



BA Group

CONCORD PARK PLACE BLOCK 7

Urban Transportation Considerations

Prepared For: Concord Adex Investments Limited

December 20th, 2019



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1.0 INTRODUCTION

BA Group is retained by Concord Adex Investments Limited (referred to herein as “Concord Adex”) to provide transportation consulting services in relation to a Site Plan application being made to the City of Toronto for the redevelopment of the Block 7 lands, located within the northern portion of the Concord Park Place lands. Block 7 is bounded by Sheppard Avenue to the north, Ethennonnhawahstihnen' Lane (formerly Woodsy Park Lane) to the west, Billes Heights to the east, and a future east-west public road (Street D) to the south.

Figure 1 illustrates the location of the site relative to the surrounding area.

The proposed development includes a mixed-use 8 storey mid-rise residential condominium building with retail at grade fronting onto the adjacent public streets. The proposed development incorporates a total of 264 residential units and 2,395 square metres of retail gross floor area (GFA).

A Site Plan application is being made to the City of Toronto to permit the construction of the proposed development as planned.

1.1 THE SITE TODAY

The site today is currently occupied by the Concord Park Place Presentation Centre, which is proposed to be demolished as part of the proposed development.

1.2 BACKGROUND

1.2.1 Zoning By-law and Official Plan Amendment Application

Concord Adex made Zoning By-law and Official Plan Amendment applications in 2010 to the City of Toronto to amend the “as-of-right” development provisions outlined within Zoning By-law 1094-2002 and the Sheppard East Subway Corridor Secondary Plan for the Concord Park Place lands located west of Provost Drive (the “West of Provost lands”) that also includes Block 7. In 2013, the Zoning By-law Amendment Application for the “West of Provost lands” (i.e. By-laws 959-2013 and 958-2013, respectively) were approved at the Ontario Municipal Board.

As part of this approval process, BA Group prepared a report entitled “*Concord Park Place, Residential Development, Urban Transportation Considerations*” (August 2010), as well as subsequent technical appendix and supplementary materials, that reviewed the transportation aspects of the modified development plan for the “West of Provost lands” as a whole.

1.2.2 Site Plan Applications for Other Blocks in the West of Provost lands

Site Plan Approval applications for six of the blocks within the “West of Provost lands” have been made to the City of Toronto, including Blocks 11, 12, 13, 15, 17, and 18. Blocks 11 and 15 are currently in the Site Plan Approval process, Block 12 is currently under construction, and Blocks 13, 17 and 18 are occupied.

1.3 THIS STUDY

BA Group has undertaken a review of the key transportation-related (i.e. traffic, parking and loading) aspects of the proposed development plan as part of this Site Plan application for Block 7 of the “West of Provost lands”. The key transportation-related aspects reviewed include:

Proposed Development Plan

- an overview of the proposed development programme;
- a review of the transportation elements (i.e. site access, loading and parking) of the proposed site;

Transportation Context

- a description of the existing transportation context of the site, considering the area road network, transit system, and other non-automobile dependent travel options;
- a description of any future transportation-related changes / improvements to the area context (i.e. transit improvements, other non-automobile dependent travel options, etc.);

Site Planning

- a review of the parking supply provisions for the proposed development plans;
- a review of the loading space provisions for the proposed development plans;
- a review of the bicycle parking supply provisions for the proposed development plans;
- a review of the functionality and appropriateness of the proposed vehicular facilities incorporated into the site plan including loading / garbage collection facility arrangements, and site access arrangements;

Transportation Demand Management

- an outline of Transportation Demand Management (TDM) measures proposed to support the development

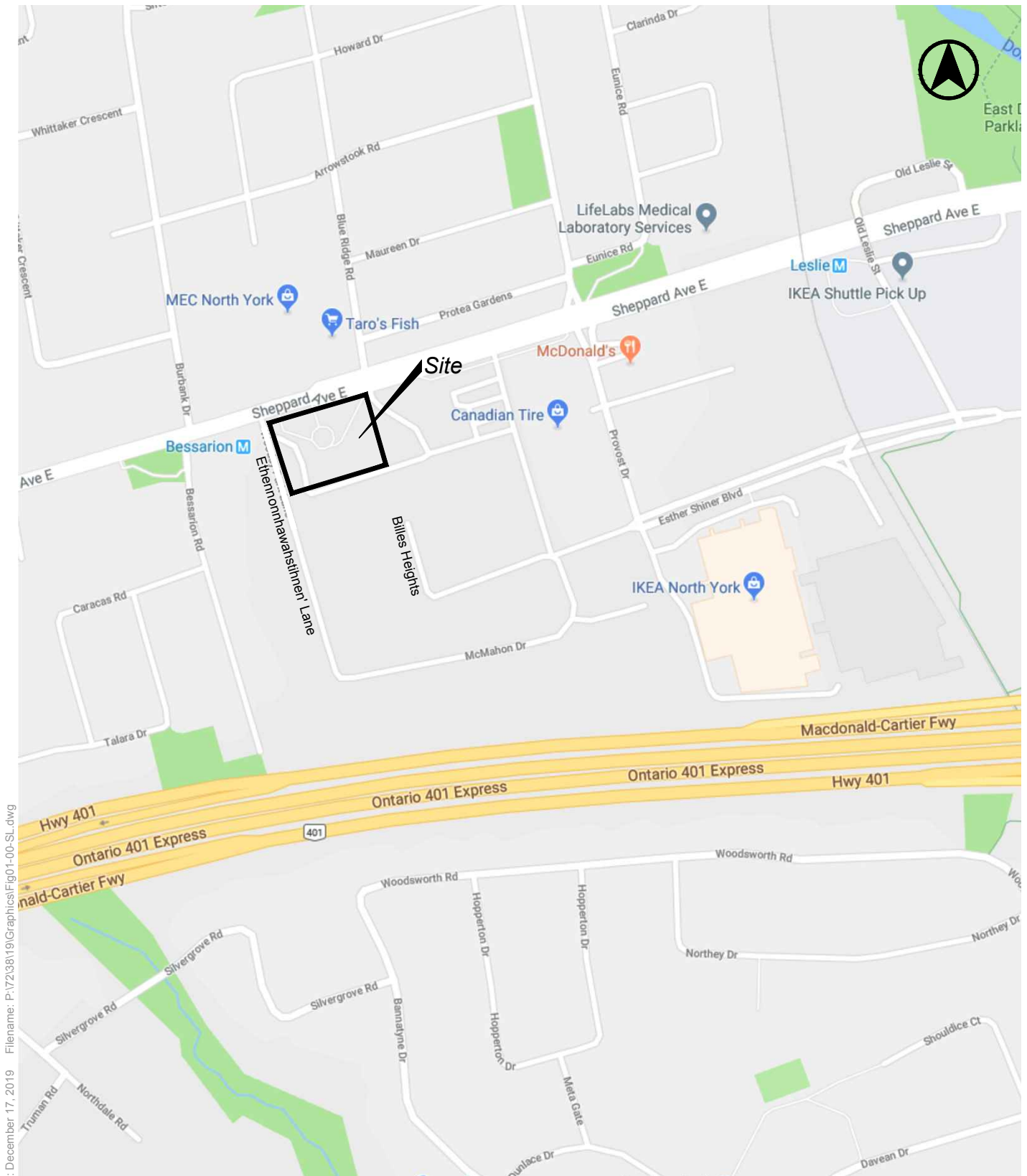
Travel Demand Forecasting

- summary estimates of multi-modal travel demand characteristics of the proposed development based on first principles;
- volumes forecast of the transit, traffic and other trip generation characteristics of the proposed development; and

Traffic Operations Review

- a review of traffic operations at intersections in the area under existing and future conditions including an assessment of the operational impacts of the proposed development.

Key study findings are provided in **Section 3.0** while the balance of the report (**Sections A to Section I**) outline the various supporting technical analyses.



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SITE LOCATION



BA Group

Block 7 - Concord Park Place
7238-19 December 2019

Figure 1

2.0 PROPOSED DEVELOPMENT

A Site Plan Approval application is now being made to the City of Toronto to permit the development of Block 7. A summary of the development proposal is provided in the following sections.

2.1 DEVELOPMENT PROPOSAL

The proposed development consists of a mixed-use building comprised of a mixed-use 8 storey mid-rise residential condominium building with retail at grade fronting onto the adjacent public streets. The proposed development incorporates a total of 264 residential units and 2,395 square metres of retail GFA. A summary of the development programme is provided in **Table 1**. Reduced scale architectural plans are provided in **Attachment A**.

TABLE 1 DEVELOPMENT PROGRAMME

Development Components		Current Application	
Land Uses	Residential	264 units	
	Retail	2,395 sq. m GFA	
Parking Supply	Residential	264 spaces	Provided within two full levels and a partial third level of underground parking
	Non-Residential	97 spaces	
	Car Share	1 space	
	Total	362 spaces	
Loading Space Supply		2 loading spaces (1 Type B, 1 Type G)	
Bicycle Parking Supply	Short Term	46 spaces	Provided on the lower ground floor and P1 level.
	Long Term	163 spaces	
	Total	209 spaces	
Proposed Access Locations	Pedestrian Residential Access	Residential pedestrian access is provided on the south and west sides of the site via Street D and Ethennonnhawahstihnen' Lane (formerly Woodsy Park Lane).	
	Pedestrian Retail Access	Retail pedestrian access is provided on all four site frontages.	
	Vehicle Parking Access	Parking access is provided via the shared driveway on the east side of the site, from Billes Heights.	
	Vehicle Loading Access	Loading access is provided via the shared driveway on the east side of the site, from Billes Heights.	

2.2 PARKING SUPPLY

A total of 362 parking spaces (including 264 residential, 97 non-residential (including retail and residential visitor), and 1 car share parking space) are proposed within two full levels and a partial third level of underground parking. Parking for retail and residential visitors is provided on a non-exclusive basis on the P1 level. Car share parking is also provided on the P1 level within the publicly accessible non-residential portion of the garage. Residential parking is provided within the remainder of the garage. Access to the parking garage is provided via the site driveway on the east side of the site, from Billes Heights.

2.3 LOADING

Two (2) loading spaces (including 1 Type B and 1 Type G loading spaces) are provided on the site within a consolidated loading area on the lower ground floor. Access to the loading area is provided via the site driveway on the east side of the site, from Billes Heights.

2.4 BICYCLE PARKING

A total of 209 bicycle parking spaces (including 46 short term and 163 long term spaces) are provided on the site. A total of 25 short term and 50 long term bicycle parking spaces are provided on the lower ground floor. The remaining 21 short term and 113 long term bicycle parking spaces are provided on the P1 level.

2.5 SITE ACCESS AND CIRCULATION

2.5.1 Vehicular Access Arrangements

Vehicular access to the site is provided from a single driveway on the east side of the site, via Billes Heights. The driveway is located approximately 55 metres south of Sheppard Avenue East, and operates under side street STOP control. The site driveway provides access to the loading and parking facilities, as well as the bicycle parking located on the lower ground floor and within the underground parking garage

2.5.2 Pedestrian Access Arrangements

Pedestrian access to / from the area public road network is provided at grade level. Access to the residential units is provided through a shared main lobby at the south end of the site from Street D, and a secondary access at the west end of the site, from Ethennonnhawahstihnen' Lane (formerly Woodsy Park Lane). Access to the retail units is provided on all four site frontages.

2.5.3 Bicycle Access Arrangements

Access to the site's bicycle parking facilities is provided from the site driveway, via Billes Heights. Bicycle parking spaces on the P1 level can be accessed from the parking ramp.

3.0 SUMMARY AND CONCLUSIONS

The following provides an overview of the key study findings of our assessment of the transportation-related aspects of the proposed Block 7 development.

Context

1. The Block 7 site is bounded by Sheppard Avenue to the north, Ethennonnhawahstihnen' Lane (formerly Woodsy Park Lane) to the west, Billes Heights to the east, and a future east-west public road (Street D) to the south. The proposed development forms part of the third and fourth phases of development within the "West of Provost lands". The "West of Provost lands" comprise the westerly portions of the Concord Park Place development, located south of Sheppard Avenue East and west of Provost Drive, in the City of Toronto.
2. Block 7 is located approximately 200 metres (a 3 minute walk) to Bessarion Station on the Sheppard subway line. The Sheppard subway line provides higher order transit connectivity across the City of Toronto and provides a viable and attractive travel alternative to the use of an automobile for the residents of Block 7. There are also a number of bus routes that provide surface transit connections along the Sheppard Avenue and Leslie Street corridors, and the site is located in close proximity to Oriole GO station, providing regional rail service on the Richmond Hill line, connecting users to Union Station in 25 minutes.

