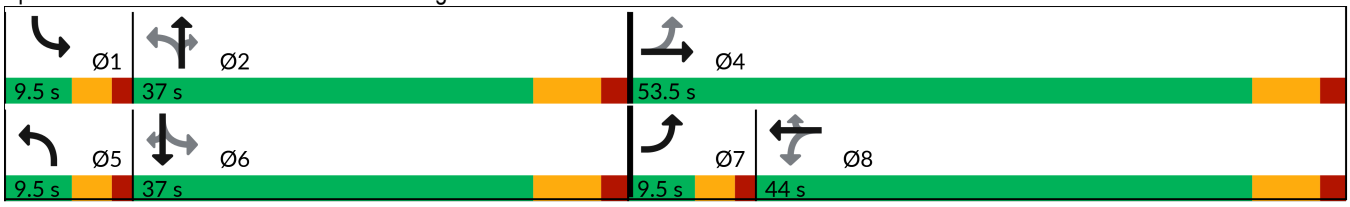
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	335	436	6	100
Volume Left	14	0	4	40
Volume Right	0	24	0	60
cSH	1103	1216	264	432
Volume to Capacity	0.01	0.00	0.02	0.23
Queue Length 95th (m)	0.3	0.0	0.5	6.7
Control Delay (s/veh)	0.5	0.0	18.9	15.8
Lane LOS	A		C	C
Approach Delay (s/veh)	0.5	0.0	18.9	15.8
Approach LOS			C	C

Intersection Summary				
Average Delay	2.1			
Intersection Capacity Utilization	37.6%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	179	195	98	145	137	78	435	108	117	472	149
Future Volume (vph)	179	195	98	145	137	78	435	108	117	472	149
Lane Group Flow (vph)	201	268	118	175	165	90	500	124	167	674	213
Turn Type	pm+pt	NA	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		8		5	2		1	6	
Permitted Phases	4		8		8	2		2	6		6
Detector Phase	7	4	8	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	5.0	5.0	5.0	5.0	30.0	30.0	5.0	30.0	30.0
Minimum Split (s)	9.5	44.0	44.0	44.0	44.0	9.5	37.0	37.0	9.5	37.0	37.0
Total Split (s)	9.5	53.5	44.0	44.0	44.0	9.5	37.0	37.0	9.5	37.0	37.0
Total Split (%)	9.5%	53.5%	44.0%	44.0%	44.0%	9.5%	37.0%	37.0%	9.5%	37.0%	37.0%
Yellow Time (s)	3.0	5.0	5.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0
All-Red Time (s)	1.5	2.0	2.0	2.0	2.0	1.5	2.0	2.0	1.5	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	7.0	7.0	7.0	7.0	4.5	7.0	7.0	4.5	7.0	7.0
Lead/Lag	Lead		Lag	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	Max	None	Max	Max
v/c Ratio	0.56	0.49	0.61	0.52	0.40	0.25	0.37	0.18	0.35	0.47	0.28
Control Delay (s/veh)	25.8	23.6	42.5	33.8	7.7	11.7	18.5	3.4	12.7	19.2	3.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	25.8	23.6	42.5	33.8	7.7	11.7	18.5	3.4	12.7	19.2	3.9
Queue Length 50th (m)	21.5	29.7	16.0	23.2	0.0	5.8	26.3	0.0	11.1	37.6	0.0
Queue Length 95th (m)	36.2	48.8	28.6	36.8	11.0	14.4	42.6	7.5	18.8	44.5	4.9
Internal Link Dist (m)		736.8		238.4			326.5			186.5	
Turn Bay Length (m)	70.0		120.0		110.0	200.0		125.0	80.0		80.0
Base Capacity (vph)	360	1080	520	907	819	359	1358	677	473	1437	767
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	0.56	0.25	0.23	0.19	0.20	0.25	0.37	0.18	0.35	0.47	0.28

Intersection Summary
Cycle Length: 100
Actuated Cycle Length: 77.1
Natural Cycle: 100
Control Type: Semi Act-Uncoord

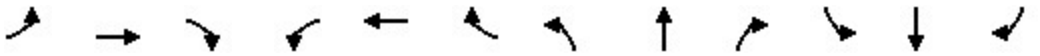
Splits and Phases: 1: CR 93 & CR 25/Yonge St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	179	195	44	98	145	137	78	435	108	117	472	149
Future Volume (vph)	179	195	44	98	145	137	78	435	108	117	472	149
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	7.0		7.0	7.0	7.0	4.5	7.0	7.0	4.5	7.0	7.0
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		1.00	1.00	0.98	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	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1768	1775		1731	1883	1527	1613	3476	1518	1785	3444	1548
Flt Permitted	0.49	1.00		0.59	1.00	1.00	0.36	1.00	1.00	0.44	1.00	1.00
Satd. Flow (perm)	909	1775		1082	1883	1527	603	3476	1518	822	3444	1548
Peak-hour factor, PHF	0.89	0.89	0.89	0.83	0.83	0.83	0.87	0.87	0.87	0.70	0.70	0.70
Adj. Flow (vph)	201	219	49	118	175	165	90	500	124	167	674	213
RTOR Reduction (vph)	0	11	0	0	0	136	0	0	75	0	0	125
Lane Group Flow (vph)	201	258	0	118	175	29	90	500	49	167	674	88
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Heavy Vehicles (%)	3%	4%	9%	5%	2%	5%	13%	5%	4%	2%	6%	2%
Turn Type	pm+pt	NA		Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8		8	2		2	6		6
Actuated Green, G (s)	23.4	23.4		13.9	13.9	13.9	35.0	31.1	31.1	37.2	32.2	32.2
Effective Green, g (s)	23.4	23.4		13.9	13.9	13.9	35.0	31.1	31.1	37.2	32.2	32.2
Actuated g/C Ratio	0.30	0.30		0.18	0.18	0.18	0.45	0.40	0.40	0.48	0.41	0.41
Clearance Time (s)	4.5	7.0		7.0	7.0	7.0	4.5	7.0	7.0	4.5	7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	327	532		192	335	272	321	1385	605	453	1421	639
v/s Ratio Prot	c0.04	0.15			0.09		0.01	0.14		c0.02	c0.20	
v/s Ratio Perm	c0.14			0.11		0.02	0.11		0.03	0.15		0.06
v/c Ratio	0.61	0.48		0.61	0.52	0.11	0.28	0.36	0.08	0.37	0.47	0.14
Uniform Delay, d1	22.9	22.4		29.6	29.0	26.9	12.6	16.5	14.6	11.8	16.7	14.3
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	3.4	0.7		5.7	1.5	0.2	0.5	0.7	0.3	0.5	1.1	0.4
Delay (s)	26.3	23.1		35.3	30.5	27.0	13.1	17.2	14.8	12.3	17.9	14.7
Level of Service	C	C		D	C	C	B	B	B	B	B	B
Approach Delay (s/veh)		24.5			30.5			16.3			16.3	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	20.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	78.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	76.3%	ICU Level of Service	D
Analysis Period (min)	15		

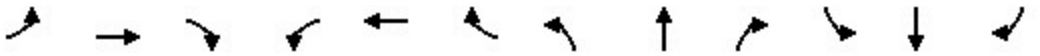
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	44	325	13	5	158	17	11	25	17	36	69	28
Future Volume (Veh/h)	44	325	13	5	158	17	11	25	17	36	69	28
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.80	0.80	0.80	0.74	0.74	0.74	0.64	0.64	0.64	0.85	0.85	0.85
Hourly flow rate (vph)	55	406	16	7	214	23	17	39	27	42	81	33
Pedestrians		10			10			10			10	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		1			1			1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	247			432			857	795	434	830	792	246
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	247			432			857	795	434	830	792	246
tC, single (s)	4.2			4.1			7.1	6.7	6.3	7.1	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.5	4.2	3.4	3.5	4.0	3.4
p0 queue free %	96			99			91	86	95	82	73	96
cM capacity (veh/h)	1256			1117			195	282	596	228	297	750

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	477	244	83	156
Volume Left	55	7	17	42
Volume Right	16	23	27	33
cSH	1256	1117	306	311
Volume to Capacity	0.04	0.01	0.27	0.50
Queue Length 95th (m)	1.0	0.1	8.2	20.2
Control Delay (s/veh)	1.3	0.3	21.1	27.7
Lane LOS	A	A	C	D
Approach Delay (s/veh)	1.3	0.3	21.1	27.7
Approach LOS			C	D

Intersection Summary			
Average Delay	7.1		
Intersection Capacity Utilization	52.8%	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)	22	341	1	1	177	28	0	0	0	21	0	12
Future Volume (Veh/h)	22	341	1	1	177	28	0	0	0	21	0	12
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.76	0.76	0.76	0.68	0.68	0.68	0.88	0.88	0.88	0.75	0.75	0.75
Hourly flow rate (vph)	29	449	1	1	260	41	0	0	0	28	0	16
Pedestrians								10			10	
Lane Width (m)								3.7			3.7	
Walking Speed (m/s)								1.1			1.1	
Percent Blockage								1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	311			460			816	831	460	800	811	291
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	311			460			816	831	460	800	811	291
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.4	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.8	4.0	3.3
p0 queue free %	98			100			100	100	100	89	100	98
cM capacity (veh/h)	1237			1090			277	292	596	258	300	741

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	479	302	0	44
Volume Left	29	1	0	28
Volume Right	1	41	0	16
cSH	1237	1090	1700	338
Volume to Capacity	0.02	0.00	0.00	0.13
Queue Length 95th (m)	0.5	0.0	0.0	3.4
Control Delay (s/veh)	0.7	0.0	0.0	17.2
Lane LOS	A	A	A	C
Approach Delay (s/veh)	0.7	0.0	0.0	17.2
Approach LOS			A	C

Intersection Summary				
Average Delay	1.4			
Intersection Capacity Utilization	43.9%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	621	614	0
Future Volume (Veh/h)	0	0	0	621	614	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.75	0.75	0.87	0.87	0.70	0.70
Hourly flow rate (vph)	0	0	0	714	877	0
Pedestrians	10					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	1					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)					397	
pX, platoon unblocked						
vC, conflicting volume	1601	887	887			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1601	887	887			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	115	340	756			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	0	714	877
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	756	1700
Volume to Capacity	0.00	0.00	0.52
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s/veh)	0.0	0.0	0.0
Lane LOS	A		
Approach Delay (s/veh)	0.0	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	42.7%	ICU Level of Service	A
Analysis Period (min)	15		

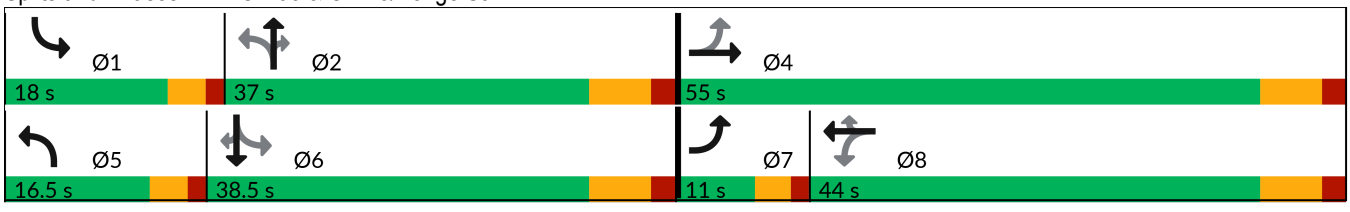
Intersection Sign configuration not allowed in HCM analysis.

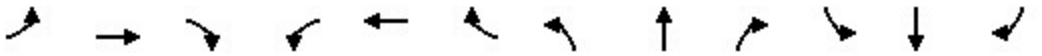
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	202	238	110	210	240	98	615	128	293	615	237
Future Volume (vph)	202	238	110	210	240	98	615	128	293	615	237
Lane Group Flow (vph)	222	330	145	276	316	113	707	147	315	661	255
Turn Type	pm+pt	NA	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		8		5	2		1	6	
Permitted Phases	4		8		8	2		2	6		6
Detector Phase	7	4	8	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	5.0	5.0	5.0	5.0	30.0	30.0	5.0	30.0	30.0
Minimum Split (s)	9.5	44.0	44.0	44.0	44.0	9.5	37.0	37.0	9.5	37.0	37.0
Total Split (s)	11.0	55.0	44.0	44.0	44.0	16.5	37.0	37.0	18.0	38.5	38.5
Total Split (%)	10.0%	50.0%	40.0%	40.0%	40.0%	15.0%	33.6%	33.6%	16.4%	35.0%	35.0%
Yellow Time (s)	3.0	5.0	5.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0
All-Red Time (s)	1.5	2.0	2.0	2.0	2.0	1.5	2.0	2.0	1.5	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	7.0	7.0	7.0	7.0	4.5	7.0	7.0	4.5	7.0	7.0
Lead/Lag	Lead		Lag	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	Max	None	Max	Max
v/c Ratio	0.73	0.54	0.65	0.69	0.54	0.29	0.61	0.25	0.74	0.50	0.35
Control Delay (s/veh)	38.0	27.4	47.1	42.9	7.2	14.4	30.3	5.8	25.9	25.5	4.8
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 (s/veh)	38.0	27.4	47.1	42.9	7.2	14.4	30.3	5.8	25.9	25.5	4.8
Queue Length 50th (m)	28.7	45.4	23.8	45.8	0.0	9.2	55.2	0.0	29.0	46.5	0.0
Queue Length 95th (m)	45.7	69.5	34.7	57.2	8.2	20.8	81.7	12.6	#74.7	77.8	17.0
Internal Link Dist (m)		736.8		238.4			326.5			186.5	
Turn Bay Length (m)	70.0		120.0		110.0	200.0		125.0	80.0		80.0
Base Capacity (vph)	303	942	419	751	815	446	1158	597	428	1319	737
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	0.73	0.35	0.35	0.37	0.39	0.25	0.61	0.25	0.74	0.50	0.35

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 93.1
Natural Cycle: 100
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: CR 93 & CR 25/Yonge St

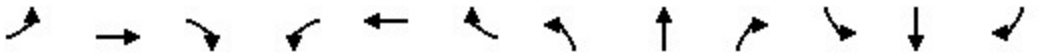




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	202	238	62	110	210	240	98	615	128	293	615	237
Future Volume (vph)	202	238	62	110	210	240	98	615	128	293	615	237
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	7.0		7.0	7.0	7.0	4.5	7.0	7.0	4.5	7.0	7.0
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		1.00	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	1.00
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1787	1807		1781	1883	1570	1671	3579	1544	1788	3510	1544
Flt Permitted	0.33	1.00		0.56	1.00	1.00	0.37	1.00	1.00	0.23	1.00	1.00
Satd. Flow (perm)	620	1807		1052	1883	1570	657	3579	1544	431	3510	1544
Peak-hour factor, PHF	0.91	0.91	0.91	0.76	0.76	0.76	0.87	0.87	0.87	0.93	0.93	0.93
Adj. Flow (vph)	222	262	68	145	276	316	113	707	147	315	661	255
RTOR Reduction (vph)	0	10	0	0	0	248	0	0	99	0	0	159
Lane Group Flow (vph)	222	320	0	145	276	68	113	707	48	315	661	96
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Heavy Vehicles (%)	2%	2%	5%	2%	2%	2%	9%	2%	2%	2%	4%	2%
Turn Type	pm+pt	NA		Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8		8	2		2	6		6
Actuated Green, G (s)	30.9	30.9		19.9	19.9	19.9	38.8	30.1	30.1	48.2	35.0	35.0
Effective Green, g (s)	30.9	30.9		19.9	19.9	19.9	38.8	30.1	30.1	48.2	35.0	35.0
Actuated g/C Ratio	0.33	0.33		0.21	0.21	0.21	0.42	0.32	0.32	0.52	0.38	0.38
Clearance Time (s)	4.5	7.0		7.0	7.0	7.0	4.5	7.0	7.0	4.5	7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	287	599		224	402	335	368	1157	499	421	1319	580
v/s Ratio Prot	c0.05	0.18			0.15		0.03	0.20		c0.11	0.19	
v/s Ratio Perm	c0.20			0.14		0.04	0.10		0.03	c0.28		0.06
v/c Ratio	0.77	0.53		0.65	0.69	0.20	0.31	0.61	0.10	0.75	0.50	0.17
Uniform Delay, d1	27.0	25.3		33.4	33.7	30.1	17.0	26.6	22.0	15.0	22.3	19.3
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	12.2	0.9		6.3	4.8	0.3	0.5	2.4	0.4	7.1	1.4	0.6
Delay (s)	39.2	26.2		39.7	38.5	30.4	17.5	29.0	22.4	22.1	23.7	19.9
Level of Service	D	C		D	D	C	B	C	C	C	C	B
Approach Delay (s/veh)		31.4			35.3			26.6			22.5	
Approach LOS		C			D			C			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	27.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	93.1	Sum of lost time (s)	23.0
Intersection Capacity Utilization	89.1%	ICU Level of Service	E
Analysis Period (min)	15		

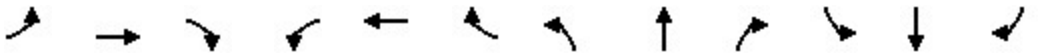
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	267	6	10	382	44	9	76	20	29	53	48
Future Volume (Veh/h)	30	267	6	10	382	44	9	76	20	29	53	48
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.84	0.84	0.84	0.86	0.86	0.86	0.88	0.88	0.88	0.85	0.85	0.85
Hourly flow rate (vph)	36	318	7	12	444	51	10	86	23	34	62	56
Pedestrians		10			10			10			10	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		1			1			1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	505			335			994	933	342	973	911	490
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	505			335			994	933	342	973	911	490
tC, single (s)	4.2			4.1			7.1	6.5	6.2	7.1	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.5	4.0	3.3	3.5	4.1	3.4
p0 queue free %	96			99			93	66	97	78	75	90
cM capacity (veh/h)	1019			1212			153	249	687	153	252	556

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	361	507	119	152
Volume Left	36	12	10	34
Volume Right	7	51	23	56
cSH	1019	1212	268	267
Volume to Capacity	0.04	0.01	0.44	0.57
Queue Length 95th (m)	0.8	0.2	16.3	24.5
Control Delay (s/veh)	1.2	0.3	28.7	34.8
Lane LOS	A	A	D	D
Approach Delay (s/veh)	1.2	0.3	28.7	34.8
Approach LOS			D	D

Intersection Summary				
Average Delay	8.2			
Intersection Capacity Utilization	50.9%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	325	0	0	386	20	2	1	0	32	0	48
Future Volume (Veh/h)	13	325	0	0	386	20	2	1	0	32	0	48
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.85	0.85	0.85	0.50	0.50	0.50	0.80	0.80	0.80
Hourly flow rate (vph)	14	353	0	0	454	24	4	2	0	40	0	60
Pedestrians								10			10	
Lane Width (m)								3.7			3.7	
Walking Speed (m/s)								1.1			1.1	
Percent Blockage								1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	488			363			917	879	363	858	867	476
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	488			363			917	879	363	858	867	476
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			98	99	100	85	100	90
cM capacity (veh/h)	1065			1184			219	277	675	266	281	583

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	367	478	6	100
Volume Left	14	0	4	40
Volume Right	0	24	0	60
cSH	1065	1184	235	395
Volume to Capacity	0.01	0.00	0.03	0.25
Queue Length 95th (m)	0.3	0.0	0.6	7.5
Control Delay (s/veh)	0.5	0.0	20.7	17.2
Lane LOS	A		C	C
Approach Delay (s/veh)	0.5	0.0	20.7	17.2
Approach LOS			C	C

Intersection Summary				
Average Delay	2.1			
Intersection Capacity Utilization	39.2%	ICU Level of Service	A	
Analysis Period (min)	15			

Appendix F –
Transportation Tomorrow Survey Excerpts

2006 GTA Zone of Origin: 8577

Outside Midland			Route Selection						Distribution						Total
Planning District of Destination	Trips	%	N (CR 93)	S (CR 93)	E (Yonge)	W (CR 25)	N (Wilson)	S (Marshall)	N (CR 93)	S (CR 93)	E (Yonge)	W (CR 25)	N (Wilson)	S (Marshall)	
Innisfil	128	17%		85%		10%		5%	0%	14%	0%	2%	0%	1%	17%
Essa	60	8%		10%		90%			0%	1%	0%	7%	0%	0%	8%
Springwater	75	10%		75%		20%		5%	0%	7%	0%	2%	0%	0%	9%
Wasaga Beach	38	5%				100%			0%	0%	0%	5%	0%	0%	5%
Tiny	41	5%	10%			60%	30%		1%	0%	0%	3%	2%	0%	6%
Penetanguishene	71	9%	90%				10%		8%	0%	0%	0%	1%	0%	9%
Midland	232								0%	0%	0%	0%	0%	0%	0%
Oro-Medonte	128	17%		100%					0%	16%	0%	0%	0%	0%	16%
Sub-Total	541	70%							9%	38%	0%	19%	3%	1%	70%
Within Midland			Route Selection						Distribution						Total
2006 GTA zone of Destination	Trips	%	N (CR 93)	S (CR 93)	E (Yonge)	W (CR 25)	N (Wilson)	S (Marshall)	N (CR 93)	S (CR 93)	E (Yonge)	W (CR 25)	N (Wilson)	S (Marshall)	
8577	85	11%	10%		90%				1%	0%	10%	0%	0%	0%	11%
8578	148	19%	30%		70%				6%	0%	13%	0%	0%	0%	19%
	233	30%							7%	0%	23%	0%	0%	0%	30%
Totals	**774**	**100%**							**16%**	**38%**	**23%**	**19%**	**3%**	**1%**	**100%**

datamanagementgroup

Hello Jacob Losole

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TTS Cross Tabulation

Cross Tabulation Query Form - Trip - 2022

Filter Variables

2006 GTA zone of origin | Planning district of desti… | (Optional) Table Attribute

Group Attributes

Row Grouping | Column Grouping | Table Grouping

Grouping file: Choose File No file chosen

Filter Selection +

2006 GTA zone of origin In
8577

And

2022 Trip purpose of destination In
10, 11,

And

Start time of trip In
0700-0900

Add Delete

Output

Comma-delimited table | Column format | Expansion Factor On | Click to Select Load | Load