The Proposed Development

3. A total of 264 residential units and 2,395 square metres of retail GFA are proposed within a mixed-use 8 storey mid-rise residential condominium building with retail at grade fronting onto the adjacent public streets.
4. One vehicular access is proposed for the site. The site driveway is located on the east side of the proposed development, off of Billes Heights, and provides access to the site's consolidated loading facility, underground parking garage, and bicycle parking facilities. The driveway is located approximately 55 metres south of Sheppard Avenue East, and operates under side street STOP control.
5. A total of 362 parking spaces (including 264 residential, 97 non-residential, and 1 car share parking space) are proposed within two full levels and a partial third level of underground parking.
6. A total of two (2) loading spaces (including 1 Type B and 1 Type G loading space) are provided on the site within a consolidated loading area on the lower ground floor.
7. A total of 209 bicycle parking spaces (including 46 short term and 163 long term spaces) are provided on the site.

Parking

8. Application of the Site Specific Zoning By-law 959-2013 (OMB) parking standards to the proposed Block 7 development would require the provision of a minimum of 272 parking spaces (including 213 residential spaces, 36 residential visitor spaces, and 23 retail spaces).
9. Application of these standards also specifies a maximum of 308 residential spaces and 95 retail spaces for the proposed development.

10. The proposed parking supply of 362 parking spaces (including 264 residential, 97 non-residential, and 1 car share parking space) meets the minimum Zoning By-law parking requirement of 272 spaces. The proposed residential parking supply of 264 spaces exceeds the Zoning By-law minimum parking requirement of 213 spaces, but does not exceed the maximum requirement of 308 spaces. The proposed non-residential parking supply of 97 spaces meets the Zoning By-law minimum parking requirement of 59 spaces.
11. Based upon the above, the proposed parking supply and arrangements of the current proposal can accommodate the parking demands of the site.

Loading

12. Application of the Site Specific Zoning By-law 959-2013 (OMB) loading standards to the proposed Block 7 development would require the provision of a minimum of two (2) loading spaces, including one (1) Type B loading space and one (1) Type G loading space.
13. A total of two (2) loading spaces (including one (1) Type B loading space and one (1) Type G loading space) are provided within a consolidated loading area. The proposed facilities meet the requirements of the Site-Specific Zoning By-law 959-2013 (OMB) and the *“City of Toronto Requirements for Garbage and Recycling Collection for New Developments and Redevelopments”* (May 2012).
14. Based upon the above, the proposed loading supply and arrangements can accommodate the servicing needs of the current proposal.

Bicycle Parking

15. Application of the Site Specific Zoning By-law 959-2013 (OMB) to the proposed development would require the provision of a minimum of 209 bicycle parking spaces, including 46 short term and 163 long term spaces.
16. Application of the Toronto Green Standard bicycle parking requirements to the proposed development would require the provision of a minimum of 212 bicycle parking spaces, including 28 short term and 184 long term spaces.
17. The proposed development incorporates a total of 209 bicycle parking spaces, including 46 short term and 163 long term spaces. The proposed bicycle parking supply meets the minimum supply requirements of the Site Specific Zoning By-law 959-2013 (OMB).

A total of 25 short term and 50 long term bicycle parking spaces are provided on the lower ground floor. These spaces can be accessed from the site driveway via Billes Heights. The remaining 21 short term and 113 long term bicycle parking spaces are provided on the P1 level. Bicycle parking spaces on the P1 level can be accessed using the parking ramp, via the site driveway off of Billes Heights. An electric bike station room and a bike repair room are also provided on the lower ground floor.

18. The proposed bicycle parking supply, facilities, and access arrangements are appropriate, and will support the proposed development as planned.

Transportation Demand Management

19. A series of TDM measures are incorporated into the Block 7 development plan. These include the provision of one (1) bicycle repair station within the building, a funding contribution for a portion of the cost of one Toronto Bike Share station (to be shared with the Block 11 and Block 15 developments), incorporation of one car share space in the underground parking garage, provision of a digital transit information screen in the building lobby, and the provision of transportation information packages for new unit owners.
20. These measures will assist in minimizing the need for vehicle travel to and from the site, and encourage and facilitate use of transit and active transportation modes. This management of transportation demands will, in turn, reduce auto use and encourage alternative modes to better balance mobility.
21. This range of TDM strategies will assist to reduce congestion, minimize the number of single-occupant vehicle trips, encourage non-auto modes of travel, and reduce vehicle dependency for trips associated with the proposed development.

Study Area and Interim Road Network

22. Traffic operations analyses and traffic volume forecasts have been undertaken and established for a focused study area including the following key intersections:
 - Sheppard Avenue East between Ethennonhawahstihnen' Lane and Leslie Street;
 - Esther Shiner Boulevard between Leslie Street and the McMahon Drive / Canadian Tire driveway intersection;
 - Leslie Street between Sheppard Avenue East and Lesmill Road; and
 - Block 7 driveway.

23. Traffic operations analyses have been undertaken assuming the full build-out of the ultimate road network. All Block 7 related traffic has been assumed to enter and exit the site using Billes Heights.

Traffic Volumes

24. Existing weekday morning and afternoon peak hour area road system traffic activity levels were established based upon traffic count information collected by, and on behalf of, BA Group (Spectrum Traffic Data Inc.).
25. Turning movement counts used in establishing existing traffic volumes were undertaken during December 2018 and March 2019.
26. Background traffic allowances accounting for: i) new traffic generated by other area development that will be constructed before or at the same time as Block 7 and; ii) general growth in traffic volumes on the arterial road system were considered and incorporated into the future traffic volume forecasts considered within the traffic operations analyses.
27. The proposed Block 7 will generate approximately 65 and 75 total two-way vehicle trips during the weekday morning and weekday afternoon street peak hours, respectively.

Traffic Operations Analyses

28. A review of existing traffic operation in the area indicated that the area signalized intersection were shown to be busy, but operating at acceptable levels during the weekday peak hours, with the weekday morning and afternoon peak hours operating with an overall v/c ratio of 0.93 or better.
29. Under future background traffic conditions, signal timings were optimized along the Leslie Street corridor in the afternoon peak period, in order to maintain coordination along the corridor and to minimize delays and queues.
30. With the above noted recommendation, the signalized intersections in the study area are anticipated to continue to operate at a busy levels of service during the weekday peak hours with overall intersection v/c ratios of 1.08 or better.
31. Notably, the Leslie Street / Sheppard Avenue East and Leslie Street / Esther Shiner Boulevard intersections were operating over theoretical capacity during the weekday peak hours.
32. With the addition of new site-related traffic under future total traffic conditions, all signalized intersections in the study area continue to operate at a busy level of service during the weekday peak hours, with overall intersection v/c ratios of 1.11 or better.
33. As noted under future background conditions, the Leslie Street / Sheppard Avenue East and Leslie Street / Esther Shiner Boulevard intersections continued to operate over theoretical capacity during the weekday peak hours, with a minor 2 to 4% traffic impact caused by new site related traffic compared to the future background traffic conditions.
34. Recognizing that traffic conditions in the area road network is busy, it is not realistic for intersections to operate above capacity. Therefore, in order to maintain the traffic conditions at capacity, an additional analysis was conducted.
35. This review assumed a reduction in vehicles on the network as a result of an evolving shift in travel behaviour in the area. This shift in travel behaviour was assume in part due to: a shift to other modes of travel (i.e. transit); vehicular travel outside of the peak periods; and alternate vehicle travel routes.
36. Based on this review, under future total conditions the area signalized intersections operate with a overall v/c ratios of 0.96 or better during the weekday peak hours, with exception of the Leslie Street / Esther Shiner Boulevard intersection.
37. Under future total conditions the Leslie Street / Esther Shiner Boulevard intersection operates with an overall v/c ratio of 1.06 and 1.00 during the weekday morning and afternoon peak hours, respectively.
38. Notwithstanding that the intersection operates above overall capacity during the weekday morning peak hour, during both the weekday morning and afternoon peak hour periods all movements at the intersection of Leslie Street / Esther Shiner Boulevard operate with a v/c ratio of 1.00 or better.

39. Under existing, future background and future total traffic conditions, the area public street and unsignalized intersections in the study area operates at acceptable level of service with turning movements generally in the LOS A to LOS E range during the weekday morning and afternoon peak hours.
40. Based upon the above, the proposed development can be accommodated within the area street network.

Site Driveway Location and Operations

41. The Block 7 site access driveway onto Billes Heights will operate acceptably and will appropriately provide for the access needs of visitors and residents of the proposed Block 7 development.

Overall

42. New traffic generated by the proposed Block 7 development can be acceptably accommodated on the interim area road system that will be in place following its construction while also considering traffic volume changes related to other area developments.
43. The proposed parking, loading, and bicycle parking provisions meet the requirements of the Site Specific Zoning By-law, other City Standards and will support the parking, loading, and bicycle parking needs of the proposed development.
44. The proposed Block 7 site access arrangements are appropriate, and will support the development of Block 7 as planned.
45. Based upon the above, the current Block 7 development proposal is considered appropriate from a transportation perspective.

A TRANSPORTATION CONTEXT

A.1 EXISTING AREA ROAD NETWORK

The existing road network, lane configurations and intersection turn restrictions within the study area boundary are shown in **Figure 2**.

Sheppard Avenue East is an east-west, major arterial road extending eastwards from Weston Road in Etobicoke to Kingston Road in Scarborough. It serves as one of the major access routes extending through the North York area of the City of Toronto. Sheppard Avenue East is generally comprised of a six-lane cross-section with auxiliary turn lanes provided at most signalized intersections. However, between Rean Drive and Provost Drive, Sheppard Avenue East has a four-lane cross-section. Within the site vicinity, traffic signal control is provided at Leslie Street, Provost Drive / Ambrose Road, Blue Ridge Road and Bessarion Road / Burbank Drive. The posted speed limit is 60 km/h.

Leslie Street is a major north-south arterial road extending northwards from Eglinton Avenue East to just beyond Steeles Avenue East. The majority of Leslie Street has a four-lane cross-section with auxiliary turn lanes provided at most signalized intersections. Between Sheppard Avenue East and the Highway 401 Westbound On-Ramp, Leslie Street has a six-lane cross-section. Within the site vicinity, traffic signal control is provided at Sheppard Avenue East and Esther Shiner Boulevard. The posted speed limit is 60 km/h.

Esther Shiner Boulevard is an east-west local road extending from Leslie Street to Billes Heights. Esther Shiner Boulevard has a four-lane cross-section east of Provost Drive with auxiliary turn lanes provided at its signalized intersections with Provost Drive, Leslie Street and Old Leslie Street. Bicycle lanes are also provided on both sides of the street. West of McMahon Drive, Esther Shiner Boulevard is currently closed to the public and serves as a construction access.

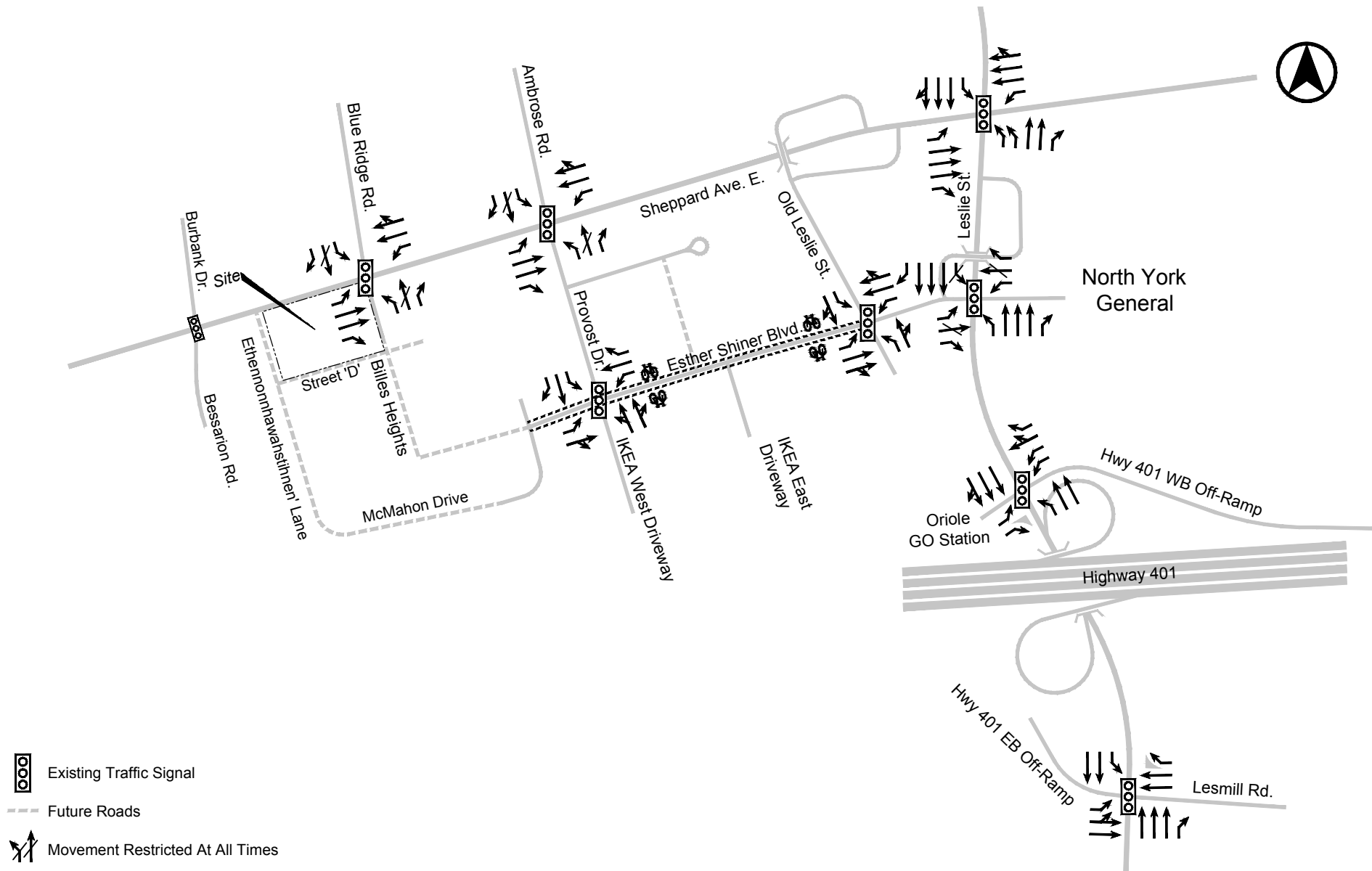
Billes Heights is a north-south local road extending approximately 75 metres north from Esther Shiner Boulevard. Billes Heights is currently closed to the public and serves as a construction access only, with construction to base course asphalt completed in October 2019. Billes Heights is proposed to intersect with Sheppard Avenue East in the north.

Provost Drive is a north-south minor arterial road that extends southwards from Sheppard Avenue East to Esther Shiner Boulevard and the IKEA retail store's westerly driveway. Provost Drive continues north of Sheppard Avenue East as Ambrose Road. Provost Drive has a five-lane cross-section with the centre lane designated as a left turn lane. Traffic signal control is provided at Sheppard Avenue East and at Esther Shiner Boulevard. Northbound and southbound through movements are prohibited at its intersection with Sheppard Avenue East. The posted speed limit is 40 km/h.

Old Leslie Street is a collector road that extends from Esther Shiner Boulevard to Sheppard Avenue East via two road connections. One link connects to the westbound travel lanes along Sheppard Avenue East by means of an overpass, while the other connects directly to the eastbound travel lanes on Sheppard Avenue East. The majority of Old Leslie Street has a two-lane cross-section and serves the TTC Leslie Subway Station. Traffic signal control is provided at the intersection of Old Leslie Street and Esther Shiner Boulevard.

Ethennonnhawahstihnen' Lane (formerly Woodsy Park Lane) is a new road that extends from Sheppard Avenue East to McMahon Drive. Ethennonnhawahstihnen' Lane has a four-lane cross-section. The intersection at Sheppard Avenue East operates under side street STOP control, and the intersection at McMahon Drive is uncontrolled. Northbound and southbound through movements are currently prohibited at the intersection of Sheppard Avenue East.

McMahon Drive is a new road that extends from Ethennonnhawahstihnen' Lane (formerly Woodsy Park Lane) to Esther Shiner Boulevard. McMahon Drive has a four-lane cross-section. The intersection at Esther Shiner Boulevard operates under side street STOP control, and the intersection at Ethennonnhawahstihnen' Lane is uncontrolled. Eastbound and westbound through movements are currently prohibited at the east end of the Block 12 development.



EXISTING & PLANNED ROAD NETWORK LANE CONFIGURATIONS & RESTRICTIONS

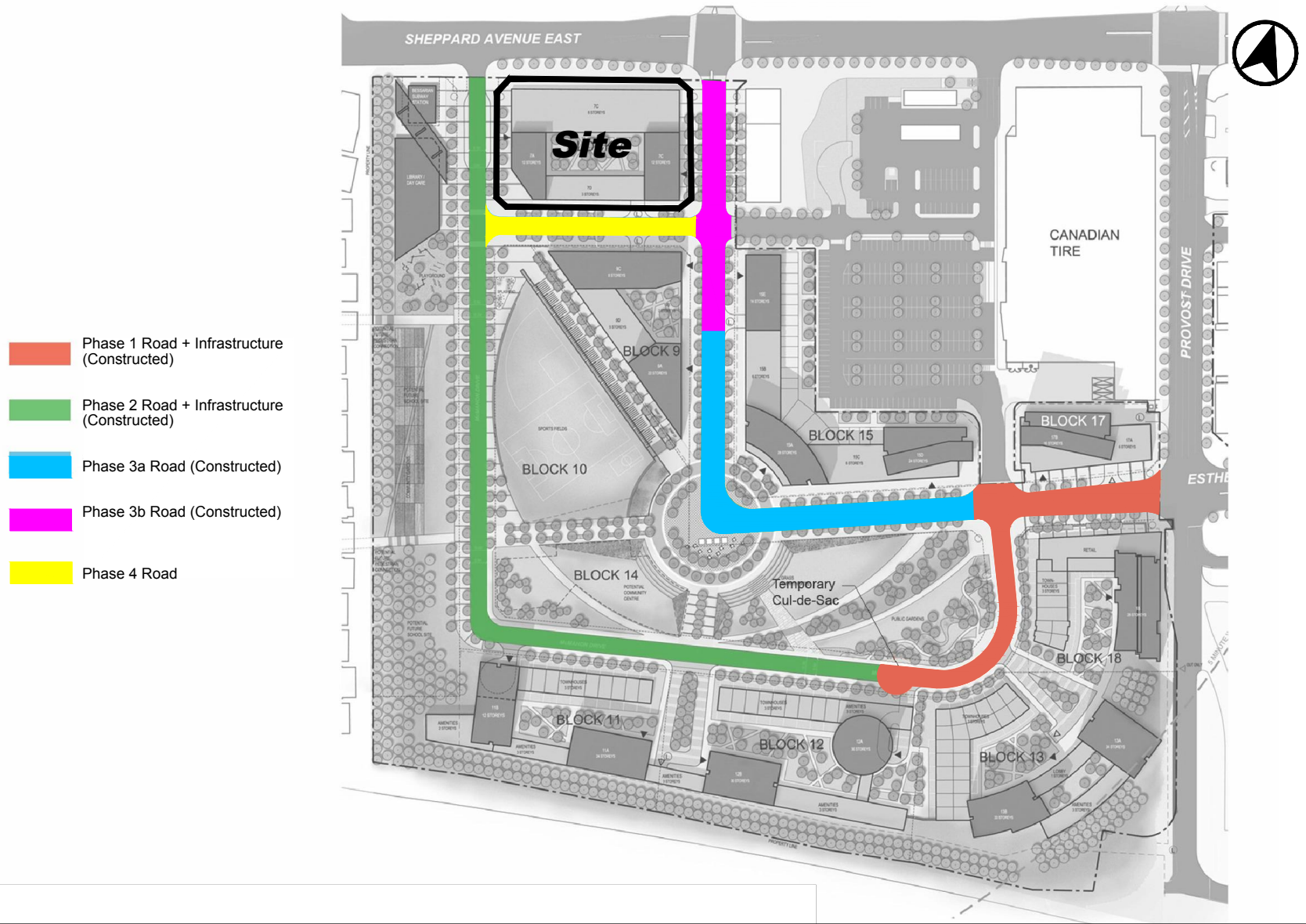
A.2 ULTIMATE ROAD NETWORK

New road infrastructure within the “West of Provost lands” will be constructed in four separate phases as development applications proceed within the area. Block 7 forms part of the Phases 3 and 4 of the “West of Provost lands”.

Full build-out of the proposed road network will be completed by the time Block 7 is occupied.

The current road network phasing is illustrated in **Figure 3**. The current phasing status is as follows:

- McMahon Drive and Ethennonnhawahstihnen' Lane (formerly Woodsy Park Lane) are constructed to base course asphalt;
- Esther Shiner Boulevard is constructed to base course asphalt;
- The southern portion of Billes Heights is constructed to base course asphalt;
- The northern portion of Billes Heights was constructed to base course asphalt in October 2019; and
- Street D is to be constructed to base course asphalt in conjunction with the construction of Block 7.



PROPOSED PHASING ROAD NETWORK

A.3 EXISTING TRANSIT SERVICES

The transit accessibility of the site provides excellent opportunity for residents and visitors of the Block 7 development to travel by transit. The existing area transit routes are illustrated in **Figure 4**.

A.3.1 Toronto Transit Commission

The area transit facilities operated by the Toronto Transit Commission (TTC) are as follows:

The **Line 4 Sheppard Subway** has five stations situated along its 5.5 kilometre length. Line 4 operates between Yonge Street and Don Mills Road and connects with the Yonge-University-Spadina Line 1 subway at Sheppard-Yonge Station. Subway trains typically run with 3-5 minute headways during the morning and afternoon peak periods. There are two subway stations located close to Block 7. Bessarion station is located approximately 200 metres from Block 7 (3 minute walk) while Leslie Station is located approximately 750m away (8 minute walk).

The **85 Sheppard East** bus route operates between Sheppard-Yonge Station and Rouge Hill GO Station, generally in an east-west direction. During the morning and afternoon peak periods, buses operate with 15 minute headways. The closest stop from the proposed development is located directly in front of the site at Sheppard Avenue East / Blue Ridge Road.

The **51 Leslie** bus route operates on Leslie Street between Eglinton subway station and Steeles Avenue East. During the morning and afternoon peak periods, buses operate with 13 minute headways. Within the study area, the 51 Leslie stops along Leslie Street at the North York General Hospital / Esther Shiner Boulevard intersection, Leslie subway station, and the Leslie Street / Sheppard Avenue East intersection. The closest stop from the proposed development is approximately 750m away (8 minute walk).

A.3.2 GO Transit Services

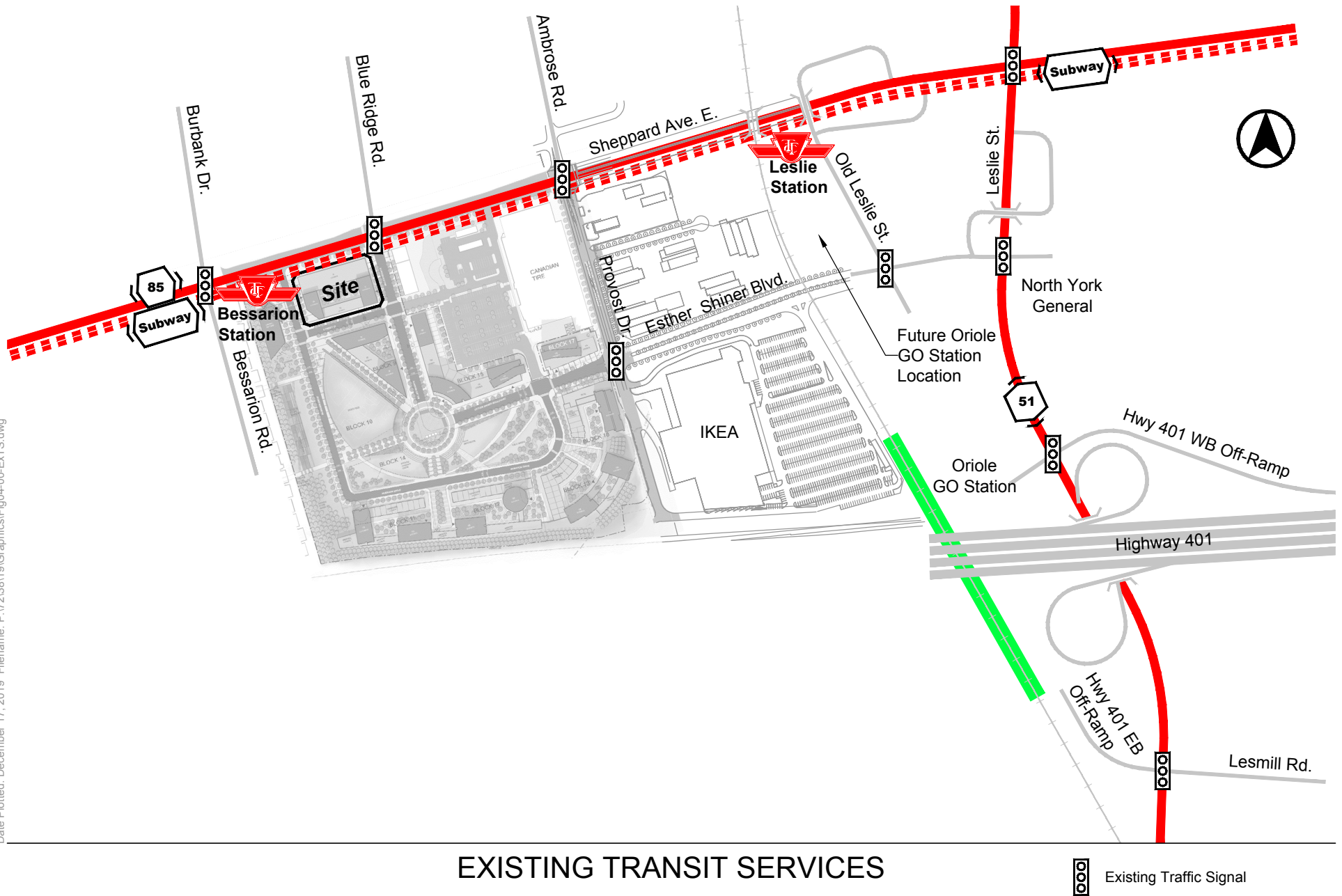
Block 7 is also in close proximity to Oriole GO station, located on the east side of the CN railway tracks to the south of Esther Shiner Boulevard.