Execute Query | Select All | Save As

```
Fri May 02 2025 12:51:46 GMT-0400 (Eastern Daylight Time) - Run Time: 3202ms

Cross Tabulation Query Form - Trip - 2022

Row: 2006 GTA zone of origin - gta06_orig
Column: Planning district of destination - pd_dest


Filters:
(2006 GTA zone of origin - gta06_orig In 8577
and
2022 Trip purpose of destination - purp_dest2022 In 10, 11,
and
Start time of trip - start_time In 0700-0900)

Trip 2022
Table:

,Innisfil,Essa,Springwater,Wasaga Beach,Tiny,Penetanguishene,Midland,Oro-Medonte
8577,128,60,75,38,41,71,232,128
```

datamanagementgroup

Hello Jacob Losole

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TTS Cross Tabulation

Cross Tabulation Query Form - Trip - 2022

Filter Variables

2006 GTA zone of origin | 2006 GTA zone of desti… | (Optional) Table Attribute

Group Attributes

Row Grouping | Column Grouping | Table Grouping

Grouping file: Choose File No file chosen

Filter Selection +

- 2006 GTA zone of origin | In | 8577
- And
- 2022 Trip purpose of destination | In | 10, 11,
- And
- Start time of trip | In | 0700-0900
- And
- Planning district of destination | In | 131,

Add Delete

Output

Comma-delimited table | Column format | Expansion Factor On | Click to Select Load | Load

Execute Query | Select All | Save As

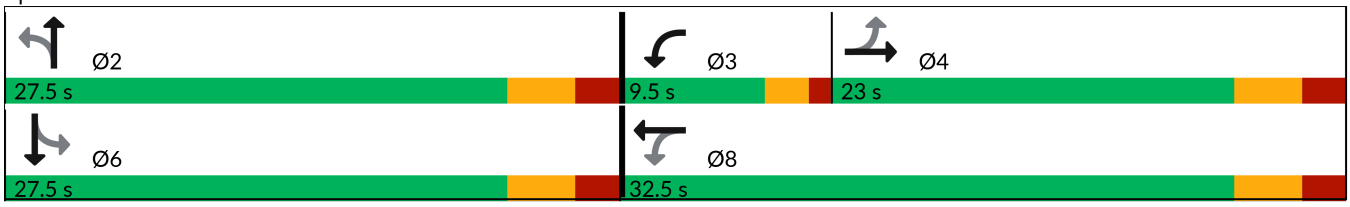
```
Fri May 02 2025 12:59:21 GMT-0400 (Eastern Daylight Time) - Run Time: 4040ms

Cross Tabulation Query Form - Trip - 2022

Row: 2006 GTA zone of origin - gta06_orig
Column: 2006 GTA zone of destination - gta06_dest


Filters:
(2006 GTA zone of origin - gta06_orig In 8577
and
2022 Trip purpose of destination - purp_dest2022 In 10, 11,
and
Start time of trip - start_time In 0700-0900
and
Planning district of destination - pd_dest In 131, )

Trip 2022
Table:

,8577,8578
8577,85,148
```

Appendix G – Synchro Analysis Output – Total Traffic Volumes

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	22	292	84	158	54	0	21	0
Future Volume (vph)	22	292	84	158	54	0	21	0
Lane Group Flow (vph)	29	418	124	273	0	268	0	44
Turn Type	Perm	NA	pm+pt	NA	Perm	NA	Perm	NA
Protected Phases		4	3	8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	3	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	23.0	23.0	9.5	23.0	27.0	27.0	27.0	27.0
Total Split (s)	23.0	23.0	9.5	32.5	27.5	27.5	27.5	27.5
Total Split (%)	38.3%	38.3%	15.8%	54.2%	45.8%	45.8%	45.8%	45.8%
Yellow Time (s)	3.0	3.0	2.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	1.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	5.0	5.0	3.0	5.0		5.0		5.0
Lead/Lag	Lag	Lag	Lead					
Lead-Lag Optimize?	Yes	Yes	Yes					
Recall Mode	None	None	None	None	Max	Max	Max	Max
v/c Ratio	0.09	0.79	0.35	0.37		0.35		0.08
Control Delay (s/veh)	16.2	31.4	11.4	11.6		5.5		1.2
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay (s/veh)	16.2	31.4	11.4	11.6		5.5		1.2
Queue Length 50th (m)	2.3	40.1	6.9	16.5		4.2		0.0
Queue Length 95th (m)	6.1	53.4	10.4	21.0		16.4		0.4
Internal Link Dist (m)		136.3		736.8		127.6		42.7
Turn Bay Length (m)	15.0		30.0					
Base Capacity (vph)	358	611	355	884		761		535
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	0.68	0.35	0.31		0.35		0.08

Intersection Summary
Cycle Length: 60
Actuated Cycle Length: 56.1
Natural Cycle: 60
Control Type: Semi Act-Uncoord

Splits and Phases: 3: West Access/Sundowner Rd & CR 25



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	292	26	84	158	28	54	0	182	21	0	12
Future Volume (vph)	22	292	26	84	158	28	54	0	182	21	0	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		3.0	5.0			5.0			5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99			1.00			1.00	
Flpb, ped/bikes	0.99	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.99		1.00	0.98			0.90			0.95	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.97	
Satd. Flow (prot)	1769	1855		1787	1755			1668			1454	
Flt Permitted	0.59	1.00		0.23	1.00			0.93			0.79	
Satd. Flow (perm)	1101	1855		441	1755			1566			1181	
Peak-hour factor, PHF	0.76	0.76	0.76	0.68	0.68	0.68	0.88	0.88	0.88	0.75	0.75	0.75
Adj. Flow (vph)	29	384	34	124	232	41	61	0	207	28	0	16
RTOR Reduction (vph)	0	6	0	0	12	0	0	123	0	0	26	0
Lane Group Flow (vph)	29	412	0	124	261	0	0	145	0	0	18	0
Confl. Peds. (#/hr)	10		10	10		10						
Heavy Vehicles (%)	2%	2%	2%	2%	4%	20%	2%	2%	2%	33%	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)	15.9	15.9		23.8	23.8			22.9			22.9	
Effective Green, g (s)	15.9	15.9		23.8	23.8			22.9			22.9	
Actuated g/C Ratio	0.28	0.28		0.42	0.42			0.40			0.40	
Clearance Time (s)	5.0	5.0		3.0	5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	308	520		301	736			632			476	
v/s Ratio Prot		c0.22		c0.04	0.15							
v/s Ratio Perm	0.03			0.14				c0.09			0.02	
v/c Ratio	0.09	0.79		0.41	0.36			0.23			0.04	
Uniform Delay, d1	15.1	18.9		11.3	11.2			11.1			10.2	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.1	8.1		0.9	0.3			0.8			0.1	
Delay (s)	15.2	27.0		12.3	11.5			11.9			10.4	
Level of Service	B	C		B	B			B			B	
Approach Delay (s/veh)		26.2			11.7			11.9			10.4	
Approach LOS		C			B			B			B	

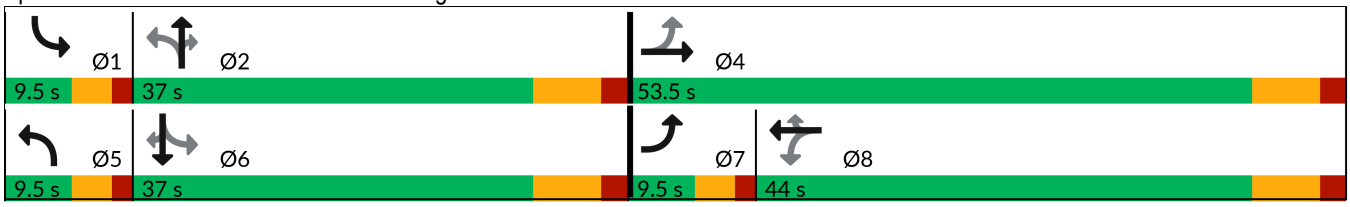
Intersection Summary			
HCM 2000 Control Delay (s/veh)	17.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	56.7	Sum of lost time (s)	13.0
Intersection Capacity Utilization	47.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	194	214	87	144	113	113	371	101	96	400	151
Future Volume (vph)	194	214	87	144	113	113	371	101	96	400	151
Lane Group Flow (vph)	218	391	105	173	136	130	426	116	137	571	216
Turn Type	pm+pt	NA	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		8		5	2		1	6	
Permitted Phases	4		8		8	2		2	6		6
Detector Phase	7	4	8	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	5.0	5.0	5.0	5.0	30.0	30.0	5.0	30.0	30.0
Minimum Split (s)	9.5	44.0	44.0	44.0	44.0	9.5	37.0	37.0	9.5	37.0	37.0
Total Split (s)	9.5	53.5	44.0	44.0	44.0	9.5	37.0	37.0	9.5	37.0	37.0
Total Split (%)	9.5%	53.5%	44.0%	44.0%	44.0%	9.5%	37.0%	37.0%	9.5%	37.0%	37.0%
Yellow Time (s)	3.0	5.0	5.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0
All-Red Time (s)	1.5	2.0	2.0	2.0	2.0	1.5	2.0	2.0	1.5	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	7.0	7.0	7.0	7.0	4.5	7.0	7.0	4.5	7.0	7.0
Lead/Lag	Lead		Lag	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	Max	None	Max	Max
v/c Ratio	0.60	0.72	0.61	0.51	0.35	0.33	0.31	0.17	0.27	0.42	0.29
Control Delay (s/veh)	27.4	29.3	43.9	33.6	7.2	12.8	17.9	3.0	11.6	19.2	4.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	27.4	29.3	43.9	33.6	7.2	12.8	17.9	3.0	11.6	19.2	4.0
Queue Length 50th (m)	23.6	44.8	14.2	22.9	0.0	8.5	21.7	0.0	8.9	30.7	0.0
Queue Length 95th (m)	39.2	72.0	26.3	36.5	9.5	19.7	36.4	6.3	15.8	37.7	4.9
Internal Link Dist (m)		736.8		238.4			326.5			186.5	
Turn Bay Length (m)	70.0		120.0		110.0	200.0		125.0	80.0		80.0
Base Capacity (vph)	361	1043	465	907	807	392	1357	677	514	1345	734
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	0.60	0.37	0.23	0.19	0.17	0.33	0.31	0.17	0.27	0.42	0.29

Intersection Summary
Cycle Length: 100
Actuated Cycle Length: 77.1
Natural Cycle: 100
Control Type: Semi Act-Uncoord

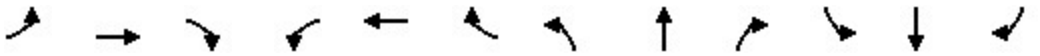
Splits and Phases: 1: CR 93 & CR 25/Yonge St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	194	214	134	87	144	113	113	371	101	96	400	151
Future Volume (vph)	194	214	134	87	144	113	113	371	101	96	400	151
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	7.0		7.0	7.0	7.0	4.5	7.0	7.0	4.5	7.0	7.0
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	0.99		1.00	1.00	0.98	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	0.94		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1768	1697		1732	1883	1527	1612	3476	1518	1783	3444	1548
Flt Permitted	0.49	1.00		0.53	1.00	1.00	0.40	1.00	1.00	0.50	1.00	1.00
Satd. Flow (perm)	911	1697		968	1883	1527	683	3476	1518	945	3444	1548
Peak-hour factor, PHF	0.89	0.89	0.89	0.83	0.83	0.83	0.87	0.87	0.87	0.70	0.70	0.70
Adj. Flow (vph)	218	240	151	105	173	136	130	426	116	137	571	216
RTOR Reduction (vph)	0	29	0	0	0	111	0	0	71	0	0	132
Lane Group Flow (vph)	218	362	0	105	173	25	130	426	45	137	571	84
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Heavy Vehicles (%)	3%	4%	9%	5%	2%	5%	13%	5%	4%	2%	6%	2%
Turn Type	pm+pt	NA		Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8		8	2		2	6		6
Actuated Green, G (s)	23.4	23.4		13.9	13.9	13.9	35.1	30.1	30.1	35.1	30.1	30.1
Effective Green, g (s)	23.4	23.4		13.9	13.9	13.9	35.1	30.1	30.1	35.1	30.1	30.1
Actuated g/C Ratio	0.30	0.30		0.18	0.18	0.18	0.46	0.39	0.39	0.46	0.39	0.39
Clearance Time (s)	4.5	7.0		7.0	7.0	7.0	4.5	7.0	7.0	4.5	7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	332	515		174	339	275	371	1358	593	485	1346	605
v/s Ratio Prot	0.04	c0.21			0.09		c0.02	0.12		0.02	c0.17	
v/s Ratio Perm	0.16			0.11		0.02	0.14		0.03	0.11		0.05
v/c Ratio	0.66	0.70		0.60	0.51	0.09	0.35	0.31	0.08	0.28	0.42	0.14
Uniform Delay, d1	22.9	23.7		29.0	28.5	26.3	12.4	16.3	14.7	12.3	17.1	15.1
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	4.6	4.3		5.8	1.3	0.1	0.6	0.6	0.3	0.3	1.0	0.5
Delay (s)	27.5	28.0		34.8	29.8	26.4	13.0	16.9	15.0	12.7	18.1	15.6
Level of Service	C	C		C	C	C	B	B	B	B	B	B
Approach Delay (s/veh)		27.9			30.0			15.8			16.7	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	21.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	77.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	80.3%	ICU Level of Service	D
Analysis Period (min)	15		

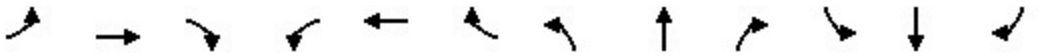
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	295	11	9	181	25	9	23	16	37	62	23
Future Volume (Veh/h)	40	295	11	9	181	25	9	23	16	37	62	23
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.80	0.80	0.80	0.74	0.74	0.74	0.64	0.64	0.64	0.85	0.85	0.85
Hourly flow rate (vph)	50	369	14	12	245	34	14	36	25	44	73	27
Pedestrians		10			10			10			10	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		1			1			1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	289			393			846	799	396	825	789	282
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	289			393			846	799	396	825	789	282
tC, single (s)	4.2			4.1			7.1	6.7	6.3	7.1	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.5	4.2	3.4	3.5	4.0	3.4
p0 queue free %	96			99			93	87	96	81	75	96
cM capacity (veh/h)	1211			1154			205	280	626	233	297	715

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	433	291	75	144
Volume Left	50	12	14	44
Volume Right	14	34	25	27
cSH	1211	1154	317	305
Volume to Capacity	0.04	0.01	0.24	0.47
Queue Length 95th (m)	1.0	0.2	6.9	18.2
Control Delay (s/veh)	1.3	0.4	19.9	27.0
Lane LOS	A	A	C	D
Approach Delay (s/veh)	1.3	0.4	19.9	27.0
Approach LOS			C	D

Intersection Summary				
Average Delay	6.4			
Intersection Capacity Utilization	50.6%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	292	26	84	158	28	54	0	182	21	0	12
Future Volume (Veh/h)	22	292	26	84	158	28	54	0	182	21	0	12
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.76	0.76	0.76	0.68	0.68	0.68	0.88	0.88	0.88	0.75	0.75	0.75
Hourly flow rate (vph)	29	384	34	124	232	41	61	0	207	28	0	16
Pedestrians								10			10	
Lane Width (m)								3.7			3.7	
Walking Speed (m/s)								1.1			1.1	
Percent Blockage								1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	283			428			986	1000	411	1177	997	263
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	283			428			986	1000	411	1177	997	263
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.4	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.8	4.0	3.3
p0 queue free %	98			89			69	100	67	68	100	98
cM capacity (veh/h)	1267			1120			195	207	634	86	208	769

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	447	397	268	44
Volume Left	29	124	61	28
Volume Right	34	41	207	16
cSH	1267	1120	419	127
Volume to Capacity	0.02	0.11	0.64	0.35
Queue Length 95th (m)	0.5	2.8	32.8	10.6
Control Delay (s/veh)	0.7	3.5	27.6	47.4
Lane LOS	A	A	D	E
Approach Delay (s/veh)	0.7	3.5	27.6	47.4
Approach LOS			D	E

Intersection Summary				
Average Delay	9.7			
Intersection Capacity Utilization	57.2%	ICU Level of Service	B	
Analysis Period (min)	15			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	38	20	13	547	591	30
Future Volume (Veh/h)	38	20	13	547	591	30
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.75	0.75	0.87	0.87	0.70	0.70
Hourly flow rate (vph)	51	27	15	629	844	43
Pedestrians	10					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	1					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)					397	
pX, platoon unblocked						
vC, conflicting volume	1220	876	897			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1220	876	897			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	70	91	98			
cM capacity (veh/h)	167	289	745			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	78	225	419	887
Volume Left	51	15	0	0
Volume Right	27	0	0	43
cSH	196	745	1700	1700
Volume to Capacity	0.40	0.02	0.25	0.52
Queue Length 95th (m)	13.5	0.5	0.0	0.0
Control Delay (s/veh)	35.0	0.9	0.0	0.0
Lane LOS	E	A		
Approach Delay (s/veh)	35.0	0.3		0.0
Approach LOS	E			

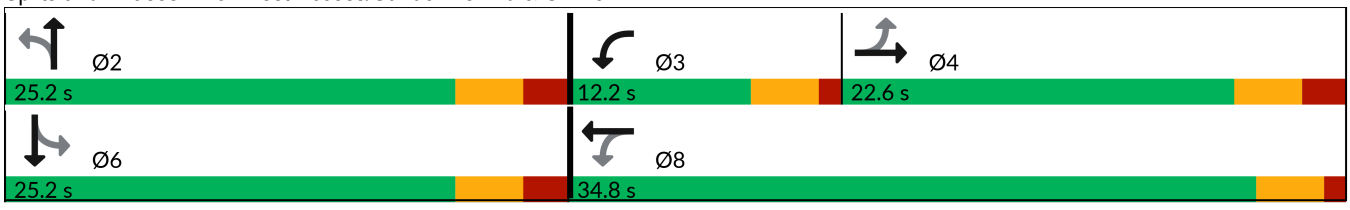
Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	43.0%	ICU Level of Service	A
Analysis Period (min)	15		

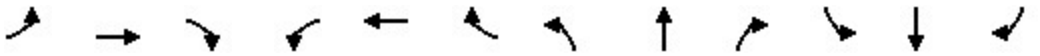
Intersection Sign configuration not allowed in HCM analysis.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	13	270	237	299	71	1	32	0
Future Volume (vph)	13	270	237	299	71	1	32	0
Lane Group Flow (vph)	14	366	279	376	0	428	0	100
Turn Type	Perm	NA	pm+pt	NA	Perm	NA	Perm	NA
Protected Phases		4	3	8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	3	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	9.5	22.5	25.0	25.0	25.0	25.0
Total Split (s)	22.6	22.6	12.2	34.8	25.2	25.2	25.2	25.2
Total Split (%)	37.7%	37.7%	20.3%	58.0%	42.0%	42.0%	42.0%	42.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	1.0	1.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	5.0	5.0	4.0	4.0		5.0		5.0
Lead/Lag	Lag	Lag	Lead					
Lead-Lag Optimize?	Yes	Yes	Yes					
Recall Mode	Max	Max	None	Max	None	None	None	None
v/c Ratio	0.04	0.60	0.53	0.36		0.82		0.24
Control Delay (s/veh)	15.5	21.1	11.4	8.7		24.5		4.8
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay (s/veh)	15.5	21.1	11.4	8.7		24.5		4.8
Queue Length 50th (m)	1.0	29.2	13.4	18.5		22.1		0.0
Queue Length 95th (m)	4.6	#58.3	26.8	35.6		13.6		5.5
Internal Link Dist (m)		136.3		736.8		127.6		42.7
Turn Bay Length (m)	15.0		30.0					
Base Capacity (vph)	330	612	537	1054		651		541
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	0.04	0.60	0.52	0.36		0.66		0.18

Intersection Summary
Cycle Length: 60
Actuated Cycle Length: 55
Natural Cycle: 60
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: West Access/Sundowner Rd & CR 25





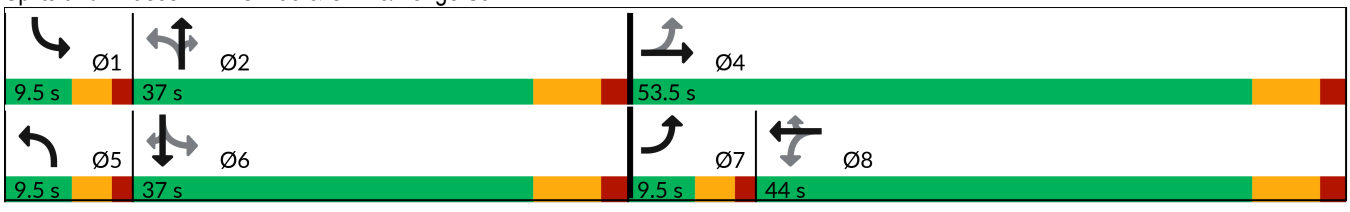
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	270	67	237	299	20	71	1	142	32	0	48
Future Volume (vph)	13	270	67	237	299	20	71	1	142	32	0	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		4.0	4.0			5.0			5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00			1.00			1.00	
Flpb, ped/bikes	0.99	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.97		1.00	0.99			0.91			0.92	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1772	1814		1785	1861			1687			1697	
Flt Permitted	0.54	1.00		0.35	1.00			0.85			0.74	
Satd. Flow (perm)	1004	1814		653	1861			1458			1276	
Peak-hour factor, PHF	0.92	0.92	0.92	0.85	0.85	0.85	0.50	0.50	0.50	0.80	0.80	0.80
Adj. Flow (vph)	14	293	73	279	352	24	142	2	284	40	0	60
RTOR Reduction (vph)	0	14	0	0	3	0	0	130	0	0	73	0
Lane Group Flow (vph)	14	352	0	279	373	0	0	298	0	0	27	0
Confl. Peds. (#/hr)	10		10	10		10						
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)	18.2	18.2		31.1	31.1			14.8			14.8	
Effective Green, g (s)	18.2	18.2		31.1	31.1			14.8			14.8	
Actuated g/C Ratio	0.33	0.33		0.57	0.57			0.27			0.27	
Clearance Time (s)	5.0	5.0		4.0	4.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	332	601		532	1054			393			343	
v/s Ratio Prot		0.19		c0.08	0.20							
v/s Ratio Perm	0.01			c0.22				c0.20			0.02	
v/c Ratio	0.04	0.59		0.52	0.35			0.76			0.08	
Uniform Delay, d1	12.4	15.2		7.0	6.5			18.4			15.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.2	4.1		0.9	0.9			8.2			0.1	
Delay (s)	12.7	19.4		7.9	7.4			26.6			15.1	
Level of Service	B	B		A	A			C			B	
Approach Delay (s/veh)		19.1			7.6			26.6			15.1	
Approach LOS		B			A			C			B	