During the morning peak period, there are currently five inbound (southbound) trains, operating with 30 minute headways, into downtown Toronto. During the afternoon peak period, there are currently seven trains outbound (northbound), operating with 30 to 60 minute headways, out of downtown Toronto.

A Site Plan Approval application has been made to the City of Toronto by Metrolinx (application #19 101260 NNY 17 SA) to relocate Oriole GO Station to the existing TTC commuter parking lot located at 2760 Old Leslie Street; this location is directly adjacent to TTC Leslie Station.

The new Oriole GO Station will be integrated to the existing TTC Leslie Station. This new location will reduce the walking distance to the site from 20 minutes to 12 minutes.

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A.4 EXISTING CYCLING NETWORK

On-street bicycle lanes are limited to an approximately 330 metre section of Esther Shiner Boulevard between Provost Drive and Old Leslie Road.

An off-street multi-purpose trail can be connected to at the Sheppard Avenue East and Leslie Street intersection, approximately 1 kilometre northeast of the site. This multi-purpose trail is located in the Don River Valley, and provides connections between the intersections of Steeles Avenue East and Leslie Street, and York Mills Road and Don Mills Road, providing a separated cycling route that by-passes Highway 401.

A.5 EXISTING AREA PEDESTRIAN CONTEXT

Existing pedestrian facilities in the immediate vicinity of the proposed development are limited, given the undeveloped nature of the surrounding area.

Pedestrian sidewalks are currently provided on both sides of Sheppard Avenue East, as well as both sides of Esther Shiner Boulevard and Provost Drive. Pedestrian sidewalks are proposed on both sides of Ethennonnhawahstihnen' Lane (formerly Woodsy Park Lane), Billes Heights, and the future Street D. The existing park on the south side of Esther Shiner Boulevard provides trails to facilitate pedestrian access to the nearby community.

B SITE ACCESS

B.1 VEHICULAR ACCESS

Vehicular access to the site is provided from a single driveway at the east end of the site. The site driveway is accessed from Billes Heights, approximately 55 metres south of Sheppard Avenue East. The site driveway provides access to the loading and parking facilities, as well as the bicycle parking located on the lower ground floor and within the underground parking garage. The driveway operates under side street STOP control.

B.2 PEDESTRIAN ACCESS

Pedestrian access to the site is provided at grade level at multiple entrances. The residential units are accessed from the future Street D and Ethennonnhawahstihnen' Lane (formerly Woodsy Park Lane) at the south and west ends of the site. Access to each of the ground-floor retail units is provided along the Sheppard Avenue East, Ethennonnhawahstihnen' Lane, Billes Heights, and Street D frontages.

B.3 BICYCLE ACCESS

Access to the site's bicycle parking facilities is provided from the site driveway, via Billes Heights. Bicycle parking spaces on the P1 level can be accessed from the parking ramp.

B.4 SUMMARY

Based upon the above, the vehicular, pedestrian, and bicycle site accesses are considered to be appropriate for the proposed Block 7 development as planned.

C PARKING

C.1 PARKING REQUIREMENTS

The site is currently subject to the requirements of Site Specific Zoning By-law 959-2013 (OMB). The minimum parking supply standards that apply to the site are outlined in **Table 2**.

TABLE 2 SITE SPECIFIC ZONING BY-LAW 959-2013 (OMB) PARKING REQUIREMENTS

Use		Units / GFA	Site Specific Zoning By-law 959-2013 (OMB)			
			Minimum Rate	Minimum Required	Maximum Rate	Maximum Required
Residential	1 Bedroom	136 units	0.7 sps / unit	95 sps	1.0 sps / unit	136 sps
	2 Bedroom	100 units	0.9 sps / unit	90 sps	1.3 sps / unit	130 sps
	3 Bedroom	28 units	1.0 sps / unit	28 sps	1.5 sps / unit	42 sps
	Residential Subtotal			213 sps	--	308 sps
Non-Residential	Residential Visitor	264 units	0.14 sps / unit	36 sps	N/A	--
	Retail	2,395 m² GFA	1.0 sps / 100 m²	23 sps	4.0 sps / 100 m²	95 sps
	Non-Residential Subtotal			59 sps	--	--
Total				272 sps	--	--

Notes:

1. Vehicular parking calculations resulting in a fraction have been rounded down to the nearest whole number in accordance with former City of North York By-law 7625.

Application of the Site Specific Zoning By-law 959-2013 (OMB) to the proposed development would require the provision of a minimum of 272 parking spaces (including 213 residential spaces, 36 residential visitor spaces, and 23 retail spaces). Application of these standards also specifies a maximum of 308 residential spaces and 95 retail spaces for the proposed development.

C.2 PROPOSED PARKING SUPPLY AND FACILITIES

A total of 362 parking spaces (including 264 residential, 97 non-residential, and 1 car share parking space) are proposed for the Block 7 development within a two full levels and a partial third level of underground parking.

C.2.1 Residential Parking Supply

It is proposed to provide a total of 264 parking spaces on a portion of the P1, and the entire P2 and P3 levels of the underground parking garage. The proposed residential parking supply of 264 spaces meets and

exceeds the Zoning By-law minimum parking requirement of 213 spaces, but does not exceed the maximum requirement of 308 spaces.

A total of 8 accessible parking spaces are incorporated into the residential parking supply. These spaces are located in close proximity to the two elevator cores, and meet the dimensional requirements outlined in Zoning By-law 579-2017.

C.2.2 Non-Residential Parking Supply

It is proposed to provide a total of 97 non-residential parking spaces on a portion of the P1 level of the underground parking garage. The non-residential parking supply will accommodate parking for residential visitors and retail uses on a non-exclusive basis. The proposed non-residential parking supply meets the Zoning By-law minimum parking requirement of 59 spaces.

A total of 3 accessible parking spaces are incorporated into the non-residential parking supply. These spaces are located in close proximity to the western elevator core, and meet the dimensional requirements outlined in Zoning By-law 579-2017.

C.2.3 Car Share Parking Supply

One car share parking space is provided within the non-residential portion of the garage on the P1 level. The car share space is publicly accessible from the commercial elevator lobby on the west side of the site.

C.2.4 Toronto Green Standard Parking Supply Provisions

The Toronto Green Standard (TGS) Version 3.0, standard AQ 1.2, states that when the parking supply exceeds the minimum Zoning By-law requirements for residential uses, excess parking spaces must be dedicated priority parking spaces for low-emitting vehicles (LEV), carpooling/ridesharing or for publicly accessible spaces dedicated to shared vehicle systems such as car-sharing, ride-sharing, or micro mobility systems. As the proposed residential parking supply exceeds the minimum Zoning By-law requirement by 51 spaces, a total of 51 spaces in close proximity to the elevator cores are designated as LEV priority spaces.

TGS 3.0 standard AQ 1.2 also specifies that for institutional, commercial and retail developments, the number of dedicated priority parking spaces should be no less than one dedicated space for every 10 parking spaces provided above the minimum zoning By-law requirement. As the proposed non-residential parking supply exceeds the minimum Zoning By-law requirement by 38 spaces, a total of 4 spaces in close proximity to the elevator core will be designated as LEV priority spaces.

The TGS 3.0 standard AQ 1.3, specifies that 20 percent of parking spaces provided on site must have electric vehicle supply equipment (EVSE) installed, and the remaining parking spaces must be designed to permit future EVSE installation. It is proposed to provide a total of 72 spaces (20%) with EVSE installed, and the remaining 290 spaces will have provisions for future EVSE installation. These spaces will be split evenly among the three parking levels, in both the residential and non-residential parking areas.

C.2.5 Parking Circulation

Physical separations (i.e. overhead doors) are provided between the non-residential parking area and the residential parking area on the P1 level. Access to the residential parking area will be provided using a transponder or key fob system.

C.3 PARKING SUMMARY

The proposed parking supply of 362 parking spaces (including 264 residential, 97 non-residential, and 1 car share parking space) meets the minimum Zoning By-law parking requirement of 272 spaces. The proposed residential parking supply of 264 spaces meets and exceeds the Zoning By-law minimum parking requirement of 213 spaces, but does not exceed the maximum requirement of 308 spaces. The proposed non-residential parking supply of 97 spaces meets the Zoning By-law minimum parking requirement of 59 spaces.

Based upon the above, the proposed parking supply and arrangements of the current proposal can accommodate the parking demands of the site.

D LOADING

D.1 LOADING REQUIREMENTS

The site is currently subject to the requirements of Site Specific Zoning By-law 959-2013 (OMB). The minimum loading supply standards that apply to the site are outlined in **Table 3**.

TABLE 3 SITE SPECIFIC ZONING BY-LAW 959-2013 (OMB) LOADING REQUIREMENTS

Use	Units / GFA	Site Specific Zoning By-law 959-2013 (OMB)				
		Type A	Type B	Type C	Type G	Total
Residential	264 units	0	0	0	1	1
Retail	2,395 m ² GFA	0	2	0	0	2
Total Before Sharing		0	2	0	1	3
Total After Sharing		0	1	0	1	2

Notes:

1. Per Zoning By-law 959-2013 (OMB) 3.1(c), loading spaces for non-residential uses may be combined and shared with loading spaces required for dwelling units.

Application of the Site Specific Zoning By-law 959-2013 (OMB) to the proposed development would require the provision of a minimum of two (2) loading spaces, including one (1) Type B loading space and one (1) Type G loading space.

D.2 PROPOSED LOADING FACILITIES

D.2.1 Loading Supply / Servicing Arrangements

A total of two (2) loading spaces (including one (1) Type B loading space and one (1) Type G loading space) are proposed on site. The two loading spaces are located within a consolidated loading facility on the lower ground floor, and are accessed from the site driveway off of Billes Heights. The proposed loading supply satisfies the requirements of the Site-Specific Zoning By-law 959-2013 (OMB) and the “City of Toronto Requirements for Garbage and Recycling Collection for New Developments and Redevelopments” (May 2012).

D.2.2 Residential Garbage and Recycling Facilities

Residential refuse / recycling collection for the building will occur within the proposed Type G loading space. Appropriate bin staging provisions are provided in front of the Type G loading space in accordance with the design provisions outlined in the “City of Toronto Requirements for Garbage and Recycling Collection for New Developments and Redevelopments” (May 2012).

Provision for a minimum bin staging area of 25 square metres has been provided adjacent to the Type G loading space to accommodate 5 bins within the allocated area (including 1 bin in the Type G loading space). This staging area has been provided in accordance with City policy requirements (i.e. size of bin staging area = 5 square metres for every 50 residential units in excess of the first 50 residential units).

Garbage rooms for each of the two residential towers are provided on the lower ground floor. Garbage bins will be transferred entirely within the site between the residential garbage rooms and the bin staging area.

D.2.3 Non-Residential Garbage and Recycling Facilities

Refuse / recycling facilities for the non-residential (retail) component of the site have been provided on the lower ground floor. Dedicated commercial refuse rooms have been provided in close proximity to the loading area, where refuse / recycling will be transferred from the room to the Type G loading space on the day of pickup. The non-residential garbage and recycling is planned to be collected by a private garbage contractor.

D.2.4 Operations and Manoeuvring

Vehicular manoeuvring diagrams (VMDs) have been developed, which demonstrate the ability of service and delivery vehicles to manoeuvre within the site when entering / exiting each of the loading spaces in the loading area. The design vehicles used in assessing the configuration of the proposed loading spaces are as follows:

- Type B loading space – Single unit vehicles (TAC SU and TAC HSU)
- Type G loading space – City of Toronto front-end loading garbage truck, and single unit vehicles (TAC SU and TAC HSU).

Vehicular manoeuvring diagrams **VMD-1** to **VMD-5** are provided in **Attachment B** and illustrate the turning movements for the design vehicles entering / exiting each of the proposed loading spaces.

These vehicle manoeuvring diagrams confirm that the proposed loading arrangements will accommodate the manoeuvring requirements of the range of vehicles that are anticipated to access the site.

D.2.5 Height Clearances

A minimum height clearance of 4.5 metres is maintained throughout the loading area, meeting / exceeding the minimum height clearance requirements of Site-Specific Zoning By-law 959-2013 (OMB) and the City of Toronto design policies (i.e. 4.0 metres for Type B loading spaces and 4.4 metres for access to a Type G loading space). A minimum height clearance of 6.1 metres is provided above the entire Type G loading spaces and bin staging area to enable compacted bulk lift bin collection services.

D.3 LOADING SUMMARY

A total of two (2) loading spaces (including one (1) Type B loading space and one (1) Type G loading space) are provided within a consolidated loading area. The proposed facilities meet the requirements of the Site-Specific Zoning By-law 959-2013 (OMB) and the *“City of Toronto Requirements for Garbage and Recycling Collection for New Developments and Redevelopments”* (May 2012).

Based upon the above, the proposed loading supply and arrangements can accommodate the servicing needs of the current proposal.

E BICYCLE PARKING

E.1 BICYCLE PARKING REQUIREMENTS

E.1.1 Site Specific Zoning By-law 959-2013 (OMB)

The site is currently subject to the requirements of Site Specific Zoning By-law 959-2013 (OMB). The minimum bicycle parking supply standards that apply to the site are outlined in **Table 4**.

TABLE 4 SITE SPECIFIC ZONING BY-LAW 959-2013(OMB) BICYCLE PARKING REQUIREMENTS

Use	Units / GFA	Site Specific Zoning By-law 959-2013 (OMB)		
		Minimum Rate		Minimum Required
Residential	264 units	Short Term	0.15 sps / unit	40 sps
		Long Term	0.60 sps / unit	159 sps
Retail	2,395 m²	Short Term	Greater of 0.25 sps / 100 m² or 6 sps	6 sps
		Long Term	0.13 sps / 100 m²	4 sps
Short Term				46 sps
Long Term				163 sps
Total				209 sps

Notes:

1. Bicycle parking calculations resulting in a fraction have been rounded up to the nearest whole number in accordance with Site Specific Zoning By-law 959-2013 (OMB).

Application of the Site Specific Zoning By-law 959-2013 (OMB) to the proposed development would require the provision of a minimum of 209 bicycle parking spaces, including 46 short term and 163 long term spaces.

E.1.2 Toronto Green Standard (Zone 2 – Tier 1)

The minimum Toronto Green Standard (Zone 2 – Tier 1, Version 3.0) bicycle parking supply requirements are summarized in **Table 5**.

TABLE 5 TORONTO GREEN STANDARD (ZONE 2 – TIER 1) BICYCLE PARKING REQUIREMENTS

Use	Units / GFA	TGS Zone 2 – Tier 1		
		Minimum Rate		Minimum Required
Residential	264 units	Short Term	0.07 sps / unit	19 sps
		Long Term	0.68 sps / unit	180 sps
Retail	2,395 m²	Short Term	3 sps + 0.25 sps / 100 m²	9 sps
		Long Term	0.13 sps / 100 m²	4 sps
Short Term				28 sps
Long Term				184 sps
Total				212 sps

Notes:

1. Bicycle parking calculations resulting in a fraction have been rounded up to the nearest whole number in accordance with the Toronto Green Standard and Zoning By-law 569-2013.

Application of the Toronto Green Standard bicycle parking requirements to the proposed development would require the provision of a minimum of 212 bicycle parking spaces, including 28 short term and 184 long term spaces.

E.2 PROPOSED BICYCLE PARKING SUPPLY AND FACILITIES

The proposed development incorporates a total of 209 bicycle parking spaces, including 46 short term and 163 long term spaces. The proposed bicycle parking supply meets the minimum supply requirements of the Site Specific Zoning By-law 959-2013 (OMB).

A total of 25 short term and 50 long term bicycle parking spaces are provided on the lower ground floor. These spaces can be accessed from the site driveway via Billes Heights. The remaining 21 short term and 113 long term bicycle parking spaces are provided on the P1 level. Bicycle parking spaces on the P1 level can be accessed using the parking ramp, via the site driveway off of Billes Heights.

An electric bike station room and a bike repair room are also provided on the lower ground floor.

E.3 BICYCLE PARKING SUMMARY

The proposed bicycle parking supply of 209 spaces (including 46 short term and 163 long term spaces) meets the minimum Zoning By-law requirements. Based upon the above, the proposed bicycle parking supply, facilities, and access arrangements are appropriate, and will support the proposed development as planned.

F TRANSPORTATION DEMAND MANAGEMENT

Transportation Demand Management (TDM) measures will be incorporated in the proposed Block 7 development to minimize the need for vehicle travel to and from the site and encourage and facilitate use of transit and active transportation. TDM reduces auto use and encourages alternative modes to better balance mobility.

The City of Toronto Official Plan embraces a range of TDM measures, and the following sections outline TDM strategies that have been incorporated into the Block 7 building programme to align with the operational and functional needs of the development.

One of the primary objectives of the TDM plan is to create / reinforce a low vehicular trip generation rate for the proposed development, and emphasize the alternative modes of travel that can satisfy day to day mobility needs, recognizing the evolving (and improving) transportation environment along the Sheppard and Leslie corridors, existing and planned cycling connections and local destinations that can be readily reached on foot.

This key objective is addressed through a series of TDM measures outlined within the TDM plan below, that take a multi-pronged approach to reducing and reinforcing the use of alternative modes of travel on a daily basis.

F.1 BUILDING-SPECIFIC MEASURES

The following specific TDM measures are proposed as part of the Block 7 building plan to support non-automobile dependent travel:

1. Provision of one (1) bicycle repair station within the building.
2. Funding contribution in for a portion of the cost of one Toronto Bike Share station, with the remainder of funding coming from the Block 11 and Block 15 developments. The Bike Share station should be located within or adjacent to the Concord Park Place lands.
3. Incorporation of one car share space in the non-residential portion of the underground parking garage.
4. A digital display facility will be provided in a visible location within the building lobby, providing transit service and local active transportation information, including: area transit service information, information regarding the location of various facilities / linkages, travel distances, access information and promotional information regarding the availability of area carpooling, car sharing, taxi and ridesharing service (i.e. Uber and Lyft).
5. Transportation information packages will be provided to new owners at the time of dwelling unit purchase.

This range of TDM strategies will assist to reduce congestion, minimize the number of single-occupant vehicle trips, encourage non-auto modes of travel, and reduce vehicle dependency for trips associated with the proposed development.

G SITE TRAVEL DEMAND FORECASTING

The following section summarizes the approach taken to estimate the multi-modal travel demand characteristics of the site based upon first principles. This approach was then compared to other proxy sites in the vicinity of the site.

G.1 APPROACH AND BASELINE PARAMETERS

As noted above, preliminary travel demand forecasts have been prepared, as part of this study, for the proposed development based upon the development programme outlined in **Section 2.0**. Multi-modal forecasts have been developed from a first principles approach using person trip making characteristics for the key component uses within the site.

As summarized in **Table 6**, the existing area travel characteristics reflect a high level of non-automotive travel modes such as pedestrian and transit usage. Based on existing multi-modal travel characteristics the travel characteristics for the proposed development are anticipated to reflect a high level of pedestrian and transit usage instead of a heavy reliance on auto-based travel modes.

The existing residential modal split for the site area was determined from a review of the 2016 Transportation Tomorrow Survey (TTS) data and is summarized in **Table 6**.

TABLE 6 EXISTING RESIDENTIAL MODAL SPLIT

Mode	AM Peak Period	PM Peak Period	Average
Transit ²	44%	37%	41%
Driver	47%	50%	48%
Passenger ³	5%	10%	7%
Walk	3%	3%	3%
Cycle	1%	0%	1%
TOTAL	100%	100%	100%

Notes:

1. Based on 2016 TTS data for home-based trip to/from 2006 TTS Zones 463-465 during the typical weekday morning and afternoon peak hour periods.
2. Transit includes GO rail only, Transit excluding GO rail and Joint GO rail and local transit
3. Passenger include taxi passenger, paid rideshare, auto passenger and school bus.

For the purpose of this analysis, travel demand to and from the site has been developed by applying modal split and time of travel assumptions to base person-density parameters provided by Transportation Tomorrow Survey (TTS). Travel information that forms the basis of this analysis has been obtained from the 2012 City of Toronto “*Trends in Housing Occupancy*” report, and information provided by the 2016 Transportation Tomorrow Survey (TTS) and data collected by BA Group.

Key technical assumptions used in establishing travel demand forecasts for the site are outlined in the following sections.

G.2 PERSON BASED TRAVEL DEMAND FORECAST

G.2.1 Residential Vehicular Trip Generation

Residential travel demand to / from the site has been developed from 'first principles' based upon a review of the total number of residents anticipated to live on the site combined with data on residential travel characteristics in the vicinity of the site (particularly from the 2016 Transportation Tomorrow Survey (TTS) and data collected by BA Group. Forecast travel demand forecast for residential trips to / from the site in the weekday morning and afternoon peak hours is summarized in **Table 7**.

TABLE 7 RESIDENTIAL PERSON-BASED TRIP GENERATION

Parameter		Peak Hour Travel Characteristics			
Residential Units ¹		264 units ¹			
Building Occupancy (Persons)		Assume 95% of units occupied at any given time @ Unit occupancy of 1.8 persons / unit ² = 455 people			
Street Peak Hour Travel: Proportion of Resident		Assume 37% (AM) and 36% (PM) of peak period travel occurs during the peak hour ³ = 170 (AM) and 165 (PM) people travelling during peak hour periods			
Trip Orientation ⁴		Weekday AM		Weekday PM	
		Inbound	Outbound	Inbound	Outbound
		21%	79%	59%	41%
Travel Demand (Vehicle / person trips)		Based upon modal share assumptions from the 2016 Transportation Tomorrow Survey (TTS) for zones 463-465			
Auto	48%	15	65	45	35
Passenger ⁵	7%	5	10	5	5
Transit	41%	15	55	40	30
Pedestrian	3%	0	5	5	0
Cyclist	1%	0	0	0	0
Total Trips	100%	35	135	95	70
Resulting Vehicular Trips		15	65	45	35
Peak Hour Demand		Trips	Rate	Trips	Rate
Inbound		15	0.06	45	0.17
Outbound		65	0.24	35	0.13
Two-way		80	0.30	80	0.30

Notes:

1. Based on site statistics provided by Dialog dated December 18, 2019.
2. Based on the "Trends in Housing Occupancy" report, City of Toronto, 2012.
3. Temporal variations of peak hour travel demand (i.e. percentage of peak *period* travel that occur during the peak *hour*) obtained from the 2016 Transportation Tomorrow Survey (TTS) for 2006 TTS zones 463-465.
4. Residential Inbound / Outbound traffic distribution based upon the Institute of Transportation Engineers Trip Generation Manual (10th Edition) Inbound / Outbound splits for Multifamily Housing (High-Rise) Land Use Code 222 in a General Urban/Suburban setting.
5. Including passenger and taxi trips.
6. Vehicle occupancy information (persons per car) obtained from the 2016 Transportation Tomorrow Survey (TTS) for 2006 TTS zones 463-465.
7. Person / auto trips rounded to the nearest 5 trips.

Based on the foregoing, non-auto residential travel demand (i.e. transit, walking, cycling and other modes) is forecast to be in the order of 75 two-way trips in the weekday morning and afternoon peak hours.

Forecast vehicular residential site traffic generation, based on this 'first principles' assessment, is in the order of 80 two-way trips in the weekday morning and afternoon peak hours, respectively, which represent trip generation rates of 0.30 two-way trips per unit in the weekday morning and afternoon peak hour periods, respectively.

The resultant site traffic forecasts for the residential component of the proposed development, and a comparison to the 'first principles' based trip generation forecast discussed above, are summarized in **Table 8**.

TABLE 8 RESIDENTIAL VEHICULAR TRIP GENERATION

Source		Morning Peak Hour			Afternoon Peak Hour		
		In	Out	2-way	In	Out	2-way
First Principles Based Trip Generation Forecast (Table 7)							
'Effective' Vehicular Trip Generation Rate (trips / unit)		0.06	0.17	0.23	0.13	0.02	0.15
ITE Trip Generation Rates							
ITE 10 th Edition LUC 222 (Multi-family Housing – High Rise)		0.07	0.24	0.31	0.22	0.14	0.36
Proxy Residential Trip Generation Rates							
Block 17 (257 units)	2017	0.02	0.16	0.18	0.10	0.06	0.16
	2018	0.04	0.15	0.19	0.12	0.06	0.19
	2019	0.02	0.15	0.17	0.11	0.04	0.14
Block 18 (428 units)	2017	0.03	0.20	0.23	0.16	0.09	0.26
	2018	0.04	0.21	0.25	0.18	0.09	0.27
15-33 Singer Court (1,131 units)	2019	0.06	0.16	0.22	0.11	0.09	0.20
113-115, 117, 121 McMahon Drive (1,094 units)	2019	0.06	0.17	0.23	0.15	0.10	0.25
2885 Bayview (447 units)	2015	0.05	0.14	0.19	0.13	0.10	0.23
Average (average proxy) Rates		0.04	0.17	0.21	0.13	0.08	0.21
Adopted Trip Generation Rate / Trips							
Adopted Rates		0.04	0.17	0.21	0.13	0.08	0.21
Vehicle Trips (264 units)		10	45	55	35	20	55

Notes:

1. Vehicular trips rounded to the 5 vehicles.

The adopted residential trip generation rate of 0.21 two-way trips during the weekday morning and afternoon peak periods based on a review of proxy locations in the site vicinity is generally consistent with (and slightly lower than) the rates derived using the first principles based trip forecasting method discussed in the previous section.