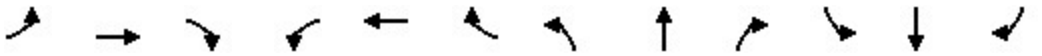
Intersection Summary			
HCM 2000 Control Delay (s/veh)	16.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	54.9	Sum of lost time (s)	14.0
Intersection Capacity Utilization	58.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	208	238	100	231	197	182	516	114	240	522	254
Future Volume (vph)	208	238	100	231	197	182	516	114	240	522	254
Lane Group Flow (vph)	229	397	132	304	259	209	593	131	258	561	273
Turn Type	pm+pt	NA	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		8		5	2		1	6	
Permitted Phases	4		8		8	2		2	6		6
Detector Phase	7	4	8	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	5.0	5.0	5.0	5.0	30.0	30.0	5.0	30.0	30.0
Minimum Split (s)	9.5	44.0	44.0	44.0	44.0	9.5	37.0	37.0	9.5	37.0	37.0
Total Split (s)	9.5	53.5	44.0	44.0	44.0	9.5	37.0	37.0	9.5	37.0	37.0
Total Split (%)	9.5%	53.5%	44.0%	44.0%	44.0%	9.5%	37.0%	37.0%	9.5%	37.0%	37.0%
Yellow Time (s)	3.0	5.0	5.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0
All-Red Time (s)	1.5	2.0	2.0	2.0	2.0	1.5	2.0	2.0	1.5	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	7.0	7.0	7.0	7.0	4.5	7.0	7.0	4.5	7.0	7.0
Lead/Lag	Lead		Lag	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	Max	None	Max	Max
v/c Ratio	0.76	0.63	0.57	0.69	0.48	0.56	0.45	0.20	0.67	0.44	0.37
Control Delay (s/veh)	36.7	24.7	37.9	37.4	8.9	21.3	22.3	4.2	26.3	22.1	4.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	36.7	24.7	37.9	37.4	8.9	21.3	22.3	4.2	26.3	22.1	4.5
Queue Length 50th (m)	25.0	46.4	18.3	43.7	4.7	17.2	36.4	0.0	21.7	34.2	0.0
Queue Length 95th (m)	#43.6	73.1	28.5	55.1	13.1	35.0	56.8	9.2	#52.3	56.2	16.2
Internal Link Dist (m)		736.8		238.4			326.5			186.5	
Turn Bay Length (m)	70.0		120.0		110.0	200.0		125.0	80.0		80.0
Base Capacity (vph)	303	1010	446	848	828	374	1306	653	384	1281	736
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	0.76	0.39	0.30	0.36	0.31	0.56	0.45	0.20	0.67	0.44	0.37

Intersection Summary
Cycle Length: 100
Actuated Cycle Length: 82.5
Natural Cycle: 100
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: CR 93 & CR 25/Yonge St

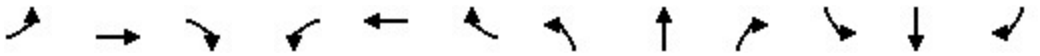




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	208	238	123	100	231	197	182	516	114	240	522	254
Future Volume (vph)	208	238	123	100	231	197	182	516	114	240	522	254
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	7.0		7.0	7.0	7.0	4.5	7.0	7.0	4.5	7.0	7.0
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	0.99		1.00	1.00	0.98	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	0.95		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1787	1759		1782	1883	1571	1671	3579	1547	1786	3510	1547
Flt Permitted	0.33	1.00		0.53	1.00	1.00	0.39	1.00	1.00	0.37	1.00	1.00
Satd. Flow (perm)	613	1759		991	1883	1571	692	3579	1547	698	3510	1547
Peak-hour factor, PHF	0.91	0.91	0.91	0.76	0.76	0.76	0.87	0.87	0.87	0.93	0.93	0.93
Adj. Flow (vph)	229	262	135	132	304	259	209	593	131	258	561	273
RTOR Reduction (vph)	0	23	0	0	0	169	0	0	83	0	0	173
Lane Group Flow (vph)	229	374	0	132	304	90	209	593	48	258	561	100
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Heavy Vehicles (%)	2%	2%	5%	2%	2%	2%	9%	2%	2%	2%	4%	2%
Turn Type	pm+pt	NA		Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8		8	2		2	6		6
Actuated Green, G (s)	28.8	28.8		19.3	19.3	19.3	35.1	30.1	30.1	35.1	30.1	30.1
Effective Green, g (s)	28.8	28.8		19.3	19.3	19.3	35.1	30.1	30.1	35.1	30.1	30.1
Actuated g/C Ratio	0.35	0.35		0.23	0.23	0.23	0.43	0.37	0.37	0.43	0.37	0.37
Clearance Time (s)	4.5	7.0		7.0	7.0	7.0	4.5	7.0	7.0	4.5	7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	285	614		232	441	367	354	1307	565	363	1282	565
v/s Ratio Prot	c0.05	0.21			0.16		0.04	0.17		c0.04	0.16	
v/s Ratio Perm	c0.23			0.13		0.06	0.22		0.03	c0.26		0.06
v/c Ratio	0.80	0.61		0.57	0.69	0.24	0.59	0.45	0.08	0.71	0.44	0.18
Uniform Delay, d1	24.2	22.2		27.9	28.8	25.6	16.5	19.9	17.1	17.8	19.8	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
Incremental Delay, d2	15.0	1.7		3.2	4.5	0.3	2.6	1.1	0.3	6.4	1.1	0.7
Delay (s)	39.2	23.9		31.1	33.3	26.0	19.1	21.0	17.4	24.3	20.8	18.4
Level of Service	D	C		C	C	C	B	C	B	C	C	B
Approach Delay (s/veh)		29.5			30.1			20.1			21.0	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	24.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	82.4	Sum of lost time (s)	23.0
Intersection Capacity Utilization	88.4%	ICU Level of Service	E
Analysis Period (min)	15		

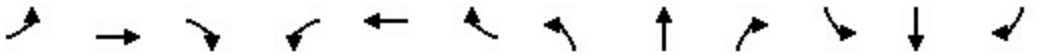
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	272	5	12	352	49	8	69	22	37	48	39
Future Volume (Veh/h)	27	272	5	12	352	49	8	69	22	37	48	39
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.84	0.84	0.84	0.86	0.86	0.86	0.88	0.88	0.88	0.85	0.85	0.85
Hourly flow rate (vph)	32	324	6	14	409	57	9	78	25	44	56	46
Pedestrians		10			10			10			10	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		1			1			1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	476			340			951	905	347	941	880	458
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	476			340			951	905	347	941	880	458
tC, single (s)	4.2			4.1			7.1	6.5	6.2	7.1	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.5	4.0	3.3	3.5	4.1	3.4
p0 queue free %	97			99			95	70	96	74	79	92
cM capacity (veh/h)	1045			1207			173	260	683	169	264	579

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	362	480	112	146
Volume Left	32	14	9	44
Volume Right	6	57	25	46
cSH	1045	1207	288	264
Volume to Capacity	0.03	0.01	0.39	0.55
Queue Length 95th (m)	0.7	0.3	13.4	23.3
Control Delay (s/veh)	1.1	0.4	25.3	34.2
Lane LOS	A	A	D	D
Approach Delay (s/veh)	1.1	0.4	25.3	34.2
Approach LOS			D	D

Intersection Summary				
Average Delay	7.6			
Intersection Capacity Utilization	47.8%	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)	13	270	67	237	299	20	71	1	142	32	0	48
Future Volume (Veh/h)	13	270	67	237	299	20	71	1	142	32	0	48
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.85	0.85	0.85	0.50	0.50	0.50	0.80	0.80	0.80
Hourly flow rate (vph)	14	293	73	279	352	24	142	2	284	40	0	60
Pedestrians								10			10	
Lane Width (m)								3.7			3.7	
Walking Speed (m/s)								1.1			1.1	
Percent Blockage								1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	386			376			1350	1312	340	1575	1336	374
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	386			376			1350	1312	340	1575	1336	374
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			76			0	98	59	3	100	91
cM capacity (veh/h)	1161			1171			92	117	696	41	113	666

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	380	655	428	100
Volume Left	14	279	142	40
Volume Right	73	24	284	60
cSH	1161	1171	217	94
Volume to Capacity	0.01	0.24	1.97	1.06
Queue Length 95th (m)	0.3	7.1	239.2	49.4
Control Delay (s/veh)	0.4	5.4	490.6	193.4
Lane LOS	A	A	F	F
Approach Delay (s/veh)	0.4	5.4	490.6	193.4
Approach LOS			F	F

Intersection Summary				
Average Delay	149.1			
Intersection Capacity Utilization	74.8%	ICU Level of Service	D	
Analysis Period (min)	15			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	38	31	23	779	688	57
Future Volume (Veh/h)	38	31	23	779	688	57
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.75	0.75	0.87	0.87	0.93	0.93
Hourly flow rate (vph)	51	41	26	895	740	61
Pedestrians	10					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	1					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)					397	
pX, platoon unblocked						
vC, conflicting volume	1280	781	811			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1280	781	811			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	66	88	97			
cM capacity (veh/h)	151	335	803			

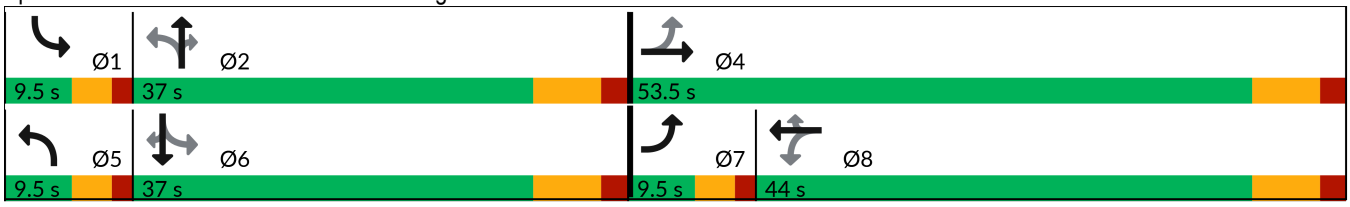
Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	92	324	597	801
Volume Left	51	26	0	0
Volume Right	41	0	0	61
cSH	200	803	1700	1700
Volume to Capacity	0.46	0.03	0.35	0.47
Queue Length 95th (m)	16.7	0.8	0.0	0.0
Control Delay (s/veh)	37.5	1.1	0.0	0.0
Lane LOS	E	A		
Approach Delay (s/veh)	37.5	0.4		0.0
Approach LOS	E			

Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	50.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	207	230	95	156	124	119	408	110	106	440	162
Future Volume (vph)	207	230	95	156	124	119	408	110	106	440	162
Lane Group Flow (vph)	233	412	114	188	149	137	469	126	151	629	231
Turn Type	pm+pt	NA	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		8		5	2		1	6	
Permitted Phases	4		8		8	2		2	6		6
Detector Phase	7	4	8	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	5.0	5.0	5.0	5.0	30.0	30.0	5.0	30.0	30.0
Minimum Split (s)	9.5	44.0	44.0	44.0	44.0	9.5	37.0	37.0	9.5	37.0	37.0
Total Split (s)	9.5	53.5	44.0	44.0	44.0	9.5	37.0	37.0	9.5	37.0	37.0
Total Split (%)	9.5%	53.5%	44.0%	44.0%	44.0%	9.5%	37.0%	37.0%	9.5%	37.0%	37.0%
Yellow Time (s)	3.0	5.0	5.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0
All-Red Time (s)	1.5	2.0	2.0	2.0	2.0	1.5	2.0	2.0	1.5	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	7.0	7.0	7.0	7.0	4.5	7.0	7.0	4.5	7.0	7.0
Lead/Lag	Lead		Lag	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	Max	None	Max	Max
v/c Ratio	0.64	0.74	0.63	0.53	0.36	0.38	0.35	0.19	0.31	0.47	0.31
Control Delay (s/veh)	28.8	30.1	45.0	33.5	7.4	14.4	18.9	3.7	12.7	20.4	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	28.8	30.1	45.0	33.5	7.4	14.4	18.9	3.7	12.7	20.4	4.1
Queue Length 50th (m)	25.5	48.6	15.6	25.1	0.0	9.3	24.9	0.0	10.3	35.4	0.0
Queue Length 95th (m)	41.7	76.6	28.2	39.1	10.6	21.5	41.3	7.9	18.0	43.0	4.7
Internal Link Dist (m)		736.8		238.4			326.5			186.5	
Turn Bay Length (m)	70.0		120.0		110.0	200.0		125.0	80.0		80.0
Base Capacity (vph)	362	1032	451	896	803	358	1340	670	484	1328	736
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	0.64	0.40	0.25	0.21	0.19	0.38	0.35	0.19	0.31	0.47	0.31

Intersection Summary
Cycle Length: 100
Actuated Cycle Length: 78.1
Natural Cycle: 100
Control Type: Semi Act-Uncoord

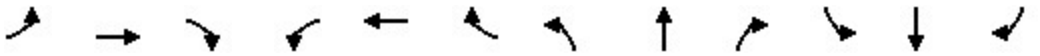
Splits and Phases: 1: CR 93 & CR 25/Yonge St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	207	230	137	95	156	124	119	408	110	106	440	162
Future Volume (vph)	207	230	137	95	156	124	119	408	110	106	440	162
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	7.0		7.0	7.0	7.0	4.5	7.0	7.0	4.5	7.0	7.0
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	0.99		1.00	1.00	0.98	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	0.94		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1768	1701		1732	1883	1527	1612	3476	1518	1784	3444	1548
Flt Permitted	0.48	1.00		0.52	1.00	1.00	0.36	1.00	1.00	0.47	1.00	1.00
Satd. Flow (perm)	892	1701		949	1883	1527	613	3476	1518	888	3444	1548
Peak-hour factor, PHF	0.89	0.89	0.89	0.83	0.83	0.83	0.87	0.87	0.87	0.70	0.70	0.70
Adj. Flow (vph)	233	258	154	114	188	149	137	469	126	151	629	231
RTOR Reduction (vph)	0	27	0	0	0	121	0	0	77	0	0	142
Lane Group Flow (vph)	233	385	0	114	188	28	137	469	49	151	629	89
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Heavy Vehicles (%)	3%	4%	9%	5%	2%	5%	13%	5%	4%	2%	6%	2%
Turn Type	pm+pt	NA		Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8		8	2		2	6		6
Actuated Green, G (s)	24.4	24.4		14.9	14.9	14.9	35.1	30.1	30.1	35.1	30.1	30.1
Effective Green, g (s)	24.4	24.4		14.9	14.9	14.9	35.1	30.1	30.1	35.1	30.1	30.1
Actuated g/C Ratio	0.31	0.31		0.19	0.19	0.19	0.45	0.39	0.39	0.45	0.39	0.39
Clearance Time (s)	4.5	7.0		7.0	7.0	7.0	4.5	7.0	7.0	4.5	7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	335	532		181	359	291	339	1341	585	457	1329	597
v/s Ratio Prot	0.04	c0.23			0.10		c0.03	0.13		0.02	c0.18	
v/s Ratio Perm	0.17			0.12		0.02	0.16		0.03	0.13		0.06
v/c Ratio	0.70	0.72		0.63	0.52	0.10	0.40	0.35	0.08	0.33	0.47	0.15
Uniform Delay, d1	23.3	23.8		29.0	28.4	26.0	13.0	17.0	15.2	12.9	18.0	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
Incremental Delay, d2	6.2	4.8		6.7	1.4	0.1	0.8	0.7	0.3	0.4	1.2	0.5
Delay (s)	29.4	28.6		35.7	29.7	26.2	13.8	17.7	15.5	13.3	19.2	16.1
Level of Service	C	C		D	C	C	B	B	B	B	B	B
Approach Delay (s/veh)		28.9			30.1			16.6			17.6	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	21.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	78.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	81.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	42	322	12	9	194	26	10	24	17	40	66	25
Future Volume (Veh/h)	42	322	12	9	194	26	10	24	17	40	66	25
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.80	0.80	0.80	0.74	0.74	0.74	0.64	0.64	0.64	0.85	0.85	0.85
Hourly flow rate (vph)	52	402	15	12	262	35	16	38	27	47	78	29
Pedestrians		10			10			10			10	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		1			1			1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	307			427			905	855	430	883	845	300
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	307			427			905	855	430	883	845	300
tC, single (s)	4.2			4.1			7.1	6.7	6.3	7.1	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.5	4.2	3.4	3.5	4.0	3.4
p0 queue free %	96			99			91	85	95	77	72	96
cM capacity (veh/h)	1192			1121			179	259	599	208	275	699

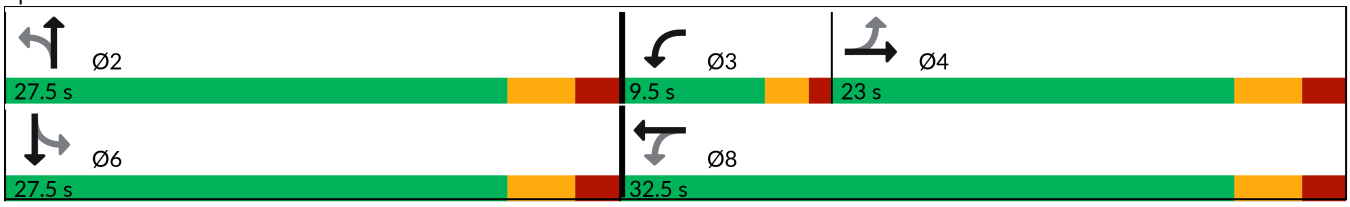
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	469	309	81	154
Volume Left	52	12	16	47
Volume Right	15	35	27	29
cSH	1192	1121	288	279
Volume to Capacity	0.04	0.01	0.28	0.55
Queue Length 95th (m)	1.0	0.2	8.6	23.4
Control Delay (s/veh)	1.3	0.4	22.3	32.7
Lane LOS	A	A	C	D
Approach Delay (s/veh)	1.3	0.4	22.3	32.7
Approach LOS			C	D

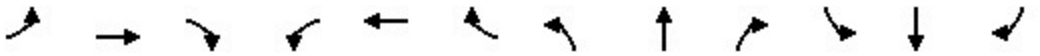
Intersection Summary				
Average Delay	7.5			
Intersection Capacity Utilization	53.8%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	22	321	84	173	54	0	21	0
Future Volume (vph)	22	321	84	173	54	0	21	0
Lane Group Flow (vph)	29	456	124	295	0	268	0	44
Turn Type	Perm	NA	pm+pt	NA	Perm	NA	Perm	NA
Protected Phases		4	3	8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	3	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	23.0	23.0	9.5	23.0	27.0	27.0	27.0	27.0
Total Split (s)	23.0	23.0	9.5	32.5	27.5	27.5	27.5	27.5
Total Split (%)	38.3%	38.3%	15.8%	54.2%	45.8%	45.8%	45.8%	45.8%
Yellow Time (s)	3.0	3.0	2.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	1.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	5.0	5.0	3.0	5.0		5.0		5.0
Lead/Lag	Lag	Lag	Lead					
Lead-Lag Optimize?	Yes	Yes	Yes					
Recall Mode	None	None	None	None	Max	Max	Max	Max
v/c Ratio	0.09	0.84	0.37	0.39		0.36		0.08
Control Delay (s/veh)	16.1	35.0	11.8	12.0		5.5		1.2
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay (s/veh)	16.1	35.0	11.8	12.0		5.5		1.2
Queue Length 50th (m)	2.3	45.2	6.9	18.4		4.2		0.0
Queue Length 95th (m)	6.1	59.0	10.4	22.9		16.4		0.4
Internal Link Dist (m)		136.3		736.8		127.6		42.7
Turn Bay Length (m)	15.0		30.0					
Base Capacity (vph)	348	603	338	875		753		529
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	0.76	0.37	0.34		0.36		0.08

Intersection Summary
Cycle Length: 60
Actuated Cycle Length: 56.7
Natural Cycle: 60
Control Type: Semi Act-Uncoord

Splits and Phases: 3: West Access/Sundowner Rd & CR 25





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	321	26	84	173	28	54	0	182	21	0	12
Future Volume (vph)	22	321	26	84	173	28	54	0	182	21	0	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		3.0	5.0			5.0			5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99			1.00			1.00	
Flpb, ped/bikes	0.99	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.99		1.00	0.98			0.90			0.95	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.97	
Satd. Flow (prot)	1769	1857		1788	1762			1668			1454	
Flt Permitted	0.58	1.00		0.21	1.00			0.93			0.79	
Satd. Flow (perm)	1080	1857		386	1762			1565			1180	
Peak-hour factor, PHF	0.76	0.76	0.76	0.68	0.68	0.68	0.88	0.88	0.88	0.75	0.75	0.75
Adj. Flow (vph)	29	422	34	124	254	41	61	0	207	28	0	16
RTOR Reduction (vph)	0	5	0	0	10	0	0	124	0	0	26	0
Lane Group Flow (vph)	29	451	0	124	285	0	0	144	0	0	18	0
Confl. Peds. (#/hr)	10		10	10		10						
Heavy Vehicles (%)	2%	2%	2%	2%	4%	20%	2%	2%	2%	33%	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)	16.5	16.5		24.4	24.4			22.8			22.8	
Effective Green, g (s)	16.5	16.5		24.4	24.4			22.8			22.8	
Actuated g/C Ratio	0.29	0.29		0.43	0.43			0.40			0.40	
Clearance Time (s)	5.0	5.0		3.0	5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	311	535		284	751			623			470	
v/s Ratio Prot		c0.24		c0.04	0.16							
v/s Ratio Perm	0.03			0.15				c0.09			0.01	
v/c Ratio	0.09	0.84		0.44	0.38			0.23			0.04	
Uniform Delay, d1	14.9	19.1		11.5	11.2			11.4			10.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.1	11.6		1.1	0.3			0.9			0.1	
Delay (s)	15.0	30.7		12.6	11.5			12.3			10.6	
Level of Service	B	C		B	B			B			B	
Approach Delay (s/veh)		29.7			11.8			12.3			10.6	
Approach LOS		C			B			B			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	19.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	57.2	Sum of lost time (s)	13.0
Intersection Capacity Utilization	49.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	38	20	13	599	642	30
Future Volume (Veh/h)	38	20	13	599	642	30
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.75	0.75	0.87	0.87	0.70	0.70
Hourly flow rate (vph)	51	27	15	689	917	43
Pedestrians	10					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	1					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)					397	
pX, platoon unblocked						
vC, conflicting volume	1323	949	970			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1323	949	970			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	64	90	98			
cM capacity (veh/h)	143	259	699			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	78	245	459	960
Volume Left	51	15	0	0
Volume Right	27	0	0	43
cSH	169	699	1700	1700
Volume to Capacity	0.46	0.02	0.27	0.56
Queue Length 95th (m)	16.4	0.5	0.0	0.0
Control Delay (s/veh)	43.3	0.9	0.0	0.0
Lane LOS	E	A		
Approach Delay (s/veh)	43.3	0.3		0.0
Approach LOS	E			

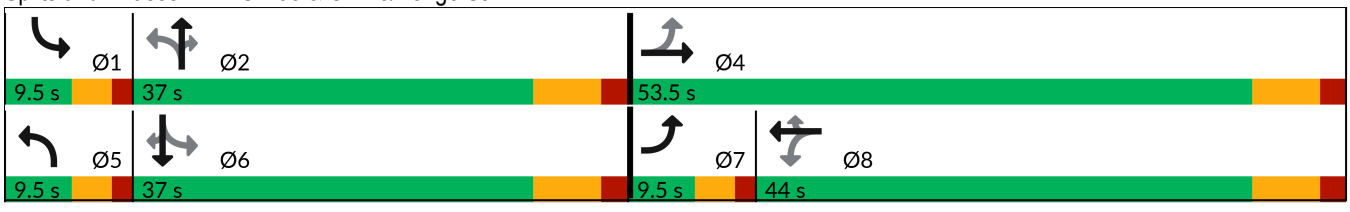
Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	45.7%	ICU Level of Service	A
Analysis Period (min)	15		

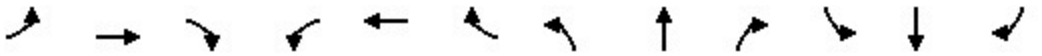
Intersection Sign configuration not allowed in HCM analysis.