Based on the foregoing, the residential component of the proposed development is forecast to generate in the order of 55 two-way vehicular residential trips during both the weekday morning and weekday afternoon peak hours.

G.2.2 Adopted Residential Travel Demand Forecast

For the purpose of this study, residential travel demand parameters adopted to assess the future residential travel characteristics of the proposed development are summarized in **Table 9**.

TABLE 9 ADOPTED RESIDENTIAL TRAVEL DEMAND (TRIPS)

Source	Morning Peak Hour			Afternoon Peak Hour		
	In	Out	2-way	In	Out	2-way
Auto ¹	15	65	80	45	35	80
Transit ²	15	55	70	40	30	70
Pedestrian ²	0	5	5	5	0	5
Cyclist ²	0	0	0	0	0	0
Total Trips	30	125	155	90	65	155

Notes:

1. Based on the review of trip generation rates at other comparably located residential developments summarized in **Table 8**.
2. Based on the 'first principles' based travel demand assessment summarized in **Table 7**.

G.2.3 Retail Vehicular Trip Generation

Given the size and nature of the proposed retail, it is expected to primarily service residents of the proposed building as well as transit patrons using the both Bessarion and Leslie TTC Stations located adjacent to the subject site. In this regard, the majority of travel to/from the retail is expected to be pass-by walking trips and vehicle travel associated with the retail is expected to be minimal.

Notwithstanding, BA Group has incorporated a level of retail related vehicle activity. For the purpose of this assessment, retail trip generation was based on a review of the proposed parking supply and a total of approximately 23 retail parking spaces are assumed to be available for non-residential visitors in the commercial parking garage. The number of parking spaces occupied by the non-residential visitors was estimated based on the peak period parking occupancy outlined in the Zoning By-law 959-2013 for developments located on the 1001 Sheppard Avenue East and 72 Esther Shiner Boulevard lands. The resultant number of parking spaces which may be available for the non-residential (i.e. retail) visitors are summarized in **Table 10**.

TABLE 10 NON-RESIDENTIAL PARKING AVAILABILITY

Land Uses	Peak Period Parking Demand	
	Weekday Morning Peak Hour	Weekday Afternoon Peak Hour
Proposed Retail Parking Supply	60 spaces	60 spaces
<i>Time of Day Occupancy Rate</i>	<i>20%</i>	<i>100%</i>
Parking Spaces Occupied by Retail Visitors (Rounded)	10 spaces	60 spaces

The retail related traffic volumes were forecasted based on the application of trip generation rate applied on a per occupied parking space basis. For the purpose of this analysis, it is assumed that the non-residential uses on the site will have a 60-minute occupancy per parking space which is equivalent to a trip generation rate of 1.00 two-way trip per occupied parking space. The traffic volumes forecasts for the proposed non-residential component of the site are summarized in **Table 11**.

It has been assumed that the projected retail vehicle trips during the morning and afternoon peak hours will be pass-by trips from vehicles already travelling on the area road network.

TABLE 11 RETAIL VEHICLE TRIP GENERATION

	AM Peak Hour			PM Peak Hour		
	In	Out	2-Way	In	Out	2-Way
Retail Trip Rates (per parking space occupied)	0.50	0.50	1.00	0.50	0.50	1.00
Forecast Traffic Volumes Vehicle Trips	5	5	10	30	30	60

Notes:

1. All trips are rounded to the nearest 5 trips.

The proposed retail use will generate approximately 10 and 60 two-way vehicles trips during the weekday morning and afternoon peak hours.

G.2.4 Toronto Green Standard Tier 3

The Toronto Green Standard (TGS) is Toronto's sustainable design requirements for new developments that aim to promote sustainable Site and building design across five areas. TGS consists of multiple tiers of sustainable performance measures (from Tier 1 to Tier 4) where Tier 1 is mandatory as part of the planning approval process, whereas Tiers 2 to 4 are voluntary. A new Version 3 of the TGS is applicable to development applications submitted after May 1, 2018.

The Tier 1 standard within the updated TGS requires all development proposals to reduce single occupancy auto vehicle trips generated by the proposed development by 15% through the adopted TDM measures and multimodal infrastructure strategies for the Site. As such, the impacts of the adopted TDM measures and Site context on the proposed Site trip generation must be quantified. The combined effect of the adopted TDM

measures and multimodal infrastructure strategies were assessed based on a comparison to default trip generation derived from the ITE Trip Generation Manual 10th Edition for an urban locational context and is summarized in **Table 12**. As outlined above, a comparison of the ITE trip generation to the projected Site trip generation, with the adoption of the suggested TDM measures (as noted in **Section F**), is anticipated to have a reduced two-way trips generation by approximately 31% to 42% during the study peak hours. As such, this reduction meets and exceeds the requirements set out within the TGS for Tier 1.

TABLE 12 TRIP GENERATION REDUCTION SUMMARY

	Inbound	Outbound	Two-Way
ITE Residential Trips (rate)	0.07 (0.22)	0.24 (0.14)	0.31 (0.36)
Residential (ITE222)	20 (60)	65 (35)	85 (95)
Reduction	50% (42%)	31% (43%)	31% (42%)

Notes:

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

H VEHICULAR TRAFFIC VOLUMES

H.1 TRAFFIC ANALYSIS SCENARIOS AND DESIGN PERIODS

Traffic operations analyses have been undertaken during the weekday morning and afternoon street peak hours under the following conditions:

- Existing traffic – traffic activity levels under current conditions;
- Future background traffic – traffic activity levels 5 years into the future which include allowances for corridor growth and background developments; and,
- Future total traffic – traffic activity levels 5 years into the future with Block 7 developed and projected site generate traffic added to the future road network.

H.2 EXISTING TRAFFIC VOLUMES

H.2.1 Existing Baseline Traffic Volumes

Existing baseline traffic and pedestrian volumes were established at intersections within the study area for the weekday morning and afternoon peak hour periods using traffic count information obtained from surveys undertaken by Spectrum Traffic Data Inc. on Tuesday, December 4, 2018 and Wednesday, March 27, 2019. A listing of the count data and sources are provided in **Table 13**.

TABLE 13 TURNING MOVEMENT COUNT SUMMARY

Intersections	Count Data	Time Periods	Source
Leslie Street / Sheppard Avenue East	Wednesday, March 27, 2019	Weekdays: 7:00 to 9:00 a.m. 4:00 to 6:00 p.m.	Spectrum Traffic Data Inc.
Leslie Street / Esther Shiner Boulevard			
Leslie Street / Hwy 401 EB Off-Ramp			
Leslie Street / Hwy 401 WB Off-Ramp			
Esther Shiner Blvd / Old Leslie Street	Tuesday, December 4, 2018		
Esther Shiner Boulevard / Provost Drive			
Sheppard Avenue East / Ambrose Road & Provost Drive			
Sheppard Ave E / Blue Ridge Rd			
Sheppard Ave E / Burbank Dr & Bessarion Rd			
Provost Drive & Singer Court			
Esther Shiner Blvd & McMahon Dr			
Esther Shiner Blvd & IKEA Driveway			
Sheppard Avenue East & Mall Access			

The existing turning movement counts were reviewed in detail to ensure a general consistency in the traffic volumes on roadways between intersections. Where necessary, minor adjustments were made to balance traffic volumes between intersections to create a representative traffic volume base for the purposes of the traffic operations analyses undertaken as part of this study. The existing turning movement counts are provided in **Attachment C**. Existing, balanced baseline area traffic volumes for the weekday morning and afternoon peak hours are summarized in **Figure 5**.

H.2.2 Redistribution of Existing Traffic Volumes

Recognizing that the Leslie Street / Sheppard Avenue East intersection is currently busy under existing conditions, drivers tend to bypass the intersection and use the Leslie Street / Esther Shiner Boulevard intersection as an alternative route for travelling to and from the west direction along Sheppard Avenue East. With the build-out of the “West of Provost” lands, the Leslie Street / Esther Shiner Boulevard will likely become a busier intersection in the future. The existing drivers that are currently using the intersection as a bypass will begin shifting towards the Leslie Street / Sheppard Avenue East intersection to use as their primary route for travelling to and from the west direction along Sheppard Avenue East. Therefore, in order to capture this anticipated travel behaviour in the future, the existing traffic volumes currently travelling to and from the west direction along Sheppard Avenue East have been redistributed to use the Leslie Street / Sheppard Avenue East intersection and applied to the future background and future total traffic volumes.

The redistribution of existing traffic volumes for the weekday morning and afternoon peak hours are summarized in **Figure 6**.

H.3 FUTURE BACKGROUND TRAFFIC VOLUMES

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

- specific area development traffic (i.e. background development traffic); and
- general corridor growth on the area arterial roads (i.e. Sheppard Avenue East and Leslie Street).

H.3.1 Future Background Traffic Volumes

Future background traffic volumes on the area street system for the weekday morning and afternoon peak hours are summarized in **Figure 7**.

H.3.2 Background Development Growth

A comprehensive series of traffic allowances have been made within the analysis to accommodate for traffic generated by new area developments that are anticipated to be completed prior to, or around the same time as, the proposed development.

Specific allowances (if applicable) were made for traffic generated by 13 other developments in the area that have been either approved and are not, as of yet, occupied or are being actively reviewed by the City. The proposed background developments, statistics and source of information are provided in **Table 14**.

It should be noted, however, that for changes have been made to some of the traffic assignments and forecasted volumes for certain area developments to reflect either changes made to the approved development programmes that were not reflected in the applicable traffic study; or to update the trip generation rates used at certain studies to address the evolving transportation context where lower trip generation characteristics were observed at the studied proxy sites in the vicinity of the site (as discussed in **Section G**).

TABLE 14 BACKGROUND DEVELOPMENTS

Development Name / Address	Development Programme			Source
	Residential Units	Retail GFA	Office GFA	
2901 Bayview Avenue	1,132 units	48,684 m ²	--	BA Group; July 2017
2-14 Cusack Court	163 units	1,808 m ²	--	No TIS
577 Sheppard Avenue East	245 units	249 m ²	--	BA Group; April 17, 2014
591-593 Sheppard Ave. East	186 units	838 m ²	838 m ²	No TIS
625-627 Sheppard Ave. East	205 units	465 m ²	--	BA Group; Aug. 25, 2017
680-688 Sheppard Ave. East	527 units	695 m ² day care		BA Group; Nov. 11, 2019
699 Sheppard Ave East	155 units	111.35 m ²	--	BA Group; July 16 2019
1200 Sheppard Ave East	1,478 units	1,702 m ²	1,860 m ²	WSP; August 13, 2019
Block 13	740 units	--	--	BA Group; June 2013
Block 12	692 units	--	--	BA Group; Aug. 2, 2017
Block 11	466 units	--	--	BA Group; Nov. 28, 2018
Block 15	990 units	1,995 m ²	--	BA Group; May 15, 2019
Block 1 ¹	516 units	868 m ²	35, 604 m ²	BA Group, Dec. 2019

Note:

1. An assumption of the future development block for Block 1 has been included as part of this application.

H.3.3 Corridor Growth

Weekday street peak hour traffic volume trends at the intersection of Leslie Street / Sheppard Avenue East have been reviewed using historic traffic count information obtained over a ten to fifteen year period to provide information regarding how traffic volumes along these corridors have changed on a sustained basis during the weekday street peak hours.

The review of the historical intersection traffic data indicates that there has been no sustained corridor growth. Corridor growth analysis details are attached in **Attachment D**.

H.3.4 Future Background Traffic Volumes

Future background traffic volumes have been established for the weekday morning and afternoon peak hours as the sum of the existing traffic volumes and specific area development traffic allowances.

The total future background traffic volumes are illustrated in **Figure 7**.

H.4 SITE TRAFFIC VOLUMES

H.4.1 New Site Trip Generation Summary

Multi-modal travel forecasts were generated for the proposed development in **Section G**. The resultant vehicular site traffic related to the site parking facility (i.e. auto driver) is summarized in **Table 15**.

TABLE 15 PROPOSED SITE AUTO DRIVER VEHICLE TRAFFIC

Land Use	Morning Peak Hour			Afternoon Peak Hour		
	In	Out	2-Way	In	Out	2-Way
Residential	10	45	55	35	20	55
Retail	5	5	10	30	30	60
Total	15	50	65	65	50	115

Notes:

1. Vehicular trips rounded to the nearest 5 vehicles.

The proposed Block 7 development will generate a total of approximately 65 and 115 two-way trips during the morning and afternoon peak hours, respectively. The trips will be made to / from the proposed site parking facilities.

H.4.2 Trip Distribution and Trip Assignment

RESIDENTIAL USES

A comprehensive series of surveys were conducted in the development of the TTS database describing, among other information, the travel behaviour of motorists of a specific area during the street peak hours. A review of the TTS data for the Leslie / Sheppard area provides information as to where residents of the area will typically travel to and from during the weekday peak periods.

Distribution patterns used in the assignment of new Block 7 site traffic are based upon a review of information provided by the 2016 Transportation for Tomorrow Survey (TTS) and are consistent with those adopted in BA Group's studies undertaken as part of the prior Rezoning / Official Plan Amendment approvals process for the "West of Provost lands". The directional distribution developed for the residential site traffic, taking into account area turning restrictions, is shown in **Table 16**.

TABLE 16 RESIDENTIAL SITE TRAFFIC DISTRIBUTION

To / From	Inbound	Outbound
Sheppard Avenue East (West)	15%	10%
HWY 401 Leslie Street (West)	25%	25%
Sheppard Avenue East (East)	10%	5%
HWY 401 Leslie Street (East)	35%	40%
Leslie Street (North)	5%	10%
Leslie Street (South)	10%	10%
Total	100%	100%

Notes:

1. Based on 2016 TTS data for home-based trips to/from 2006 TTS zones 463-465 during the typical weekday morning and afternoon peak hour periods.

The residential site traffic assigned to the area road network for the weekday morning and afternoon peak hours is shown in **Figure 8**.

RETAIL USES

As previously discussed, given the size and ancillary nature of the proposed retail, it is expected to primarily serve the residents internal and external to the site and transit patrons using the TTC Stations or walking to the site.

In this regard, the majority of travel to/from the retail is expected to be pass-by walking trips, with minimal new vehicular trips generated.

The trip distribution pattern for the retail component of the site was established based upon a review of area traffic patterns during the weekday morning and afternoon peak hour periods. The proposed directional distribution of site related traffic considers the orientation and configuration of the area street system, local access characteristics and movements restrictions.

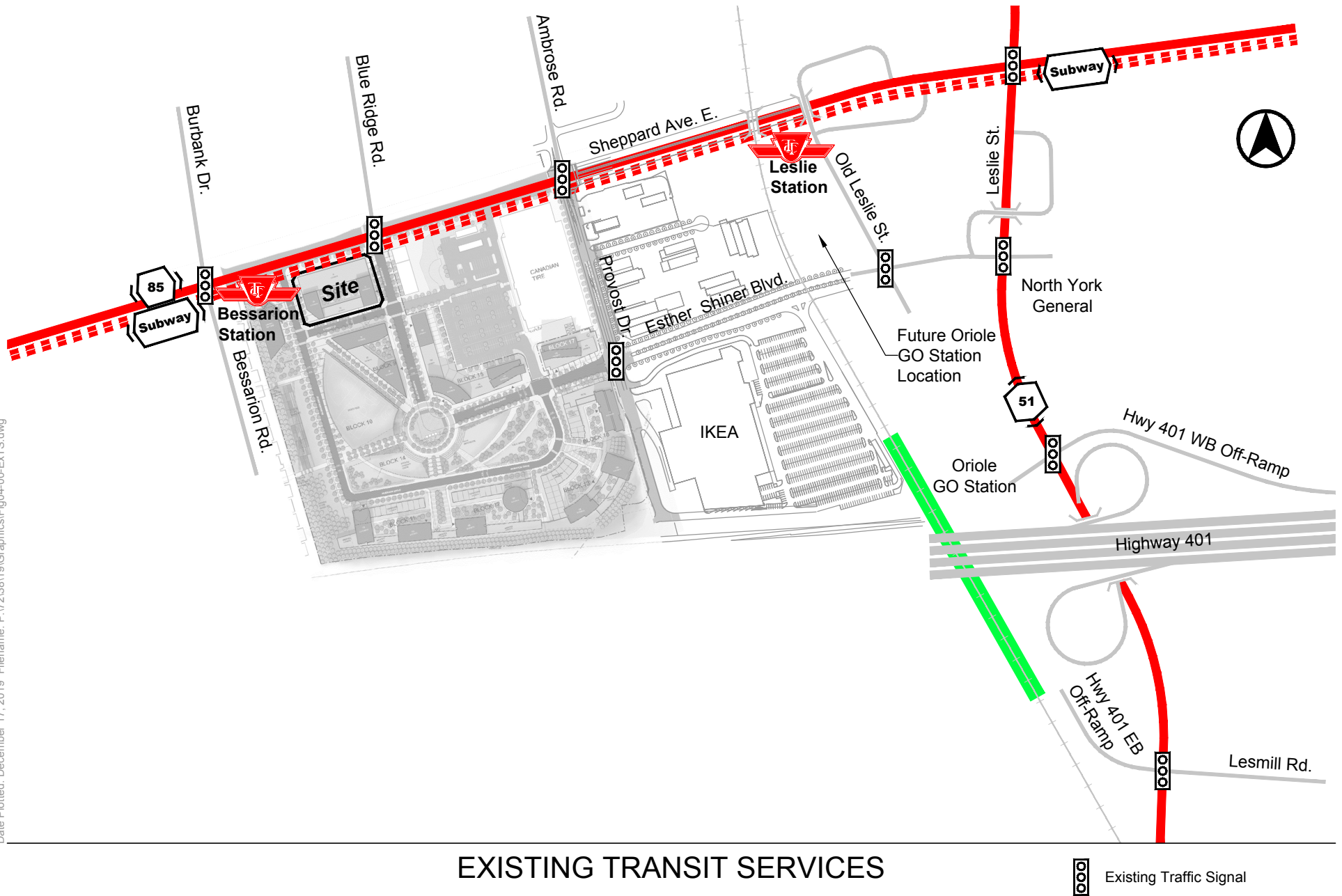
The retail (pass-by) site traffic assigned to the area road network for the weekday morning and afternoon peak hours is shown in **Figure 9**.

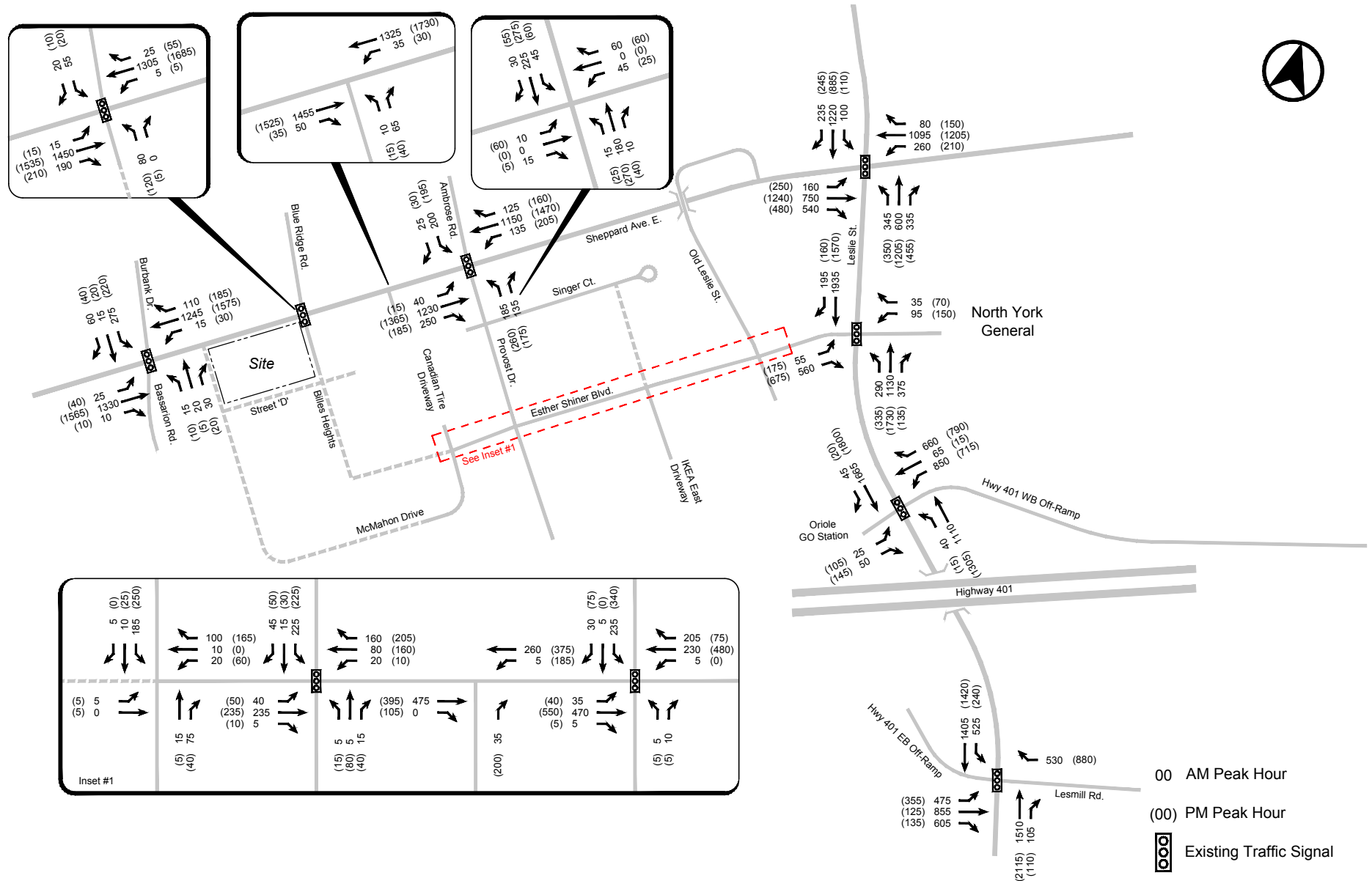
The assignment of the Block 7 site generated traffic activity for the weekday morning and afternoon peak hours is shown in **Figure 10**.

H.5 FUTURE TOTAL TRAFFIC VOLUMES

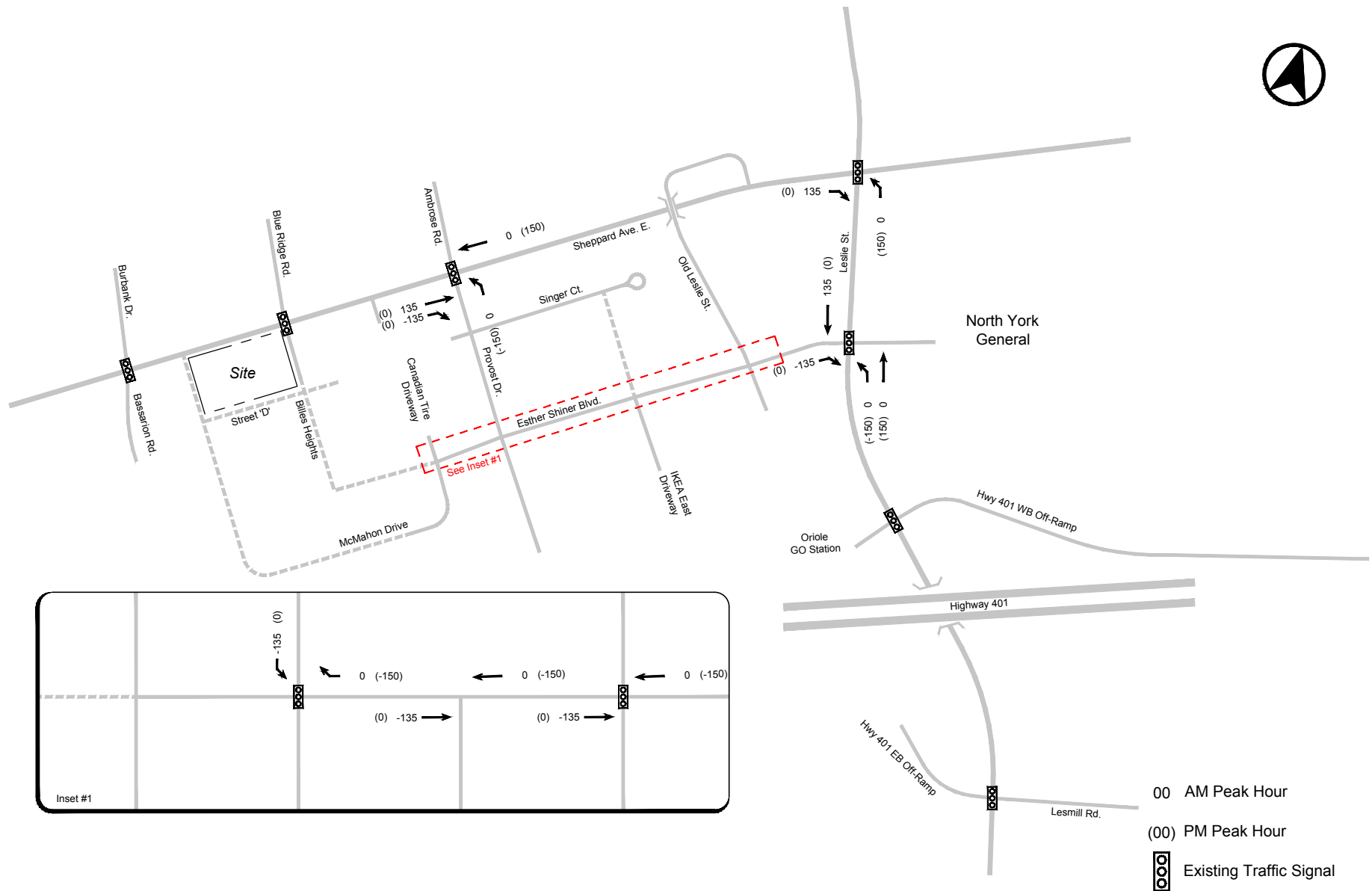
Future total weekday morning and afternoon street peak hour traffic volume forecasts incorporating future background traffic volumes (**Figure 7**) and site generated traffic activity related to the proposed development (**Figure 10**) is shown in **Figure 11**.