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	222	257	109	248	218	194	569	125	265	575	273
Future Volume (vph)	222	257	109	248	218	194	569	125	265	575	273
Lane Group Flow (vph)	244	423	143	326	287	223	654	144	285	618	294
Turn Type	pm+pt	NA	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		8		5	2		1	6	
Permitted Phases	4		8		8	2		2	6		6
Detector Phase	7	4	8	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	5.0	5.0	5.0	5.0	30.0	30.0	5.0	30.0	30.0
Minimum Split (s)	9.5	44.0	44.0	44.0	44.0	9.5	37.0	37.0	9.5	37.0	37.0
Total Split (s)	9.5	53.5	44.0	44.0	44.0	9.5	37.0	37.0	9.5	37.0	37.0
Total Split (%)	9.5%	53.5%	44.0%	44.0%	44.0%	9.5%	37.0%	37.0%	9.5%	37.0%	37.0%
Yellow Time (s)	3.0	5.0	5.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0
All-Red Time (s)	1.5	2.0	2.0	2.0	2.0	1.5	2.0	2.0	1.5	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	7.0	7.0	7.0	7.0	4.5	7.0	7.0	4.5	7.0	7.0
Lead/Lag	Lead		Lag	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	Max	None	Max	Max
v/c Ratio	0.82	0.65	0.60	0.71	0.53	0.66	0.51	0.22	0.83	0.49	0.40
Control Delay (s/veh)	44.1	25.3	39.0	37.4	12.2	27.3	23.8	5.0	40.3	23.5	4.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	44.1	25.3	39.0	37.4	12.2	27.3	23.8	5.0	40.3	23.5	4.6
Queue Length 50th (m)	26.9	50.8	20.2	47.5	10.8	19.1	41.9	0.0	25.3	39.3	0.0
Queue Length 95th (m)	#52.1	79.2	30.6	58.9	19.7	#43.2	64.8	11.2	#73.6	64.0	16.9
Internal Link Dist (m)		736.8		238.4			326.5			186.5	
Turn Bay Length (m)	70.0		120.0		110.0	200.0		125.0	80.0		80.0
Base Capacity (vph)	296	995	428	834	808	339	1286	646	345	1261	742
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	0.82	0.43	0.33	0.39	0.36	0.66	0.51	0.22	0.83	0.49	0.40

Intersection Summary
Cycle Length: 100
Actuated Cycle Length: 83.9
Natural Cycle: 100
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: CR 93 & CR 25/Yonge St

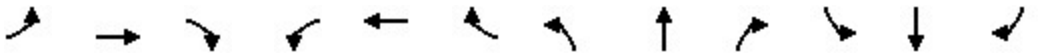




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	222	257	128	109	248	218	194	569	125	265	575	273
Future Volume (vph)	222	257	128	109	248	218	194	569	125	265	575	273
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	7.0		7.0	7.0	7.0	4.5	7.0	7.0	4.5	7.0	7.0
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	0.99		1.00	1.00	0.98	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	0.95		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1788	1761		1783	1883	1571	1671	3579	1546	1787	3510	1546
Flt Permitted	0.31	1.00		0.52	1.00	1.00	0.35	1.00	1.00	0.33	1.00	1.00
Satd. Flow (perm)	576	1761		967	1883	1571	617	3579	1546	615	3510	1546
Peak-hour factor, PHF	0.91	0.91	0.91	0.76	0.76	0.76	0.87	0.87	0.87	0.93	0.93	0.93
Adj. Flow (vph)	244	282	141	143	326	287	223	654	144	285	618	294
RTOR Reduction (vph)	0	22	0	0	0	152	0	0	92	0	0	188
Lane Group Flow (vph)	244	401	0	143	326	135	223	654	52	285	618	106
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Heavy Vehicles (%)	2%	2%	5%	2%	2%	2%	9%	2%	2%	2%	4%	2%
Turn Type	pm+pt	NA		Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8		8	2		2	6		6
Actuated Green, G (s)	30.1	30.1		20.6	20.6	20.6	35.1	30.1	30.1	35.1	30.1	30.1
Effective Green, g (s)	30.1	30.1		20.6	20.6	20.6	35.1	30.1	30.1	35.1	30.1	30.1
Actuated g/C Ratio	0.36	0.36		0.25	0.25	0.25	0.42	0.36	0.36	0.42	0.36	0.36
Clearance Time (s)	4.5	7.0		7.0	7.0	7.0	4.5	7.0	7.0	4.5	7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	279	633		237	463	386	321	1287	555	327	1262	555
v/s Ratio Prot	c0.05	0.23			0.17		0.04	0.18		c0.05	0.18	
v/s Ratio Perm	c0.26			0.15		0.09	0.25		0.03	c0.31		0.07
v/c Ratio	0.87	0.63		0.60	0.70	0.35	0.69	0.51	0.09	0.87	0.49	0.19
Uniform Delay, d1	25.2	22.2		27.9	28.8	26.0	18.3	21.0	17.8	20.7	20.8	18.4
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	24.8	2.1		4.3	4.8	0.5	6.4	1.4	0.3	21.5	1.4	0.8
Delay (s)	50.0	24.3		32.2	33.6	26.6	24.6	22.4	18.1	42.3	22.2	19.2
Level of Service	D	C		C	C	C	C	C	B	D	C	B
Approach Delay (s/veh)		33.7			30.7			22.3			26.2	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	27.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	83.7	Sum of lost time (s)	23.0
Intersection Capacity Utilization	91.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	294	5	13	384	51	8	72	24	39	50	43
Future Volume (Veh/h)	28	294	5	13	384	51	8	72	24	39	50	43
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.84	0.84	0.84	0.86	0.86	0.86	0.88	0.88	0.88	0.85	0.85	0.85
Hourly flow rate (vph)	33	350	6	15	447	59	9	82	27	46	59	51
Pedestrians		10			10			10			10	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		1			1			1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	516			366			1026	975	373	1014	949	497
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	516			366			1026	975	373	1014	949	497
tC, single (s)	4.2			4.1			7.1	6.5	6.2	7.1	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.5	4.0	3.3	3.5	4.1	3.4
p0 queue free %	97			99			94	65	96	68	75	91
cM capacity (veh/h)	1010			1181			146	235	660	142	239	551

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	389	521	118	156
Volume Left	33	15	9	46
Volume Right	6	59	27	51
cSH	1010	1181	262	235
Volume to Capacity	0.03	0.01	0.45	0.66
Queue Length 95th (m)	0.8	0.3	16.7	31.6
Control Delay (s/veh)	1.1	0.4	29.6	46.0
Lane LOS	A	A	D	E
Approach Delay (s/veh)	1.1	0.4	29.6	46.0
Approach LOS			D	E

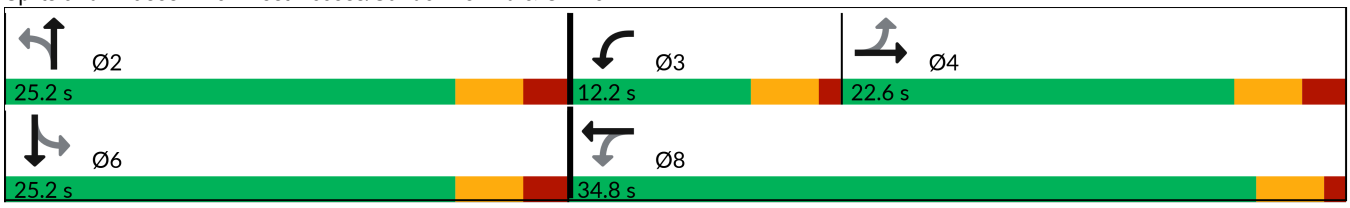
Intersection Summary				
Average Delay	9.5			
Intersection Capacity Utilization	49.8%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	13	298	237	331	71	1	32	0
Future Volume (vph)	13	298	237	331	71	1	32	0
Lane Group Flow (vph)	14	397	279	413	0	428	0	100
Turn Type	Perm	NA	pm+pt	NA	Perm	NA	Perm	NA
Protected Phases		4	3	8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	3	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	9.5	22.5	25.0	25.0	25.0	25.0
Total Split (s)	22.6	22.6	12.2	34.8	25.2	25.2	25.2	25.2
Total Split (%)	37.7%	37.7%	20.3%	58.0%	42.0%	42.0%	42.0%	42.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	1.0	1.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	5.0	5.0	4.0	4.0		5.0		5.0
Lead/Lag	Lag	Lag	Lead					
Lead-Lag Optimize?	Yes	Yes	Yes					
Recall Mode	Max	Max	None	Max	None	None	None	None
v/c Ratio	0.04	0.65	0.55	0.39		0.82		0.24
Control Delay (s/veh)	15.5	23.1	12.1	9.1		24.5		4.8
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay (s/veh)	15.5	23.1	12.1	9.1		24.5		4.8
Queue Length 50th (m)	1.0	32.7	13.4	20.9		22.1		0.0
Queue Length 95th (m)	4.6	#72.6	26.8	39.7		13.6		5.5
Internal Link Dist (m)		136.3		736.8		127.6		42.7
Turn Bay Length (m)	15.0		30.0					
Base Capacity (vph)	319	612	512	1055		651		541
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	0.04	0.65	0.54	0.39		0.66		0.18

Intersection Summary

Cycle Length: 60
Actuated Cycle Length: 55
Natural Cycle: 60
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: West Access/Sundowner Rd & CR 25



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	298	67	237	331	20	71	1	142	32	0	48
Future Volume (vph)	13	298	67	237	331	20	71	1	142	32	0	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		4.0	4.0			5.0			5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00			1.00			1.00	
Flpb, ped/bikes	0.99	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.97		1.00	0.99			0.91			0.92	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1773	1819		1786	1863			1687			1697	
Flt Permitted	0.52	1.00		0.31	1.00			0.85			0.74	
Satd. Flow (perm)	971	1819		591	1863			1458			1276	
Peak-hour factor, PHF	0.92	0.92	0.92	0.85	0.85	0.85	0.50	0.50	0.50	0.80	0.80	0.80
Adj. Flow (vph)	14	324	73	279	389	24	142	2	284	40	0	60
RTOR Reduction (vph)	0	13	0	0	3	0	0	130	0	0	73	0
Lane Group Flow (vph)	14	384	0	279	410	0	0	298	0	0	27	0
Confl. Peds. (#/hr)	10		10	10		10						
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)	18.2	18.2		31.1	31.1			14.8			14.8	
Effective Green, g (s)	18.2	18.2		31.1	31.1			14.8			14.8	
Actuated g/C Ratio	0.33	0.33		0.57	0.57			0.27			0.27	
Clearance Time (s)	5.0	5.0		4.0	4.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	321	603		506	1055			393			343	
v/s Ratio Prot		0.21		c0.08	0.22							
v/s Ratio Perm	0.01			c0.23				c0.20			0.02	
v/c Ratio	0.04	0.64		0.55	0.39			0.76			0.08	
Uniform Delay, d1	12.4	15.6		7.2	6.6			18.4			15.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.3	5.1		1.3	1.1			8.2			0.1	
Delay (s)	12.7	20.6		8.5	7.7			26.6			15.1	
Level of Service	B	C		A	A			C			B	
Approach Delay (s/veh)		20.4			8.0			26.6			15.1	
Approach LOS		C			A			C			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	16.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	54.9	Sum of lost time (s)	14.0
Intersection Capacity Utilization	60.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	38	31	23	850	755	57
Future Volume (Veh/h)	38	31	23	850	755	57
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.75	0.75	0.87	0.87	0.93	0.93
Hourly flow rate (vph)	51	41	26	977	812	61
Pedestrians	10					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	1					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)					397	
pX, platoon unblocked						
vC, conflicting volume	1393	853	883			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1393	853	883			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	60	86	97			
cM capacity (veh/h)	127	300	754			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	92	352	651	873
Volume Left	51	26	0	0
Volume Right	41	0	0	61
cSH	171	754	1700	1700
Volume to Capacity	0.54	0.03	0.38	0.51
Queue Length 95th (m)	20.8	0.8	0.0	0.0
Control Delay (s/veh)	48.3	1.1	0.0	0.0
Lane LOS	E	A		
Approach Delay (s/veh)	48.3	0.4		0.0
Approach LOS	E			

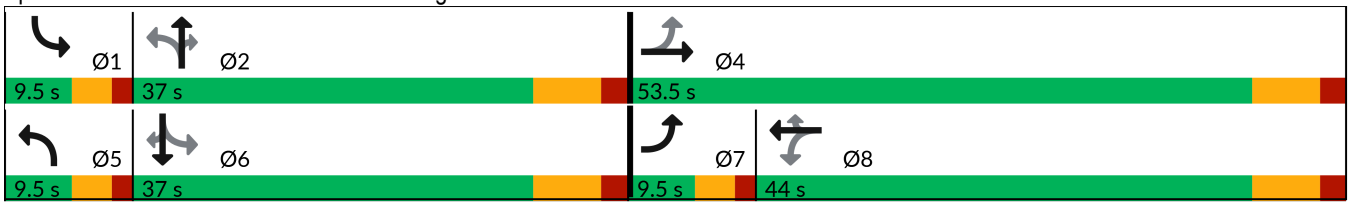
Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	53.9%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection Sign configuration not allowed in HCM analysis.

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	222	248	105	168	137	126	449	120	117	484	173
Future Volume (vph)	222	248	105	168	137	126	449	120	117	484	173
Lane Group Flow (vph)	249	437	127	202	165	145	516	138	167	691	247
Turn Type	pm+pt	NA	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		8		5	2		1	6	
Permitted Phases	4		8		8	2		2	6		6
Detector Phase	7	4	8	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	5.0	5.0	5.0	5.0	30.0	30.0	5.0	30.0	30.0
Minimum Split (s)	9.5	44.0	44.0	44.0	44.0	9.5	37.0	37.0	9.5	37.0	37.0
Total Split (s)	9.5	53.5	44.0	44.0	44.0	9.5	37.0	37.0	9.5	37.0	37.0
Total Split (%)	9.5%	53.5%	44.0%	44.0%	44.0%	9.5%	37.0%	37.0%	9.5%	37.0%	37.0%
Yellow Time (s)	3.0	5.0	5.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0
All-Red Time (s)	1.5	2.0	2.0	2.0	2.0	1.5	2.0	2.0	1.5	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	7.0	7.0	7.0	7.0	4.5	7.0	7.0	4.5	7.0	7.0
Lead/Lag	Lead		Lag	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	Max	None	Max	Max
v/c Ratio	0.68	0.75	0.69	0.52	0.37	0.45	0.39	0.21	0.38	0.53	0.34
Control Delay (s/veh)	29.9	30.2	48.5	32.3	6.7	17.5	20.4	4.5	14.9	22.3	4.3
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 (s/veh)	29.9	30.2	48.5	32.3	6.7	17.5	20.4	4.5	14.9	22.3	4.3
Queue Length 50th (m)	27.5	53.2	17.8	27.2	0.0	10.5	29.0	0.0	12.1	41.4	0.0
Queue Length 95th (m)	44.2	82.3	31.7	41.4	10.6	24.3	48.0	10.1	21.0	50.1	4.8
Internal Link Dist (m)		736.8		238.4			326.5			186.5	
Turn Bay Length (m)	70.0		120.0		110.0	200.0		125.0	80.0		80.0
Base Capacity (vph)	368	1012	412	875	797	320	1311	658	443	1299	735
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	0.68	0.43	0.31	0.23	0.21	0.45	0.39	0.21	0.38	0.53	0.34

Intersection Summary
Cycle Length: 100
Actuated Cycle Length: 80
Natural Cycle: 100
Control Type: Semi Act-Uncoord

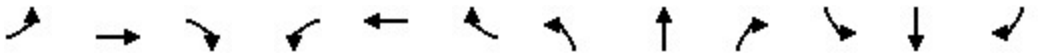
Splits and Phases: 1: CR 93 & CR 25/Yonge St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	222	248	141	105	168	137	126	449	120	117	484	173
Future Volume (vph)	222	248	141	105	168	137	126	449	120	117	484	173
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	7.0		7.0	7.0	7.0	4.5	7.0	7.0	4.5	7.0	7.0
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	0.99		1.00	1.00	0.98	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	0.95		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1768	1706		1732	1883	1527	1613	3476	1518	1785	3444	1547
Flt Permitted	0.47	1.00		0.49	1.00	1.00	0.32	1.00	1.00	0.43	1.00	1.00
Satd. Flow (perm)	871	1706		888	1883	1527	538	3476	1518	814	3444	1547
Peak-hour factor, PHF	0.89	0.89	0.89	0.83	0.83	0.83	0.87	0.87	0.87	0.70	0.70	0.70
Adj. Flow (vph)	249	279	158	127	202	165	145	516	138	167	691	247
RTOR Reduction (vph)	0	26	0	0	0	131	0	0	86	0	0	154
Lane Group Flow (vph)	249	411	0	127	202	34	145	516	52	167	691	93
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Heavy Vehicles (%)	3%	4%	9%	5%	2%	5%	13%	5%	4%	2%	6%	2%
Turn Type	pm+pt	NA		Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8		8	2		2	6		6
Actuated Green, G (s)	26.2	26.2		16.7	16.7	16.7	35.2	30.2	30.2	35.2	30.2	30.2
Effective Green, g (s)	26.2	26.2		16.7	16.7	16.7	35.2	30.2	30.2	35.2	30.2	30.2
Actuated g/C Ratio	0.33	0.33		0.21	0.21	0.21	0.44	0.38	0.38	0.44	0.38	0.38
Clearance Time (s)	4.5	7.0		7.0	7.0	7.0	4.5	7.0	7.0	4.5	7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	341	559		185	393	319	304	1313	573	419	1301	584
v/s Ratio Prot	0.05	c0.24			0.11		c0.03	0.15		0.02	c0.20	
v/s Ratio Perm	0.19			0.14		0.02	0.18		0.03	0.15		0.06
v/c Ratio	0.73	0.74		0.69	0.51	0.11	0.48	0.39	0.09	0.40	0.53	0.16
Uniform Delay, d1	23.6	23.8		29.2	28.0	25.6	14.0	18.2	16.0	13.8	19.3	16.5
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	7.8	5.0		10.1	1.1	0.2	1.2	0.9	0.3	0.6	1.6	0.6
Delay (s)	31.4	28.8		39.3	29.1	25.7	15.2	19.0	16.3	14.4	20.9	17.0
Level of Service	C	C		D	C	C	B	B	B	B	C	B
Approach Delay (s/veh)		29.8			30.6			17.9			19.1	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	23.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	79.9	Sum of lost time (s)	23.0
Intersection Capacity Utilization	83.6%	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)	44	352	13	10	209	27	11	25	19	43	69	28
Future Volume (Veh/h)	44	352	13	10	209	27	11	25	19	43	69	28
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.80	0.80	0.80	0.74	0.74	0.74	0.64	0.64	0.64	0.85	0.85	0.85
Hourly flow rate (vph)	55	440	16	14	282	36	17	39	30	51	81	33
Pedestrians		10			10			10			10	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		1			1			1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	328			466			980	924	468	956	914	320
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	328			466			980	924	468	956	914	320
tC, single (s)	4.2			4.1			7.1	6.7	6.3	7.1	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.5	4.2	3.4	3.5	4.0	3.4
p0 queue free %	95			99			89	83	95	72	67	95
cM capacity (veh/h)	1171			1085			151	234	570	180	249	680

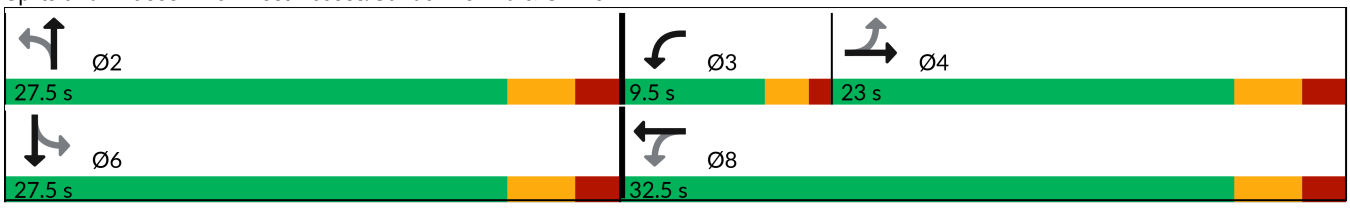
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	511	332	86	165
Volume Left	55	14	17	51
Volume Right	16	36	30	33
cSH	1171	1085	259	251
Volume to Capacity	0.05	0.01	0.33	0.66
Queue Length 95th (m)	1.1	0.3	10.6	31.5
Control Delay (s/veh)	1.4	0.5	25.7	43.1
Lane LOS	A	A	D	E
Approach Delay (s/veh)	1.4	0.5	25.7	43.1
Approach LOS			D	E

Intersection Summary			
Average Delay	9.3		
Intersection Capacity Utilization	56.4%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	22	352	84	189	54	0	21	0
Future Volume (vph)	22	352	84	189	54	0	21	0
Lane Group Flow (vph)	29	497	124	319	0	268	0	44
Turn Type	Perm	NA	pm+pt	NA	Perm	NA	Perm	NA
Protected Phases		4	3	8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	3	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	23.0	23.0	9.5	23.0	27.0	27.0	27.0	27.0
Total Split (s)	23.0	23.0	9.5	32.5	27.5	27.5	27.5	27.5
Total Split (%)	38.3%	38.3%	15.8%	54.2%	45.8%	45.8%	45.8%	45.8%
Yellow Time (s)	3.0	3.0	2.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	1.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	5.0	5.0	3.0	5.0		5.0		5.0
Lead/Lag	Lag	Lag	Lead					
Lead-Lag Optimize?	Yes	Yes	Yes					
Recall Mode	None	None	None	None	Max	Max	Max	Max
v/c Ratio	0.09	0.89	0.38	0.42		0.36		0.08
Control Delay (s/veh)	16.1	40.7	11.9	12.4		5.6		1.2
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay (s/veh)	16.1	40.7	11.9	12.4		5.6		1.2
Queue Length 50th (m)	2.3	50.8	6.9	20.4		4.2		0.0
Queue Length 95th (m)	6.1	#73.8	10.4	25.0		16.4		0.4
Internal Link Dist (m)		136.3		736.8		127.6		42.7
Turn Bay Length (m)	15.0		30.0					
Base Capacity (vph)	335	595	334	867		746		522
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	0.09	0.84	0.37	0.37		0.36		0.08

Intersection Summary
Cycle Length: 60
Actuated Cycle Length: 57.2
Natural Cycle: 60
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: West Access/Sundowner Rd & CR 25



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	352	26	84	189	28	54	0	182	21	0	12
Future Volume (vph)	22	352	26	84	189	28	54	0	182	21	0	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		3.0	5.0			5.0			5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Flpb, ped/bikes	0.99	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.99		1.00	0.98			0.90			0.95	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.97	
Satd. Flow (prot)	1770	1859		1788	1768			1668			1454	
Flt Permitted	0.57	1.00		0.20	1.00			0.93			0.79	
Satd. Flow (perm)	1056	1859		375	1768			1565			1178	
Peak-hour factor, PHF	0.76	0.76	0.76	0.68	0.68	0.68	0.88	0.88	0.88	0.75	0.75	0.75
Adj. Flow (vph)	29	463	34	124	278	41	61	0	207	28	0	16
RTOR Reduction (vph)	0	4	0	0	9	0	0	126	0	0	27	0
Lane Group Flow (vph)	29	493	0	124	310	0	0	142	0	0	17	0
Confl. Peds. (#/hr)	10		10	10		10						
Heavy Vehicles (%)	2%	2%	2%	2%	4%	20%	2%	2%	2%	33%	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)	17.1	17.1		25.1	25.1			22.7			22.7	
Effective Green, g (s)	17.1	17.1		25.1	25.1			22.7			22.7	
Actuated g/C Ratio	0.30	0.30		0.43	0.43			0.39			0.39	
Clearance Time (s)	5.0	5.0		3.0	5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	312	549		285	767			614			462	
v/s Ratio Prot		c0.27		c0.04	0.18							
v/s Ratio Perm	0.03			0.15				c0.09			0.01	
v/c Ratio	0.09	0.90		0.44	0.40			0.23			0.04	
Uniform Delay, d1	14.7	19.5		11.7	11.2			11.7			10.8	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.1	17.2		1.1	0.3			0.9			0.2	
Delay (s)	14.9	36.7		12.8	11.6			12.6			11.0	
Level of Service	B	D		B	B			B			B	
Approach Delay (s/veh)		35.5			11.9			12.6			11.0	
Approach LOS		D			B			B			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	21.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	57.8	Sum of lost time (s)	13.0
Intersection Capacity Utilization	50.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	38	20	13	657	700	30
Future Volume (Veh/h)	38	20	13	657	700	30
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.75	0.75	0.87	0.87	0.70	0.70
Hourly flow rate (vph)	51	27	15	755	1000	43
Pedestrians	10					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	1					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)					397	
pX, platoon unblocked						
vC, conflicting volume	1439	1032	1053			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1439	1032	1053			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	57	88	98			
cM capacity (veh/h)	120	228	650			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	78	267	503	1043
Volume Left	51	15	0	0
Volume Right	27	0	0	43
cSH	143	650	1700	1700
Volume to Capacity	0.54	0.02	0.30	0.61
Queue Length 95th (m)	20.5	0.5	0.0	0.0
Control Delay (s/veh)	56.7	0.9	0.0	0.0
Lane LOS	F	A		
Approach Delay (s/veh)	56.7	0.3		0.0
Approach LOS	F			

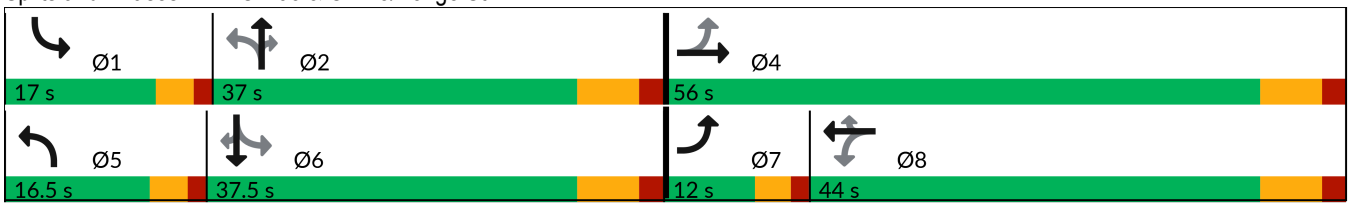
Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	48.7%	ICU Level of Service	A
Analysis Period (min)	15		

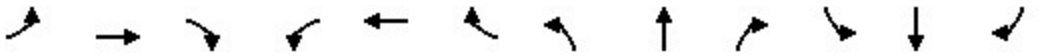
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	238	277	120	267	240	203	627	137	293	633	293
Future Volume (vph)	238	277	120	267	240	203	627	137	293	633	293
Lane Group Flow (vph)	262	449	158	351	316	233	721	157	315	681	315
Turn Type	pm+pt	NA	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		8		5	2		1	6	
Permitted Phases	4		8		8	2		2	6		6
Detector Phase	7	4	8	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	5.0	5.0	5.0	5.0	30.0	30.0	5.0	30.0	30.0
Minimum Split (s)	9.5	44.0	44.0	44.0	44.0	9.5	37.0	37.0	9.5	37.0	37.0
Total Split (s)	12.0	56.0	44.0	44.0	44.0	16.5	37.0	37.0	17.0	37.5	37.5
Total Split (%)	10.9%	50.9%	40.0%	40.0%	40.0%	15.0%	33.6%	33.6%	15.5%	34.1%	34.1%
Yellow Time (s)	3.0	5.0	5.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0
All-Red Time (s)	1.5	2.0	2.0	2.0	2.0	1.5	2.0	2.0	1.5	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	7.0	7.0	7.0	7.0	4.5	7.0	7.0	4.5	7.0	7.0
Lead/Lag	Lead		Lag	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	Max	None	Max	Max
v/c Ratio	0.89	0.66	0.71	0.75	0.51	0.65	0.65	0.27	0.83	0.61	0.45
Control Delay (s/veh)	54.5	28.7	50.9	43.7	6.8	25.7	33.9	6.2	38.4	32.3	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 (s/veh)	54.5	28.7	50.9	43.7	6.8	25.7	33.9	6.2	38.4	32.3	5.6
Queue Length 50th (m)	34.0	65.2	27.2	61.0	1.6	23.6	60.9	0.0	33.2	56.5	0.0
Queue Length 95th (m)	#66.6	95.8	38.9	72.1	9.1	47.0	91.3	13.5	#90.7	89.3	20.2
Internal Link Dist (m)		736.8		238.4			326.5			186.5	
Turn Bay Length (m)	70.0		120.0		110.0	200.0		125.0	80.0		80.0
Base Capacity (vph)	295	901	338	715	784	372	1102	582	378	1123	706
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	0.89	0.50	0.47	0.49	0.40	0.63	0.65	0.27	0.83	0.61	0.45

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 97.9
Natural Cycle: 100
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: CR 93 & CR 25/Yonge St

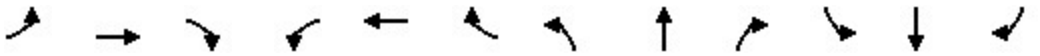




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	238	277	132	120	267	240	203	627	137	293	633	293
Future Volume (vph)	238	277	132	120	267	240	203	627	137	293	633	293
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	7.0		7.0	7.0	7.0	4.5	7.0	7.0	4.5	7.0	7.0
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	0.99		1.00	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	1.00
Frt	1.00	0.95		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1788	1764		1782	1883	1569	1672	3579	1542	1788	3510	1542
Flt Permitted	0.26	1.00		0.48	1.00	1.00	0.28	1.00	1.00	0.23	1.00	1.00
Satd. Flow (perm)	493	1764		891	1883	1569	500	3579	1542	433	3510	1542
Peak-hour factor, PHF	0.91	0.91	0.91	0.76	0.76	0.76	0.87	0.87	0.87	0.93	0.93	0.93
Adj. Flow (vph)	262	304	145	158	351	316	233	721	157	315	681	315
RTOR Reduction (vph)	0	18	0	0	0	228	0	0	109	0	0	214
Lane Group Flow (vph)	262	431	0	158	351	88	233	721	48	315	681	101
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Heavy Vehicles (%)	2%	2%	5%	2%	2%	2%	9%	2%	2%	2%	4%	2%
Turn Type	pm+pt	NA		Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8		8	2		2	6		6
Actuated Green, G (s)	36.6	36.6		24.6	24.6	24.6	41.6	30.2	30.2	44.0	31.4	31.4
Effective Green, g (s)	36.6	36.6		24.6	24.6	24.6	41.6	30.2	30.2	44.0	31.4	31.4
Actuated g/C Ratio	0.37	0.37		0.25	0.25	0.25	0.42	0.31	0.31	0.45	0.32	0.32
Clearance Time (s)	4.5	7.0		7.0	7.0	7.0	4.5	7.0	7.0	4.5	7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	283	659		223	473	394	348	1104	475	368	1125	494
v/s Ratio Prot	c0.07	0.24			0.19		0.08	0.20		c0.11	0.19	
v/s Ratio Perm	c0.27			0.18		0.06	0.21		0.03	c0.27		0.07
v/c Ratio	0.93	0.65		0.71	0.74	0.22	0.67	0.65	0.10	0.86	0.61	0.20
Uniform Delay, d1	28.0	25.4		33.4	33.7	29.1	19.3	29.3	24.2	19.4	28.0	24.2
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	34.2	2.3		9.9	6.2	0.3	4.8	3.0	0.4	17.4	2.4	0.9
Delay (s)	62.2	27.8		43.2	39.9	29.4	24.2	32.3	24.6	36.8	30.4	25.1
Level of Service	E	C		D	D	C	C	C	C	D	C	C
Approach Delay (s/veh)		40.5			36.5			29.5			30.7	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	33.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	97.9	Sum of lost time (s)	23.0
Intersection Capacity Utilization	94.3%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	319	6	13	420	53	9	76	26	41	53	48
Future Volume (Veh/h)	30	319	6	13	420	53	9	76	26	41	53	48
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.84	0.84	0.84	0.86	0.86	0.86	0.88	0.88	0.88	0.85	0.85	0.85
Hourly flow rate (vph)	36	380	7	15	488	62	10	86	30	48	62	56
Pedestrians		10			10			10			10	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		1			1			1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	560			397			1112	1056	404	1098	1028	539
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	560			397			1112	1056	404	1098	1028	539
tC, single (s)	4.2			4.1			7.1	6.5	6.2	7.1	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.5	4.0	3.3	3.5	4.1	3.4
p0 queue free %	96			99			92	59	95	58	71	89
cM capacity (veh/h)	972			1150			120	210	634	115	214	521

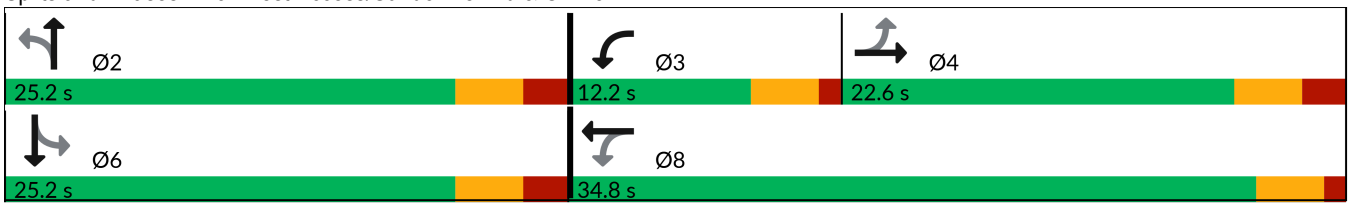
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	423	565	126	166
Volume Left	36	15	10	48
Volume Right	7	62	30	56
cSH	972	1150	233	204
Volume to Capacity	0.04	0.01	0.54	0.81
Queue Length 95th (m)	0.9	0.3	22.0	44.6
Control Delay (s/veh)	1.1	0.4	37.2	71.5
Lane LOS	A	A	E	F
Approach Delay (s/veh)	1.1	0.4	37.2	71.5
Approach LOS			E	F

Intersection Summary				
Average Delay	13.5			
Intersection Capacity Utilization	53.2%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	13	328	237	367	71	1	32	0
Future Volume (vph)	13	328	237	367	71	1	32	0
Lane Group Flow (vph)	14	430	279	456	0	428	0	100
Turn Type	Perm	NA	pm+pt	NA	Perm	NA	Perm	NA
Protected Phases		4	3	8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	3	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	9.5	22.5	25.0	25.0	25.0	25.0
Total Split (s)	22.6	22.6	12.2	34.8	25.2	25.2	25.2	25.2
Total Split (%)	37.7%	37.7%	20.3%	58.0%	42.0%	42.0%	42.0%	42.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	1.0	1.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	5.0	5.0	4.0	4.0		5.0		5.0
Lead/Lag	Lag	Lag	Lead					
Lead-Lag Optimize?	Yes	Yes	Yes					
Recall Mode	Max	Max	None	Max	None	None	None	None
v/c Ratio	0.05	0.70	0.58	0.43		0.82		0.24
Control Delay (s/veh)	15.6	25.6	13.2	9.5		24.5		4.8
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay (s/veh)	15.6	25.6	13.2	9.5		24.5		4.8
Queue Length 50th (m)	1.0	36.6	13.4	23.9		22.1		0.0
Queue Length 95th (m)	4.6	#82.3	26.8	44.9		13.6		5.5
Internal Link Dist (m)		136.3		736.8		127.6		42.7
Turn Bay Length (m)	15.0		30.0					
Base Capacity (vph)	306	610	484	1056		651		541
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	0.05	0.70	0.58	0.43		0.66		0.18

Intersection Summary
Cycle Length: 60
Actuated Cycle Length: 55
Natural Cycle: 60
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: West Access/Sundowner Rd & CR 25



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	328	67	237	367	20	71	1	142	32	0	48
Future Volume (vph)	13	328	67	237	367	20	71	1	142	32	0	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		4.0	4.0			5.0			5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00			1.00			1.00	
Flpb, ped/bikes	0.99	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.97		1.00	0.99			0.91			0.92	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1774	1824		1787	1865			1687			1697	
Flt Permitted	0.50	1.00		0.28	1.00			0.85			0.74	
Satd. Flow (perm)	934	1824		523	1865			1458			1276	
Peak-hour factor, PHF	0.92	0.92	0.92	0.85	0.85	0.85	0.50	0.50	0.50	0.80	0.80	0.80
Adj. Flow (vph)	14	357	73	279	432	24	142	2	284	40	0	60
RTOR Reduction (vph)	0	11	0	0	3	0	0	130	0	0	73	0
Lane Group Flow (vph)	14	419	0	279	453	0	0	298	0	0	27	0
Confl. Peds. (#/hr)	10		10	10		10						
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)	18.1	18.1		31.1	31.1			14.8			14.8	
Effective Green, g (s)	18.1	18.1		31.1	31.1			14.8			14.8	
Actuated g/C Ratio	0.33	0.33		0.57	0.57			0.27			0.27	
Clearance Time (s)	5.0	5.0		4.0	4.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	307	601		480	1056			393			343	
v/s Ratio Prot		c0.23		c0.08	0.24							
v/s Ratio Perm	0.01			0.24				c0.20			0.02	
v/c Ratio	0.05	0.70		0.58	0.43			0.76			0.08	
Uniform Delay, d1	12.5	16.0		7.5	6.8			18.4			15.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.3	6.6		1.8	1.3			8.2			0.1	
Delay (s)	12.8	22.6		9.3	8.1			26.6			15.1	
Level of Service	B	C		A	A			C			B	
Approach Delay (s/veh)		22.3			8.6			26.6			15.1	
Approach LOS		C			A			C			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	17.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	54.9	Sum of lost time (s)	14.0
Intersection Capacity Utilization	61.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

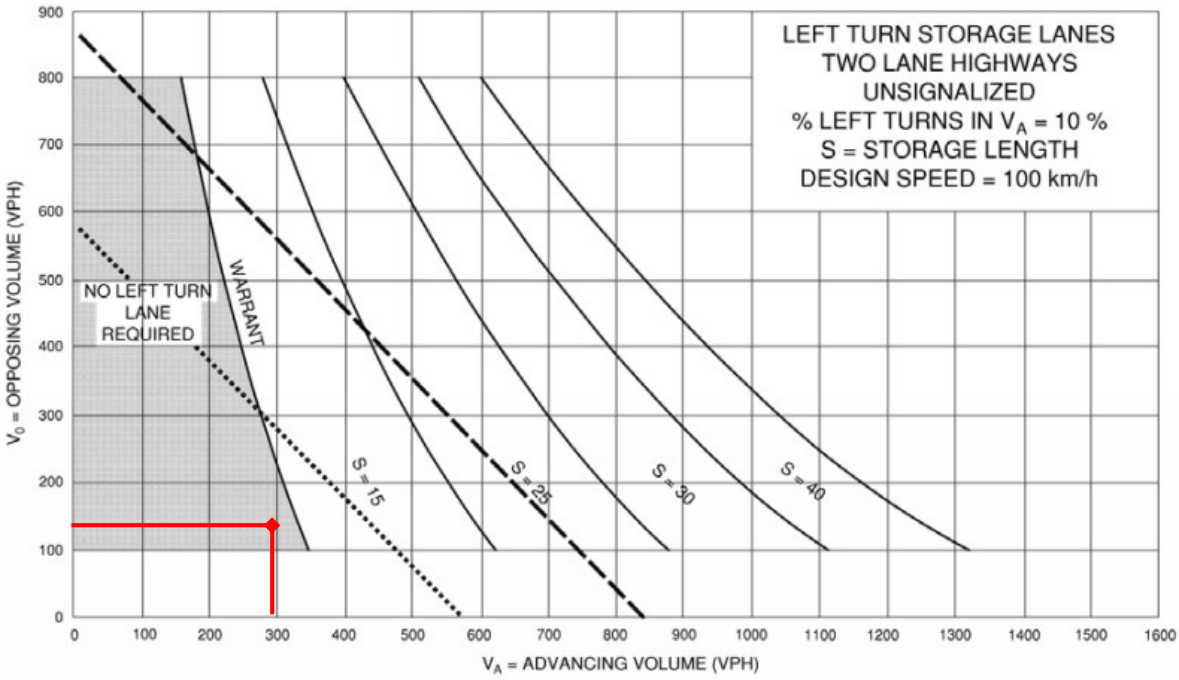
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	38	31	23	929	828	57
Future Volume (Veh/h)	38	31	23	929	828	57
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.75	0.75	0.87	0.87	0.93	0.93
Hourly flow rate (vph)	51	41	26	1068	890	61
Pedestrians	10					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	1					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)					397	
pX, platoon unblocked						
vC, conflicting volume	1517	931	961			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1517	931	961			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	51	85	96			
cM capacity (veh/h)	105	266	705			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	92	382	712	951
Volume Left	51	26	0	0
Volume Right	41	0	0	61
cSH	144	705	1700	1700
Volume to Capacity	0.64	0.04	0.42	0.56
Queue Length 95th (m)	26.4	0.9	0.0	0.0
Control Delay (s/veh)	66.5	1.1	0.0	0.0
Lane LOS	F	A		
Approach Delay (s/veh)	66.5	0.4		0.0
Approach LOS	F			

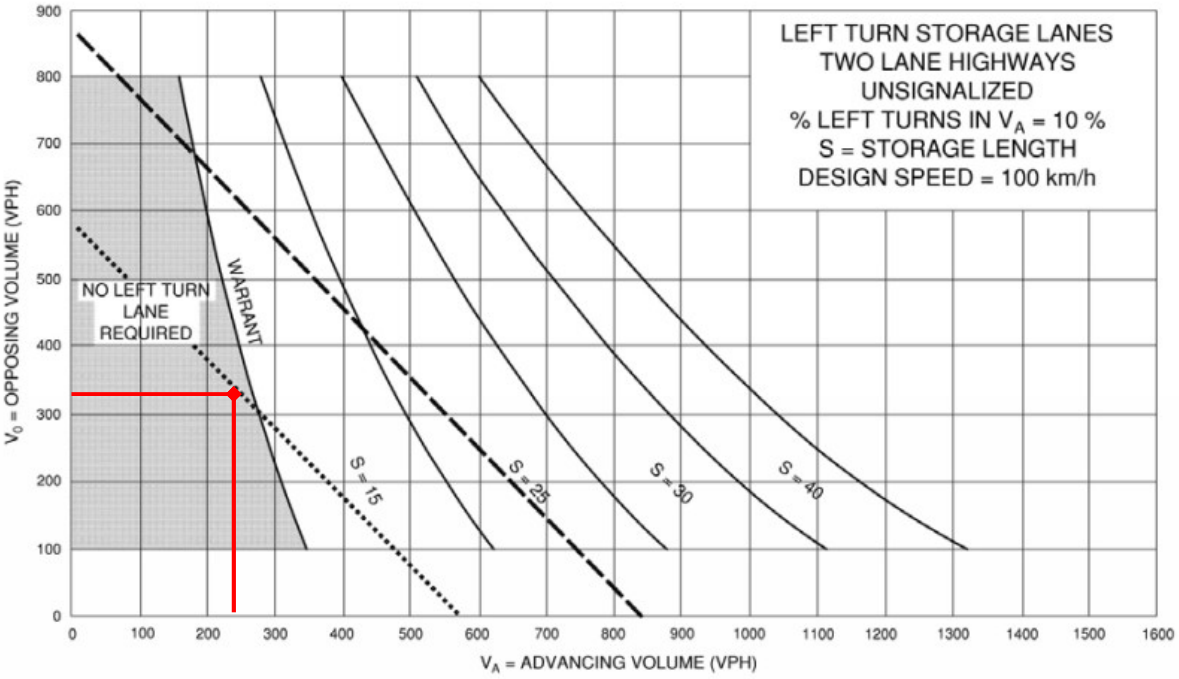
Intersection Summary			
Average Delay	3.1		
Intersection Capacity Utilization	57.8%	ICU Level of Service	B
Analysis Period (min)	15		

Intersection Sign configuration not allowed in HCM analysis.

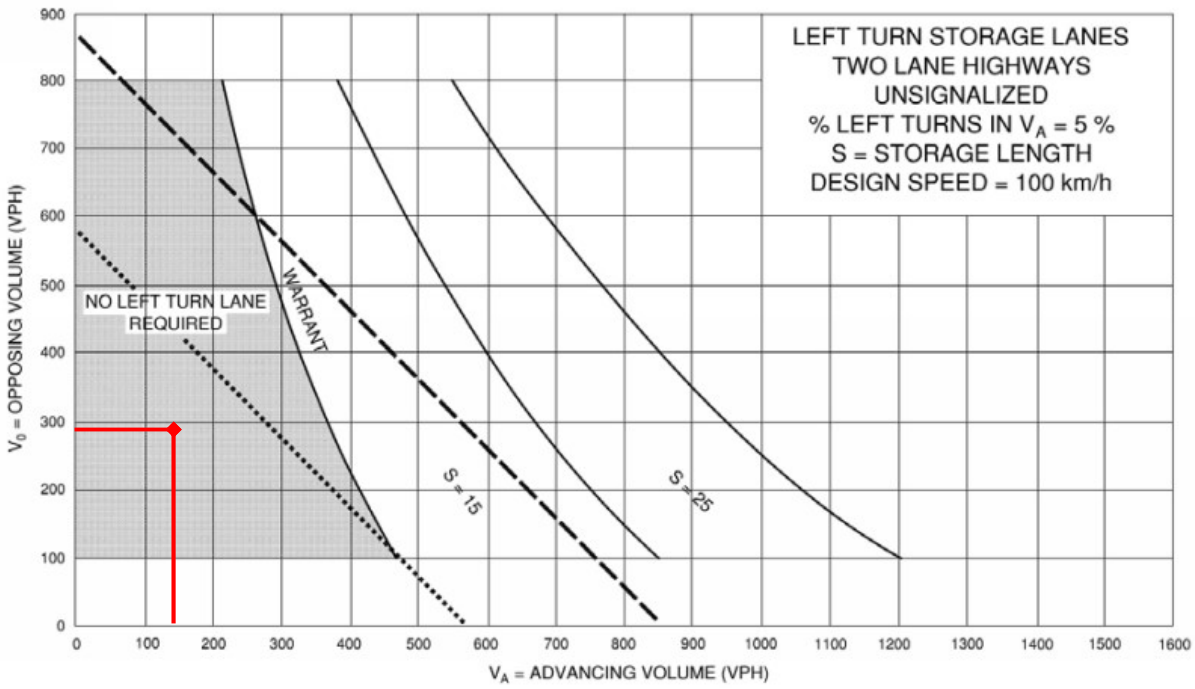
Appendix H –
MTO Left Turn Analysis



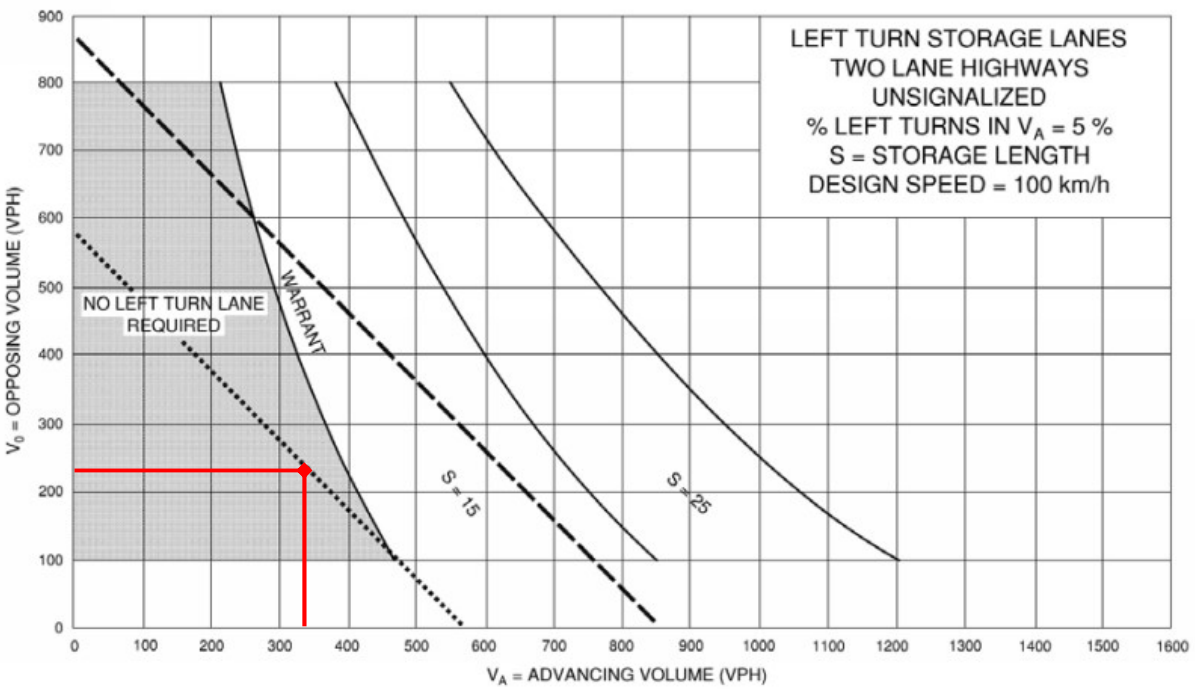
Existing (2025) AM Peak – EB on County Road 25 at Wilson Road / Marshall Road



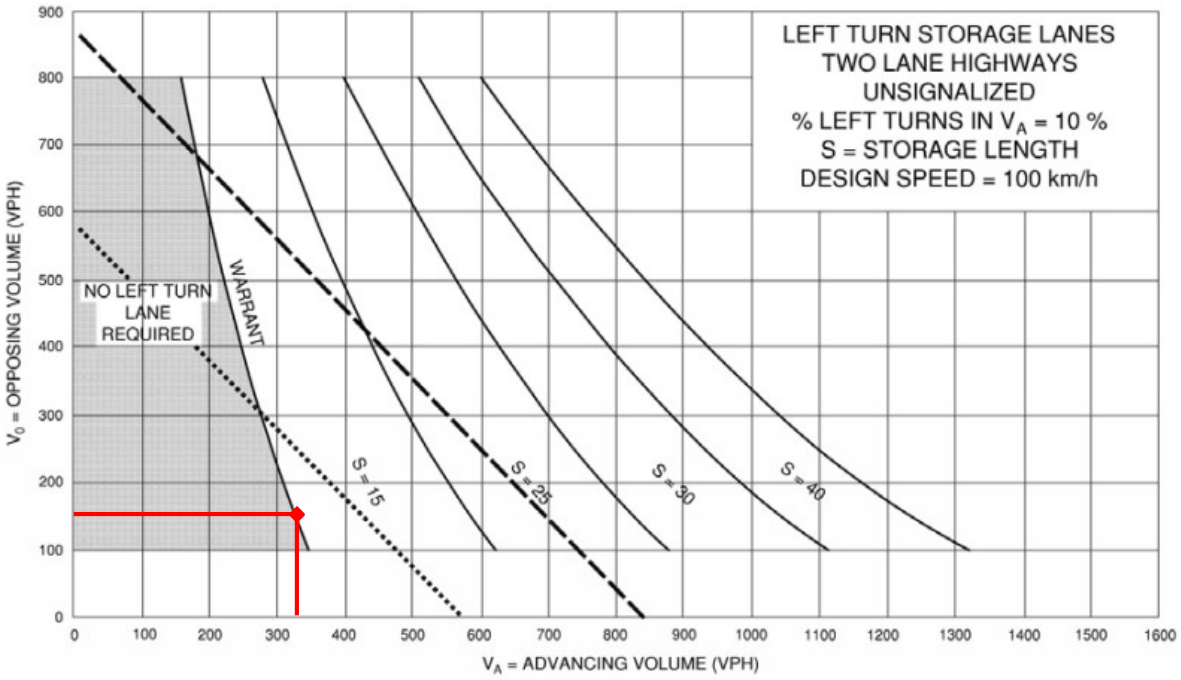
Existing (2025) PM Peak – EB on County Road 25 at Wilson Road / Marshall Road



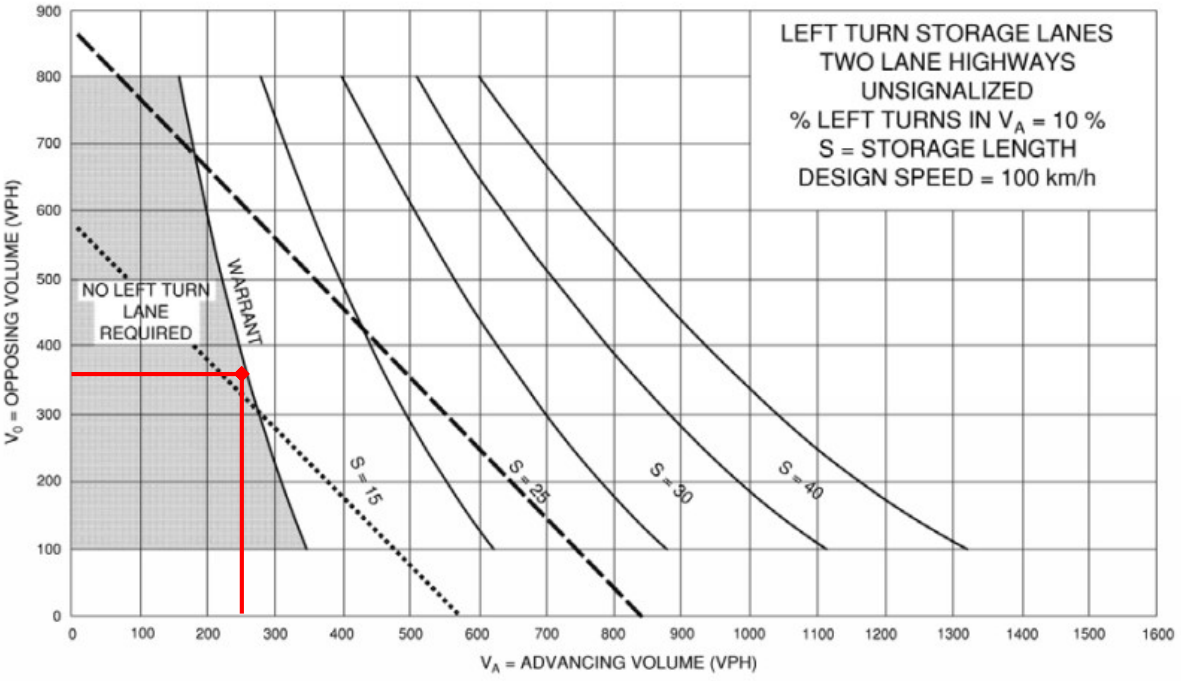
Existing (2025) AM Peak – WB on County Road 25 at Wilson Road / Marshall Road



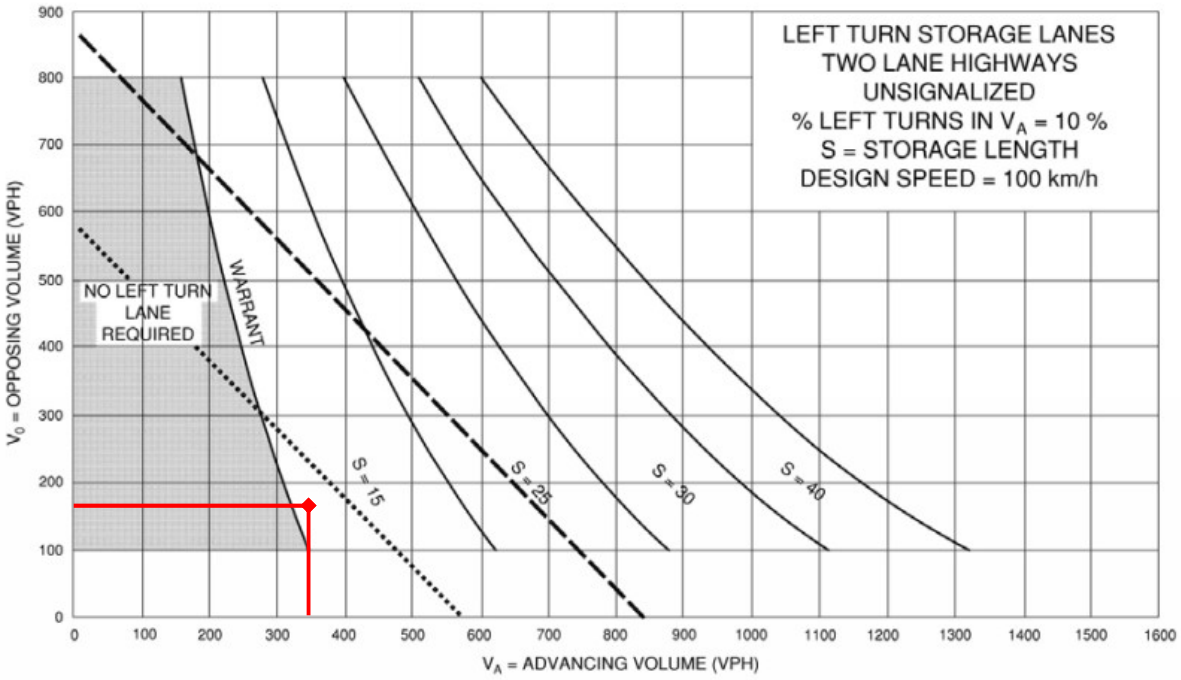
Existing (2025) PM Peak – WB on County Road 25 at Wilson Road / Marshall Road



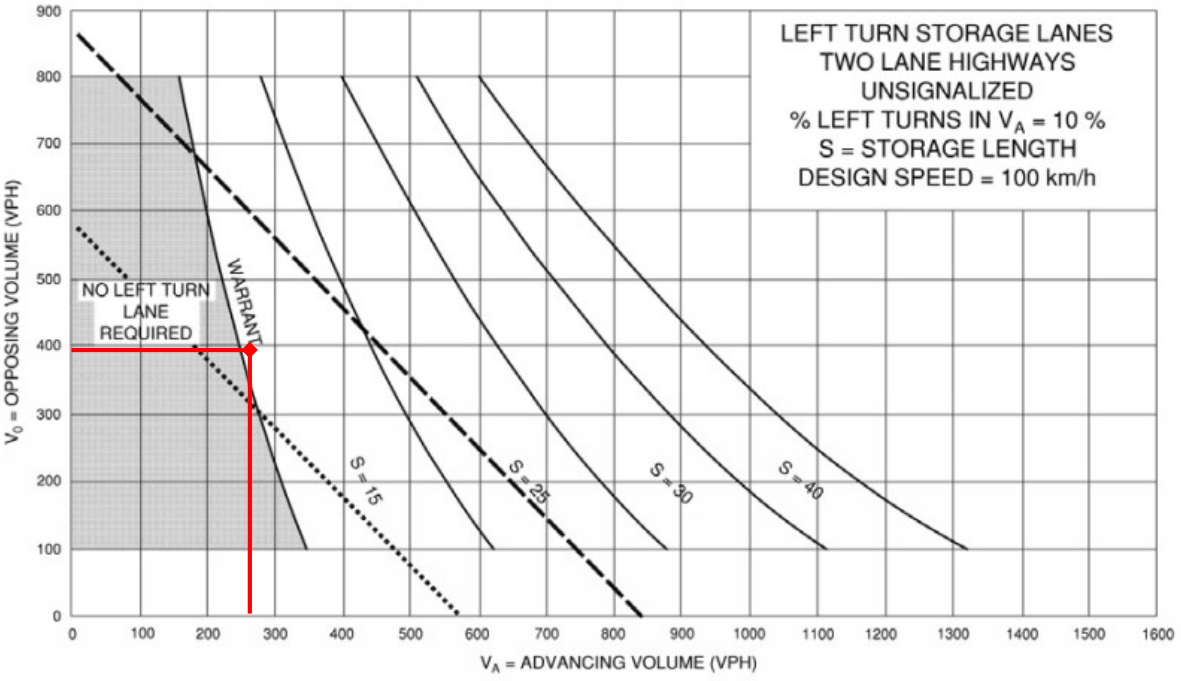
BG (2028) AM Peak – EB on County Road 25 at Wilson Road / Marshall Road



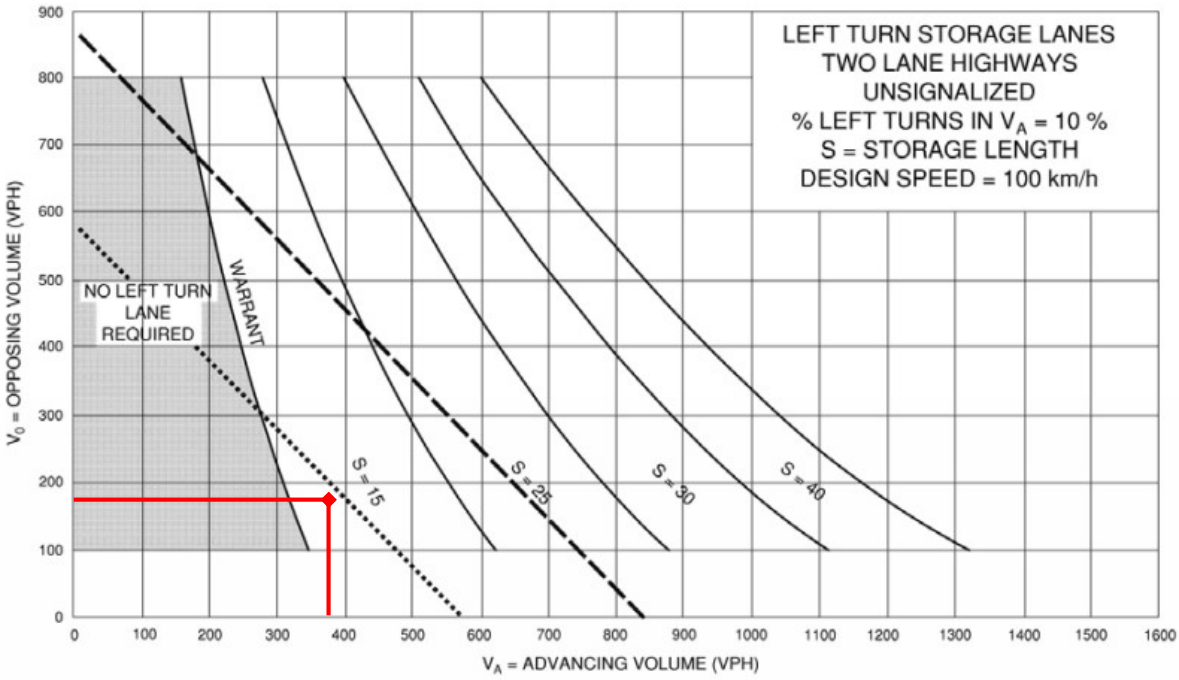
BG (2028) PM Peak – EB on County Road 25 at Wilson Road / Marshall Road



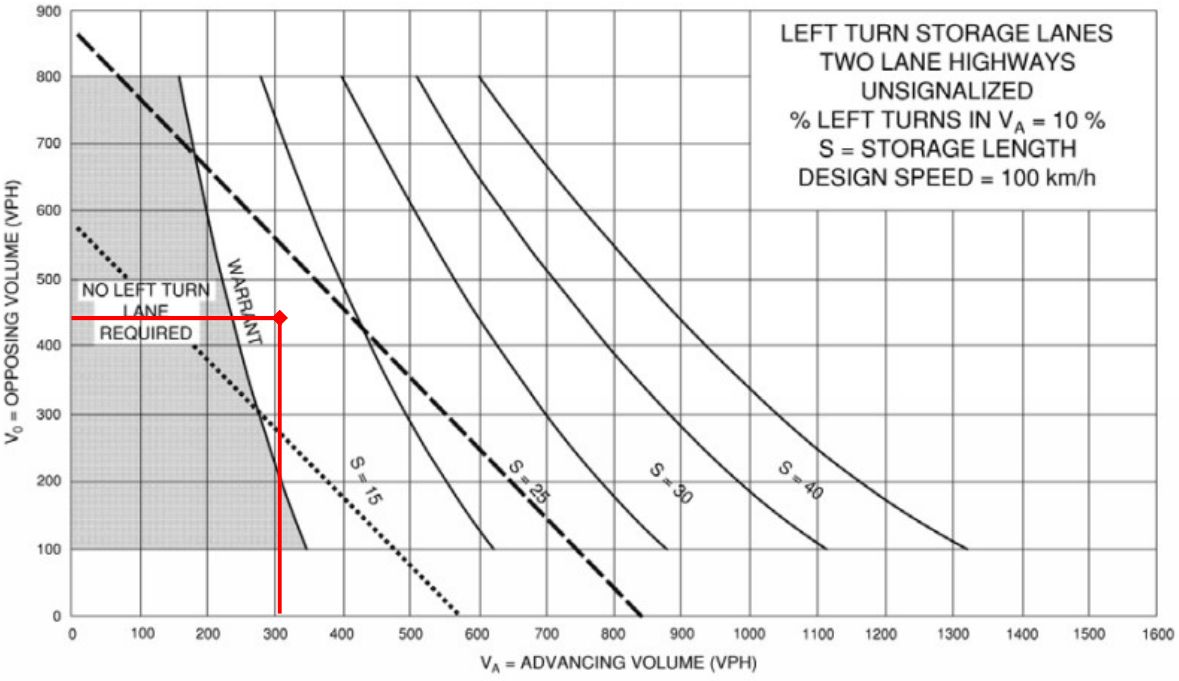
BG (2033) AM Peak – EB on County Road 25 at Wilson Road / Marshall Road



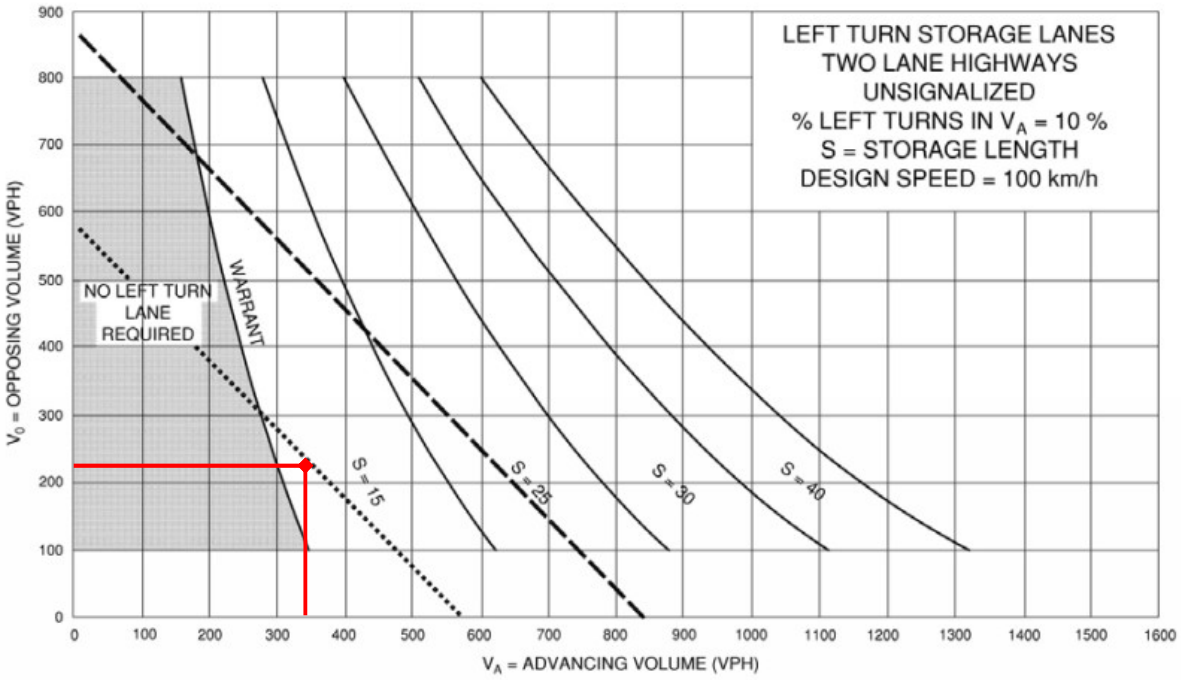
BG (2033) PM Peak – EB on County Road 25 at Wilson Road / Marshall Road



BG (2038) AM Peak – EB on County Road 25 at Wilson Road / Marshall Road



BG (2038) PM Peak – EB on County Road 25 at Wilson Road / Marshall Road



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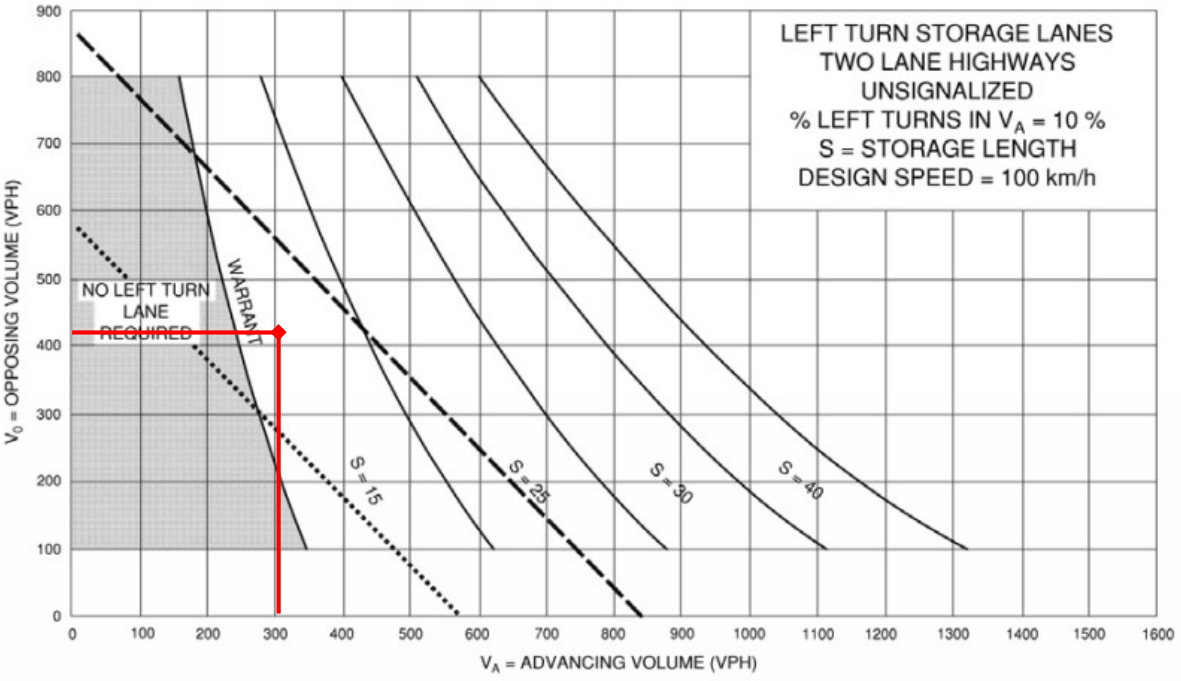
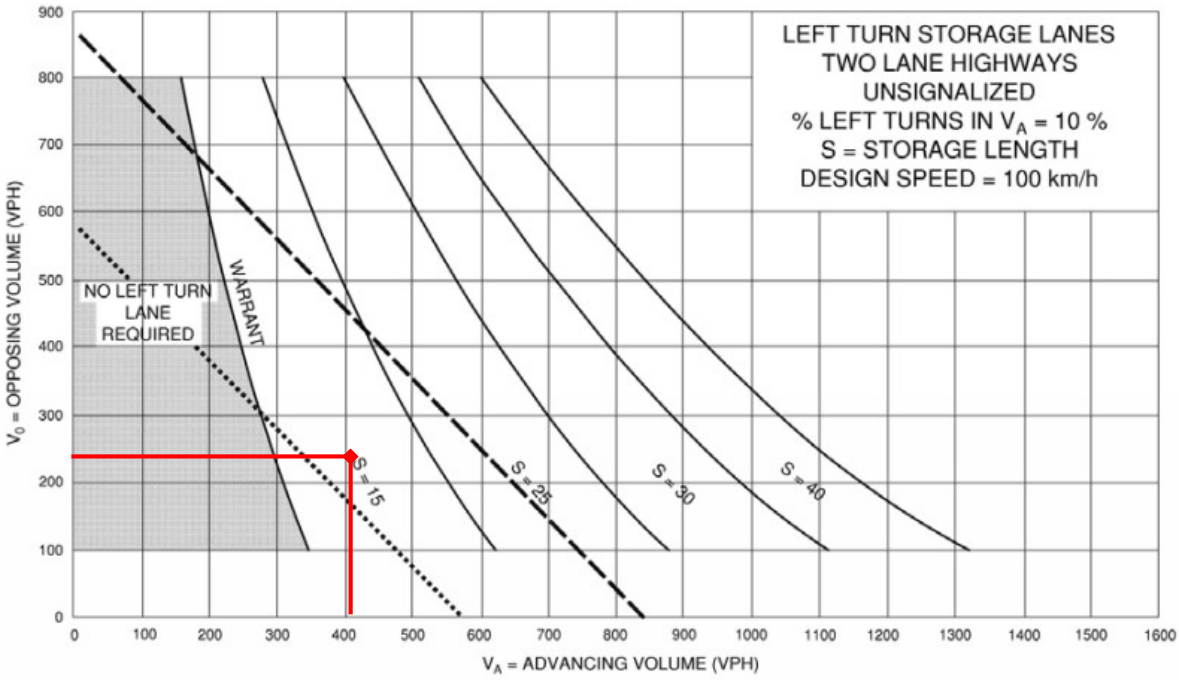
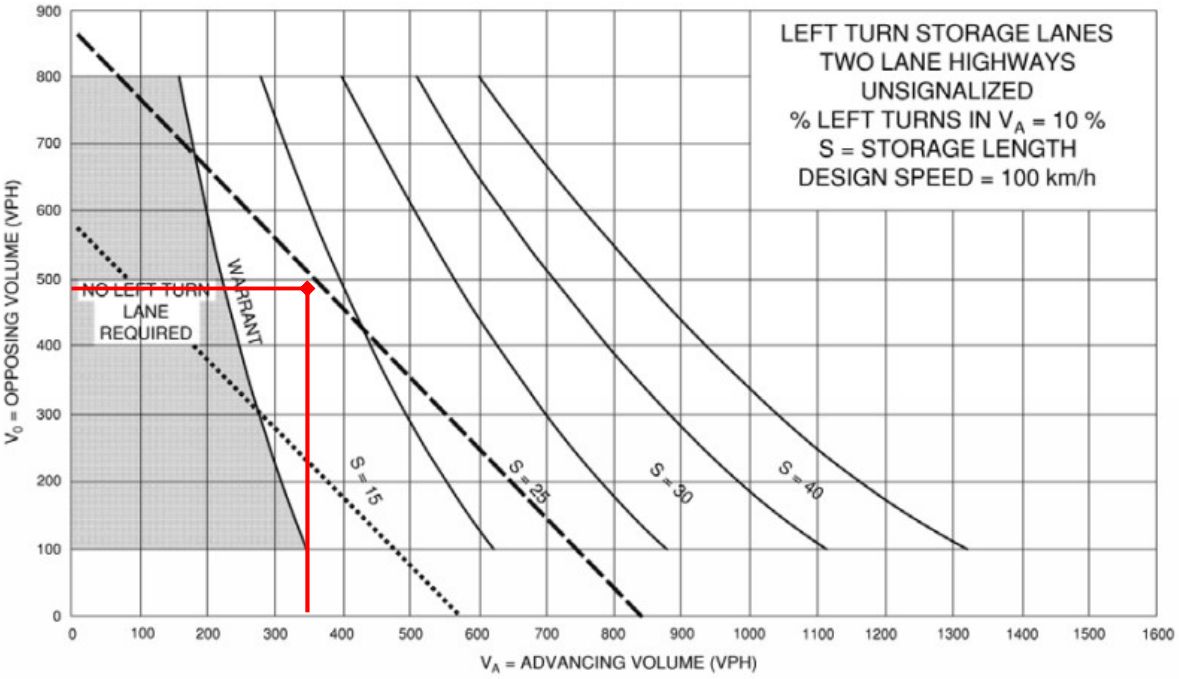


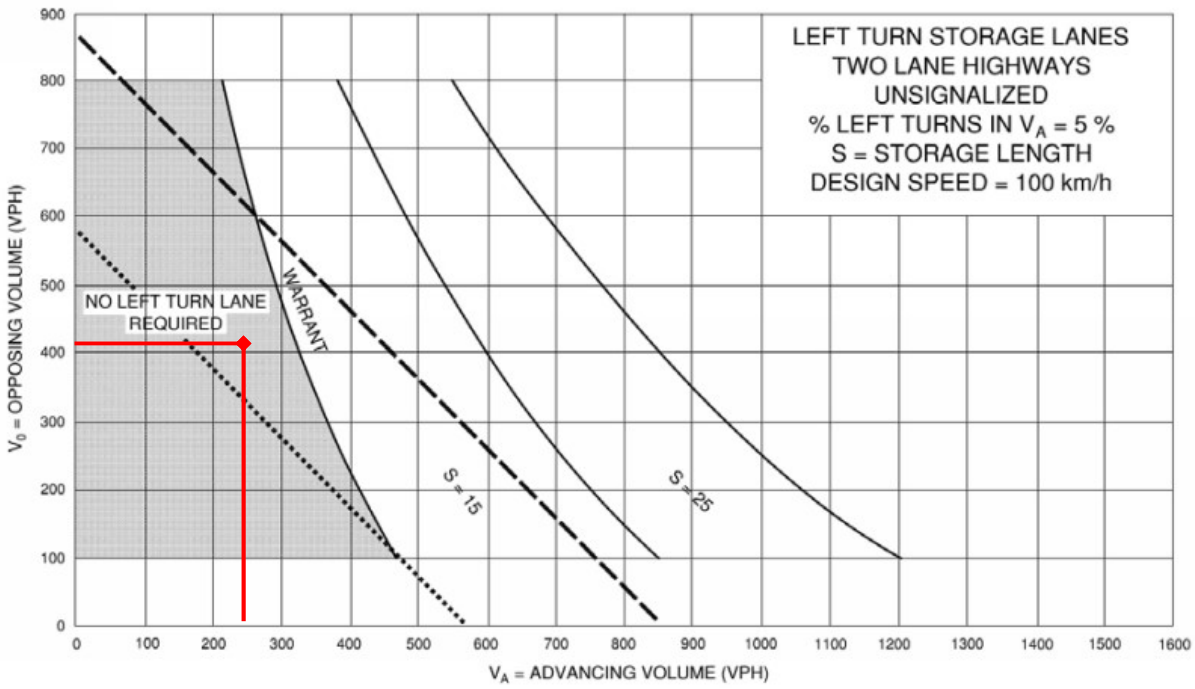
Total (2028) PM Peak – EB on County Road 25 at Wilson Road / Marshall Road



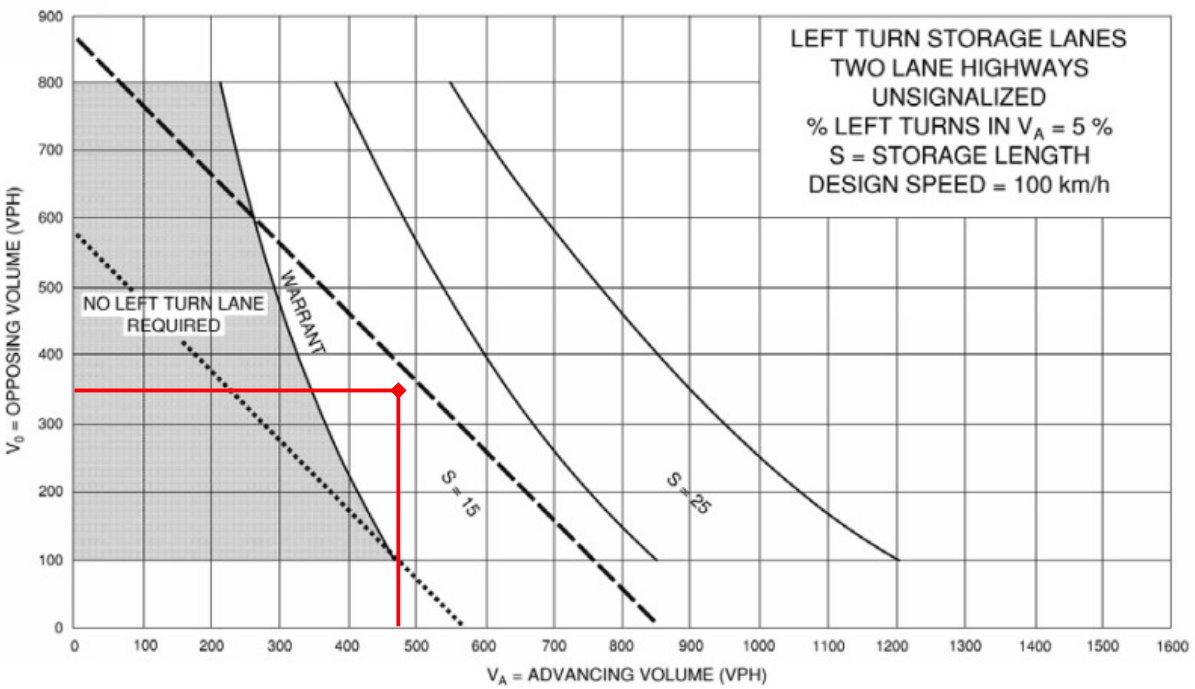
Total (2038) AM Peak – EB on County Road 25 at Wilson Road / Marshall Road



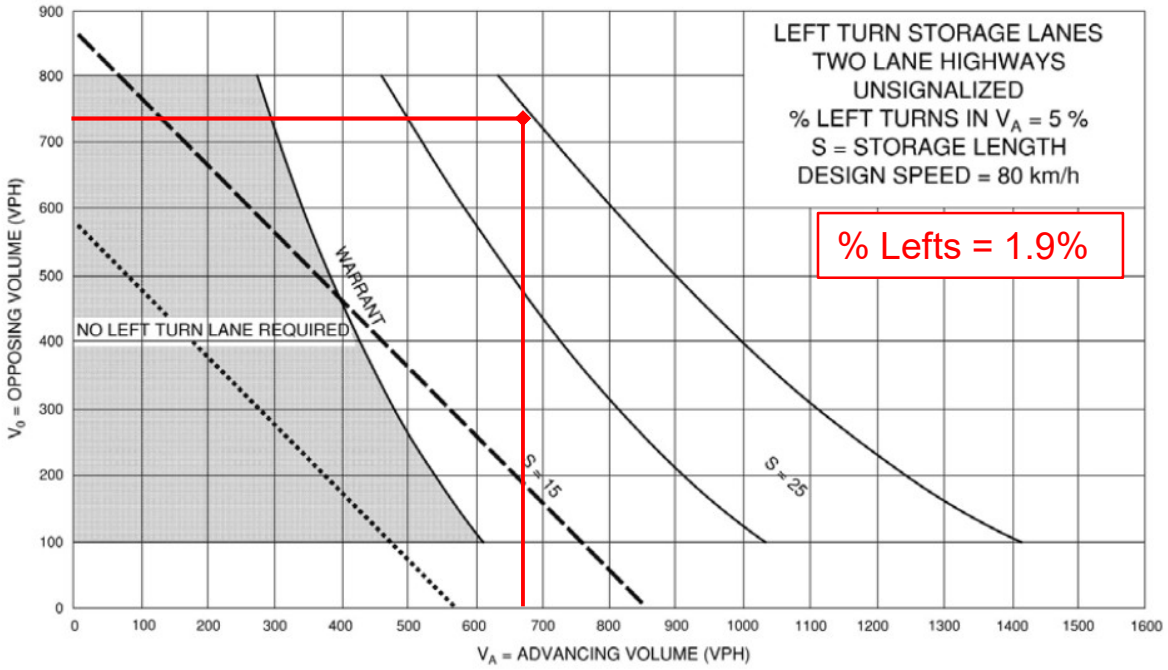
Total (2038) PM Peak – EB on County Road 25 at Wilson Road / Marshall Road



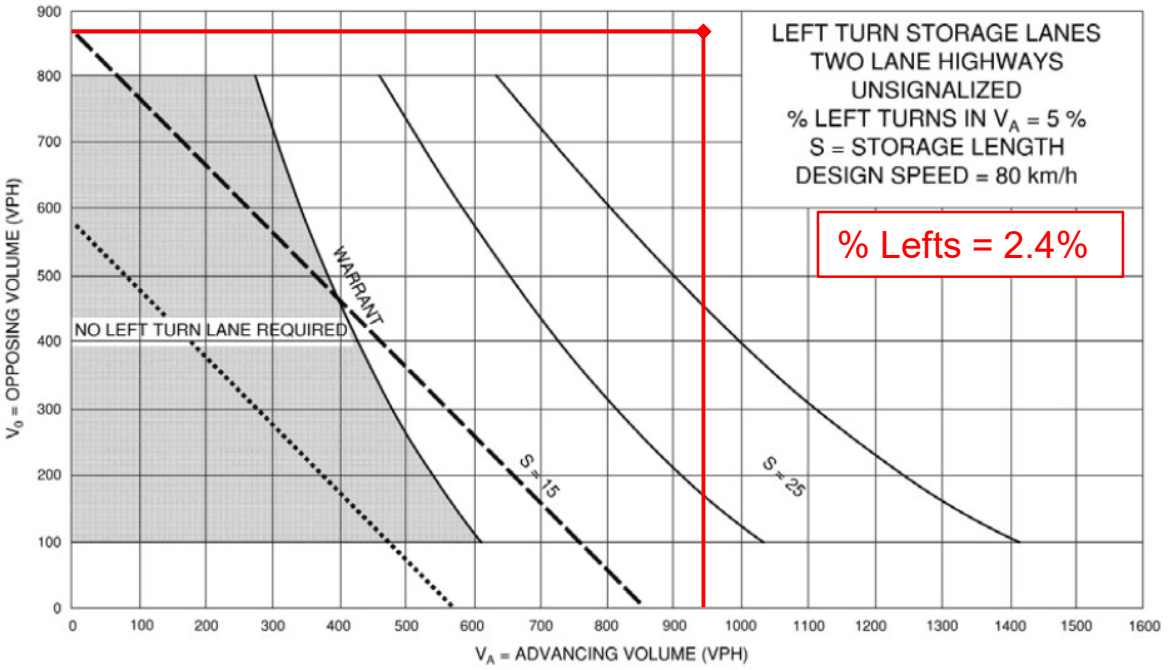
Total (2038) AM Peak – WB on County Road 25 at Wilson Road / Marshall Road



Total (2038) PM Peak – WB on County Road 25 at Wilson Road / Marshall Road



Total (2038) AM Peak – NB on County Road 93 at West Access



Total (2038) PM Peak – EB on NB on County Road 93 at West Access

ENGINEERING

Appendix I –
OTM Signal Justification Sheets

Justification No. 7 - Total (2038) Traffic

CR 25 / West Access & Sundowner Road

Justification	Description		Compliance			Signal Warrant	Underground Provisions Warrant
			Sectional		Entire %		
		Rest. Flow	Numerical	%			
1. Minimum Vehicluar Volume	A. Vehicle volume, all aproaches (average hour)	720	574	80%	66%	NO	NO
	B. Vehicle volume, along minor streets (average hour)	170	141	83%		NO	NO
2. Delay to cross traffic	A. Vehicle volume, major street (average hour)	720	398	55%	46%	NO	NO
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	75	45	60%		NO	NO

Justification No. 7 - Total (2038) Traffic

CR 25 / Marshall Rd & Wilson Rd

Justification	Description		Compliance			Signal Warrant	Underground Provisions Warrant
			Sectional		Entire %		
		Free Flow	Numerical	%			
1. Minimum Vehicluar Volume	A. Vehicle volume, all aproaches (average hour)	480	486	101%	78%	NO	YES
	B. Vehicle volume, along minor streets (average hour)	120	112	93%		NO	NO
2. Delay to cross traffic	A. Vehicle volume, major street (average hour)	480	349	73%	61%	NO	NO
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	57	113%		NO	YES

Justification No. 7 - Total (2038) Traffic

CR 93 / East Access

Justification	Description		Compliance			Signal Warrant	Underground Provisions Warrant
			Sectional		Entire %		
		Rest. Flow	Numerical	%			
1. Minimum Vehicluar Volume	A. Vehicle volume, all aproaches (average hour)	900	841	93%	8%	NO	NO
	B. Vehicle volume, along minor streets (average hour)	255	32	12%		NO	NO
2. Delay to cross traffic	A. Vehicle volume, major street (average hour)	900	788	88%	7%	NO	NO
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	170	19	11%		NO	NO

Appendix I –
NHCRP Internal Recapture Sheets

Project Name:	659 Balm Beach Rd
Analysis Period:	**AM Street Peak Hour**

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.00	44	44	1.00	29	29
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	17	17	1.00	55	55
Hotel	1.00	0	0	1.00	0	0

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	8		4	0	4	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	1	1	11	0		0
Hotel	0	0	0	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		14	0	0	0	0
Retail	0		0	0	0	0
Restaurant	0	4		0	1	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	7	0	0		0
Hotel	0	2	0	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	1	43	44	43	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	0	17	17	17	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	0	29	29	29	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	1	54	55	54	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

Project Name:	659 Balm Beach Rd
Analysis Period:	**PM Street Peak Hour**

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.00	106	106	1.00	106	106
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	45	45	1.00	29	29
Hotel	1.00	0	0	1.00	0	0

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	2		31	4	28	5
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	1	12	6	0		1
Hotel	0	0	0	0	0	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		8	0	0	2	0
Retail	0		0	0	21	0
Restaurant	0	53		0	7	0
Cinema/Entertainment	0	4	0		2	0
Residential	0	11	0	0		0
Hotel	0	2	0	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	11	95	106	95	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	21	24	45	24	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	21	85	106	85	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	11	18	29	18	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

Project Name:	659 Balm Beach Rd
Analysis Period:	**AM Street Peak Hour**

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.00	44	44	1.00	29	29
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	17	17	1.00	55	55
Hotel	1.00	0	0	1.00	0	0

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	8		4	0	4	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	1	1	11	0		0
Hotel	0	0	0	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		14	0	0	0	0
Retail	0		0	0	0	0
Restaurant	0	4		0	1	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	7	0	0		0
Hotel	0	2	0	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	1	43	44	43	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	0	17	17	17	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	0	29	29	29	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	1	54	55	54	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

Project Name:	659 Balm Beach Rd
Analysis Period:	**PM Street Peak Hour**

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.00	106	106	1.00	106	106
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	45	45	1.00	29	29
Hotel	1.00	0	0	1.00	0	0

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	2		31	4	28	5
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	1	12	6	0		1
Hotel	0	0	0	0	0	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		8	0	0	2	0
Retail	0		0	0	21	0
Restaurant	0	53		0	7	0
Cinema/Entertainment	0	4	0		2	0
Residential	0	11	0	0		0
Hotel	0	2	0	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	11	95	106	95	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	21	24	45	24	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	21	85	106	85	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	11	18	29	18	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

APPENDIX B

Water and Servicing Demand Calculations

CROZIER
CONSULTING ENGINEERS

File: 2774-7263
Date: July 18, 2025
By: R.D.M.
Check By: J.K.

659 Balm Beach Road Water Demand

Developed Site Area	17.30	ha
Number of Residential Units and Land Usage		
1) Single Residential		**Units**
2) Semi-Detached Residential	**575**	**Units**
3) High Density		**Units**
4) Mixed-Use High Density Commercial	**320**	**Units**
5) Ground Floor Commercial Area	**6,400**	**m^2**
Person Per Residential Unit		
1) Single Residential (per TOM Engineering Standards, 2024)	3.0	persons/unit
2) Semi-Detached (per TOM Engineering Standards, 2024)	2.5	persons/unit
3) High Density/Mixed Use Residential	2.0	persons/unit
Total Residential Population	2,078	Persons
Domestic Water Design Flows		
Residential (Per TOM Engineering Standards, 2024)	450	L/C-day
Commercial (Per TOM Engineering Standards, 2024)	2.5	L/ha-day
Total Domestic Water Design Flows		
Average Residential Daily Flow	10.82	L/sec
Average Daily Commercial Flow	0.185	L/sec
Max Day Peak Factor (Per TOM Engineering Standards, 2024)	2.00	
Max Day Demand Flow	**22.01**	L/sec
Peak Hour Factor (Per TOM Engineering Standards, 2024)	4.50	
Peak Hour Flow	**49.52**	L/sec

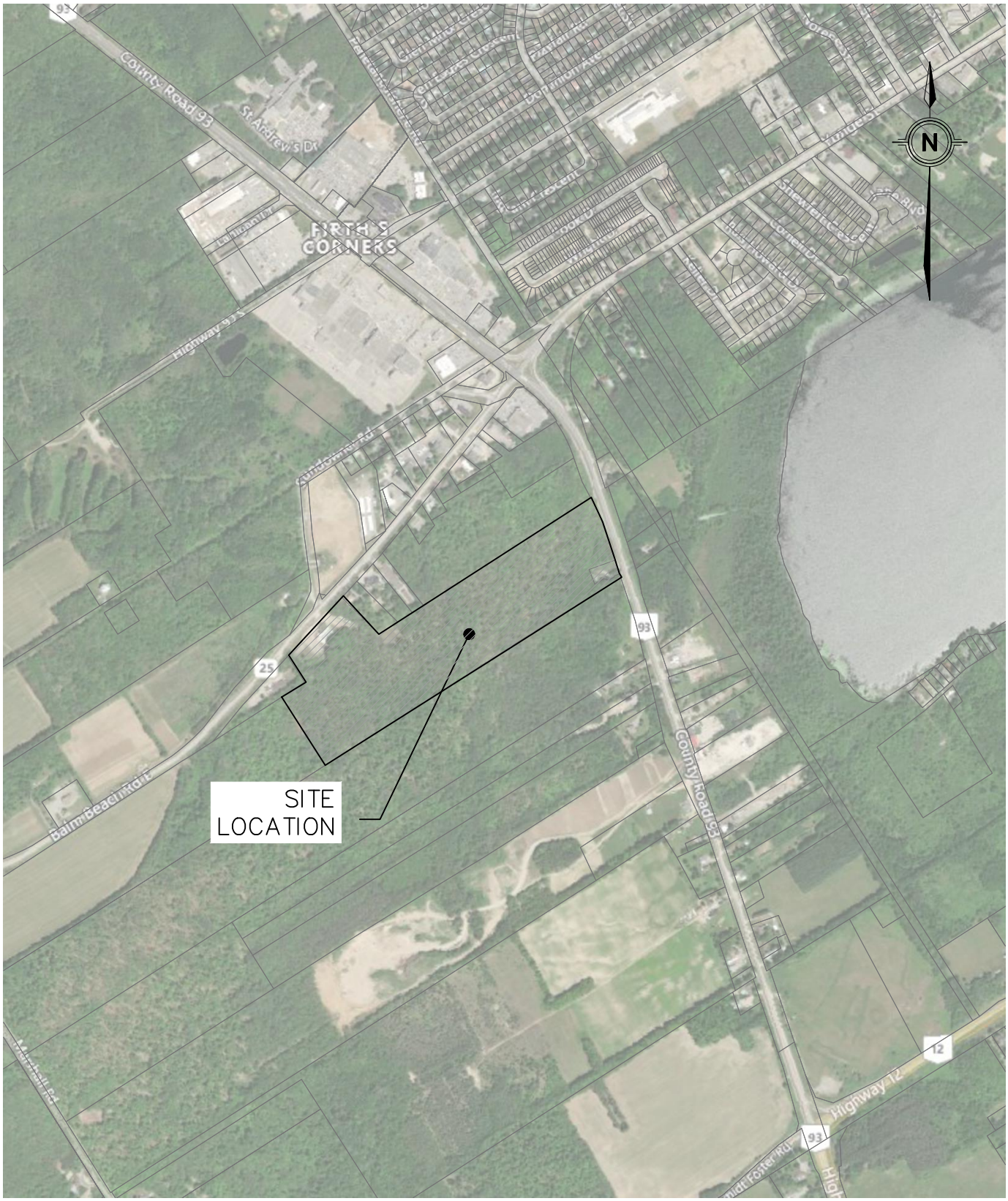
CROZIER CONSULTING ENGINEERS

File: 2774-7263
Date: July 18, 2025
By: R.D.M.
Check By: J.K.

659 Balm Beach Road Sanitary Demand

Developed Site Area	17.30	ha
Number of Residential Units and Land Usage		
1) Single Residential		**Units**
2) Semi-Detached Residential	**575**	**Units**
3) High Denisty Residential		**Units**
4) Mixed Use High Density Residential	**320**	**Units**
5) Ground Floor Commercial Area	**6,400**	**m^2**
Person Per Residential Unit		
1) Single Residential (per TOM Engineering Standards, 2024)	3.0	persons/unit
2) Semi-Detached (per TOM Engineering Standards, 2024)	2.5	persons/unit
3) High Density/Mixed Use Residential	2.0	persons/unit
Total Residential Population	2,078	Persons
Unit Sewage flows		
Residential (per TOM Engineering Standards, 2024)	450	L/C-day
Commercial (per MOE Design Guidelines for Water Works, 2008)	2.5	L/m^2-day
Infiltration (per TOM Engineering Standards, 2024)	0.23	L/s/ha
Total Design Sewage Flows		
Infiltration/Inflow Residential	3.98	L/sec
Average Daily Residential Flow	10.82	L/sec
Average Daily Commercial Flow	0.185	L/sec
Residential Peak Factor (Harmon Formula)	3.57	
Total Peak Daily Flow	**43.30**	**L/sec**

FIGURES



Legend

= SUBJECT LANDS

Project

659 BALM BEACH ROAD
TOWN OF MIDLAND

Drawing

SITE LOCATION PLAN

CROZIER
CONSULTING ENGINEERS

Drawn By	Design By	Project
R.D.M.	J.K./R.D.M.	2774-7263
Scale	Date	Check By	Drawing
N.T.S.	AUG/06/2025	J.K./P.W.	FIG. 1

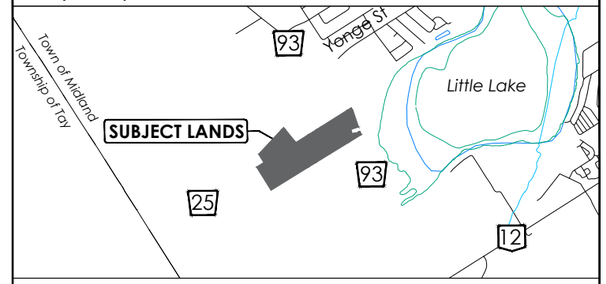
PROPOSED OFFICIAL PLAN AMENDMENT

659 BALM BEACH ROAD

SCHEDULE OF REVISIONS

No.	Date	Description	By
11	May 14, 2025	Revise land-use designations and road network;	A.S.
12	May 23, 2025	Revise land-use designations and road network;	A.S.
13	June 12, 2025	Add new parcel to block 'G' and 'C';	A.S.
14	June 26, 2025	Revise land-use designations;	A.S.

Key Map



659 Balm Beach Road East,
(Lot 105 Concession 1 West of Penetanguishene Road)
Town of Midland

LEGEND

- Subject Site (±20.6ha)
- A - C: Mixed-Use High Density:
  - 100 units / ha: ± 320 units
- D - F: Medium Density Residential
  - 50 units / ha: ± 575 units
- G - H: S.W.M. Area (1.7 ha)
- I: Potential Park Area (± 0.8 ha)
- Natural Heritage Area (± 3.3 ha)
- Potential Roads - 20.0m width

* TOTAL UNITS: ± 895 units

FOR DISCUSSION PURPOSES ONLY

Note: This drawing is for discussion purposes only.
The information shown is approximate and subject to change.

0 100 200m N

Date:	October 1, 2021	Drawn By:	A.S.
File:	17-728	Checked By:	G.B.

IPS INNOVATIVE PLANNING SOLUTIONS
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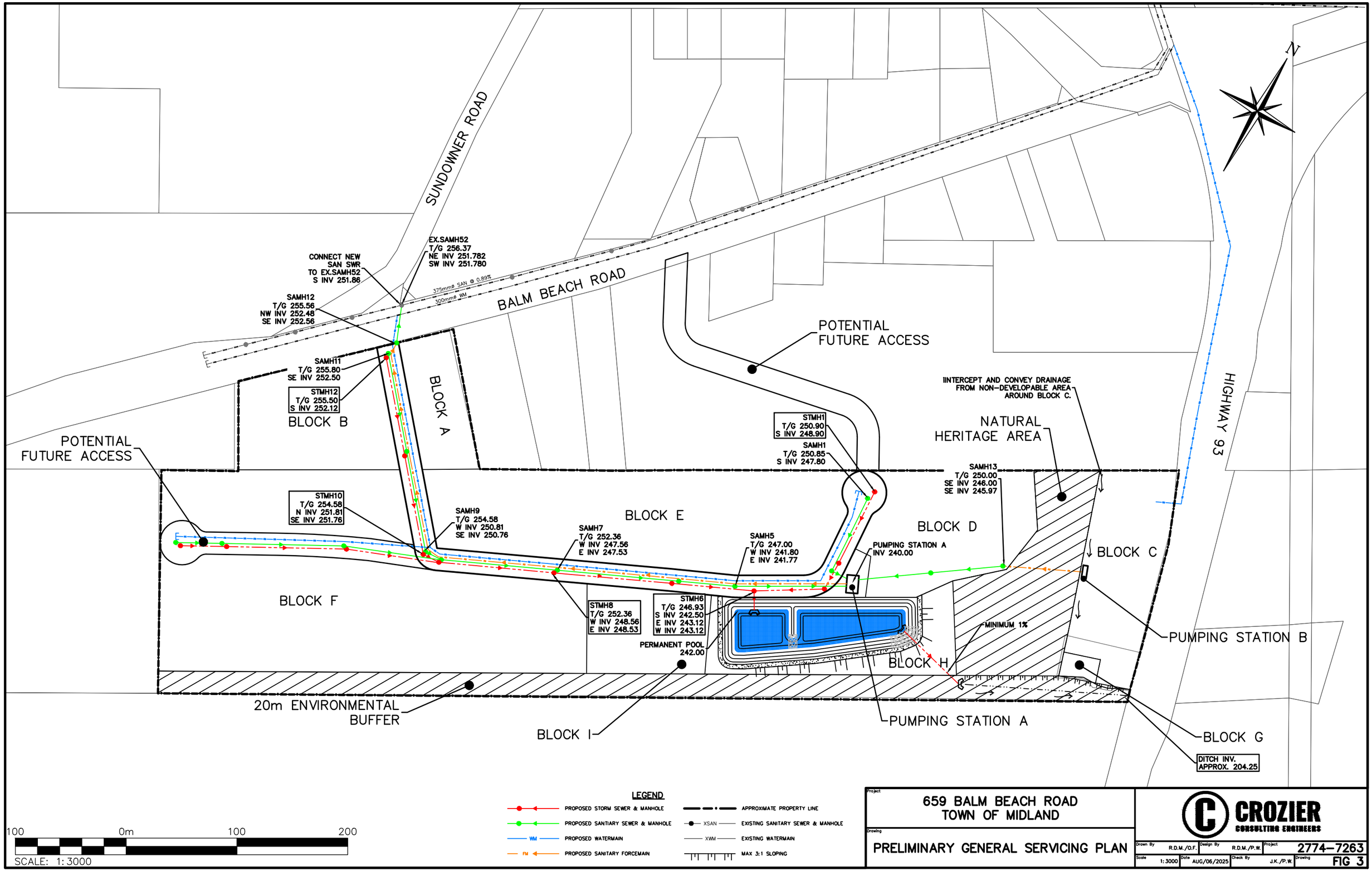
3800 STEELS AVE. W, SUITE 200W, VAUGHAN, ON, L4L 4G9 Tel: 905-291-7525
info@ipsconsultinginc.com / www.ipsconsultinginc.com

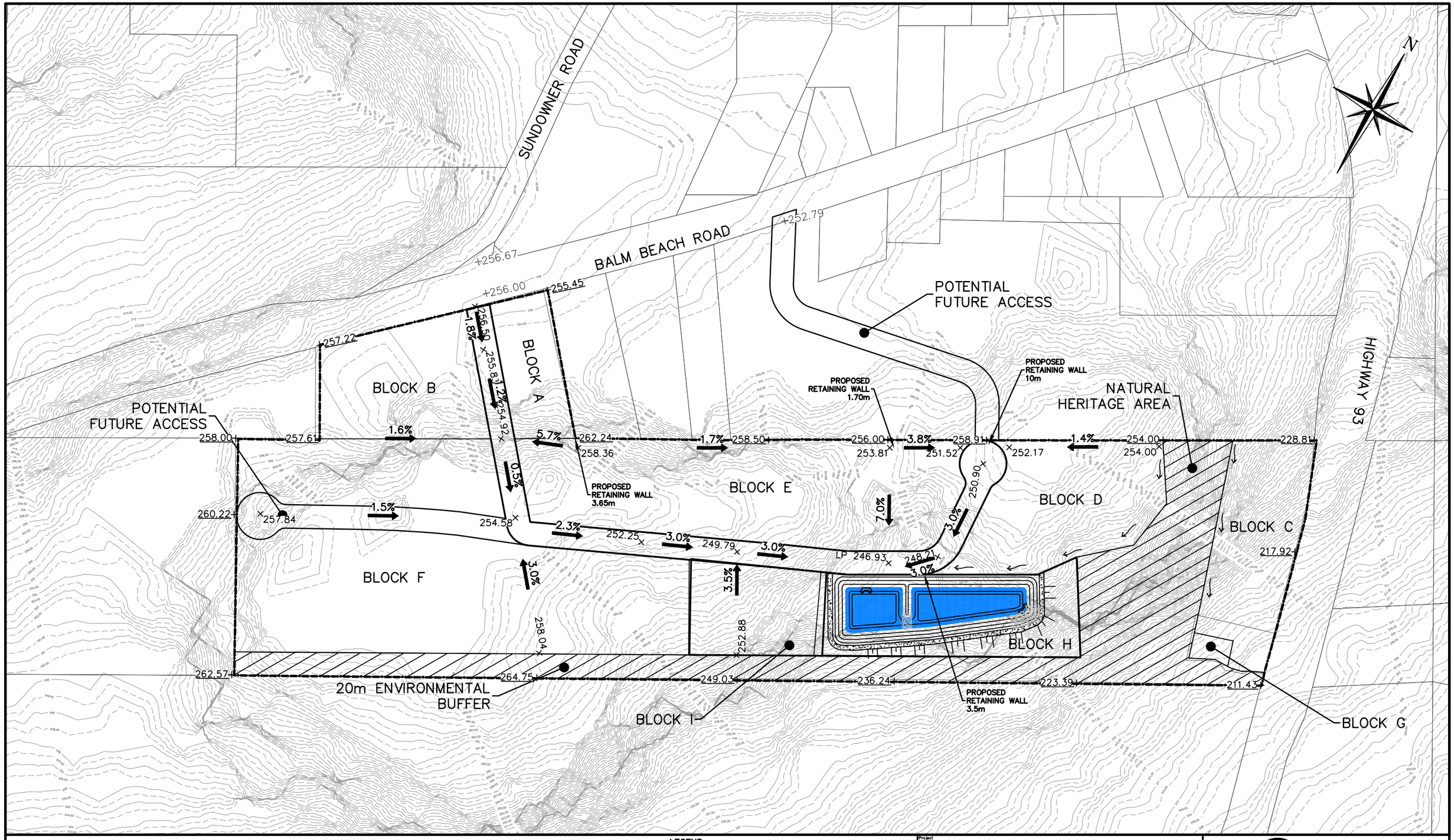


Project
659 BALM BEACH ROAD
TOWN OF MIDLAND

Drawing
PRELIMINARY GENERAL SERVICING PLAN

CROZIER CONSULTING ENGINEERS

Drawn By	Design By	Project
R.D.M. /O.F.	R.D.M. /P.W.	2774-7263
Scale	Date	Check By	Drawing
1: 3000	AUG/06/2025	J.K. /P.W.	FIG 3



100 0m 100 200

SCALE: 1:3000

LEGEND

+XXX.XX PR. ELEVATION

XX% PR. SLOPE

XXX.X EX. CONTOUR

APPROXIMATE PROPERTY LINE

Project: 659 BALM BEACH ROAD TOWN OF MIDLAND

Drawing: PRELIMINARY GRADING PLAN

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Scale	Date	Check By	Drawing
1:3000	AUG/06/2025	J.K./P.W.	FIG 4