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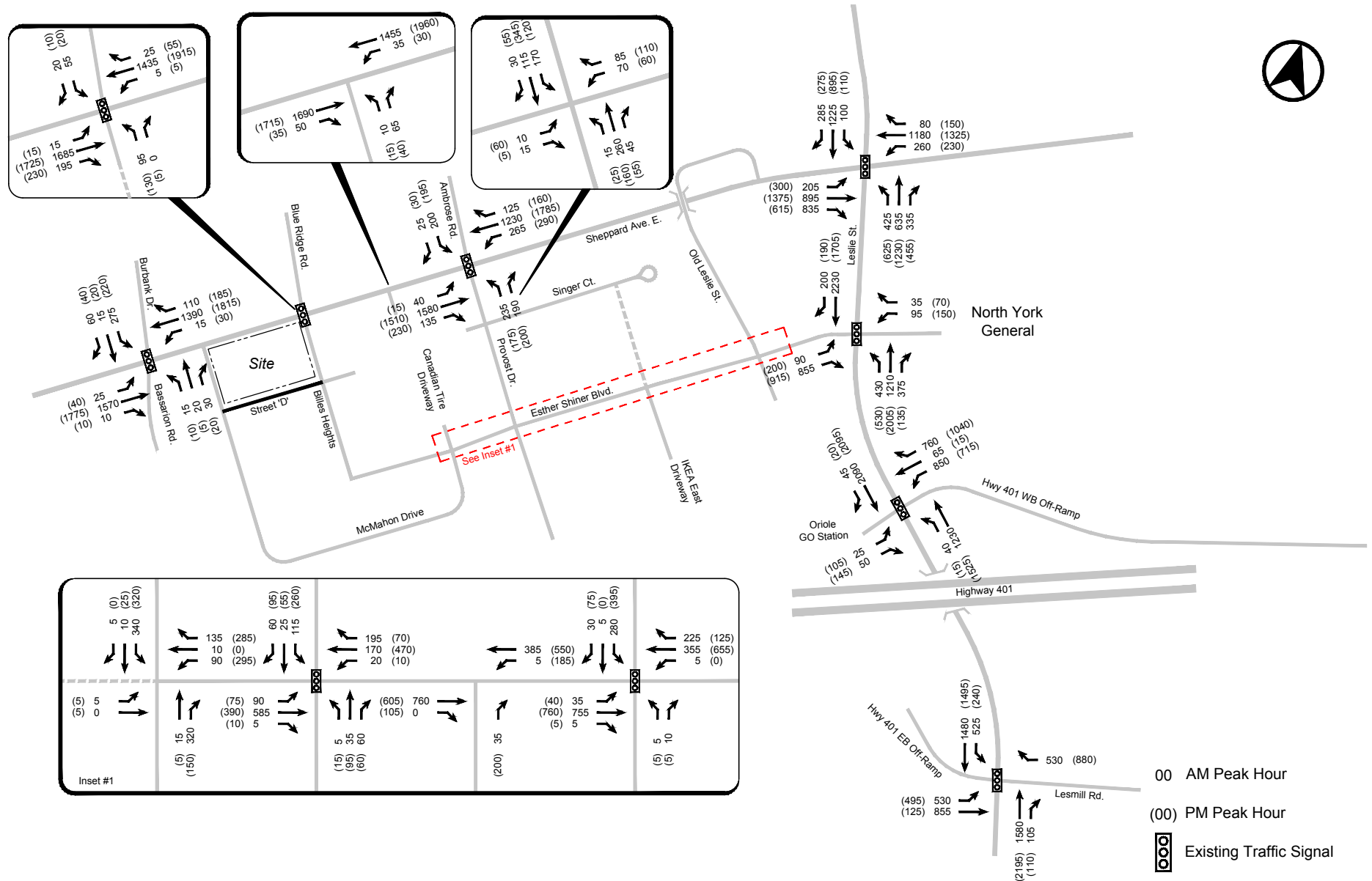




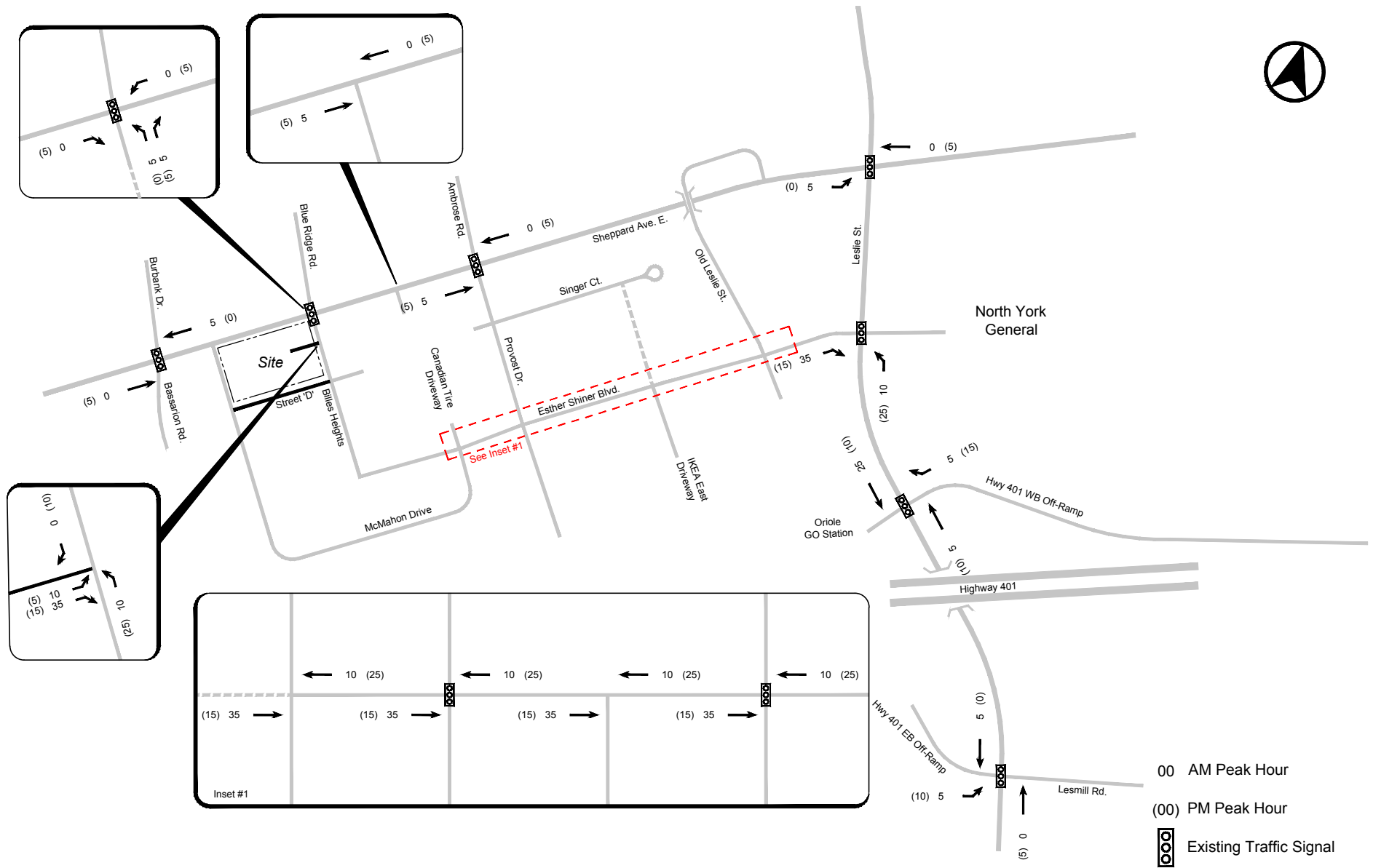
EXISTING TRAFFIC VOLUMES



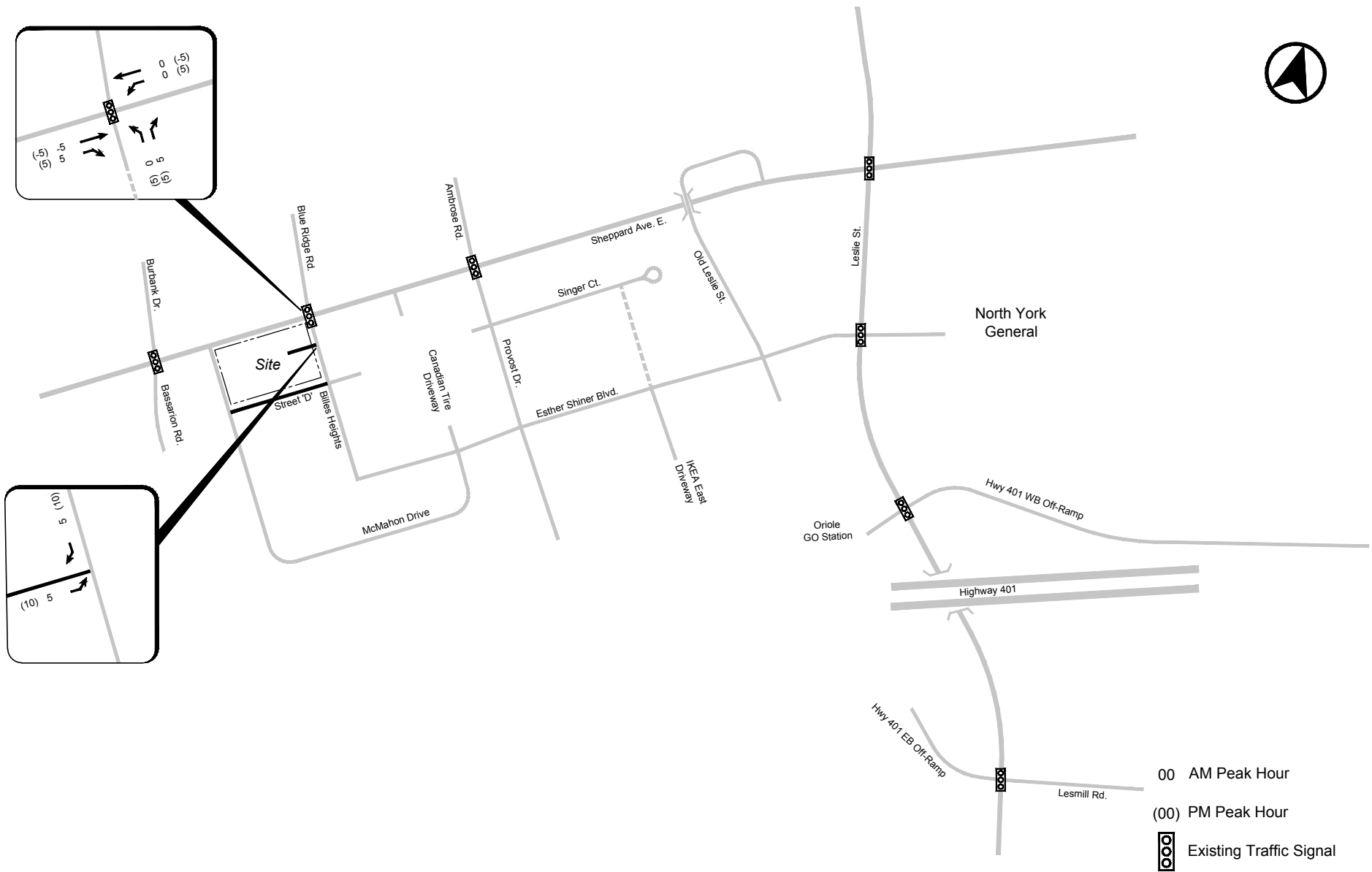
REDISTRIBUTION OF EXISTING TRAFFIC VOLUMES



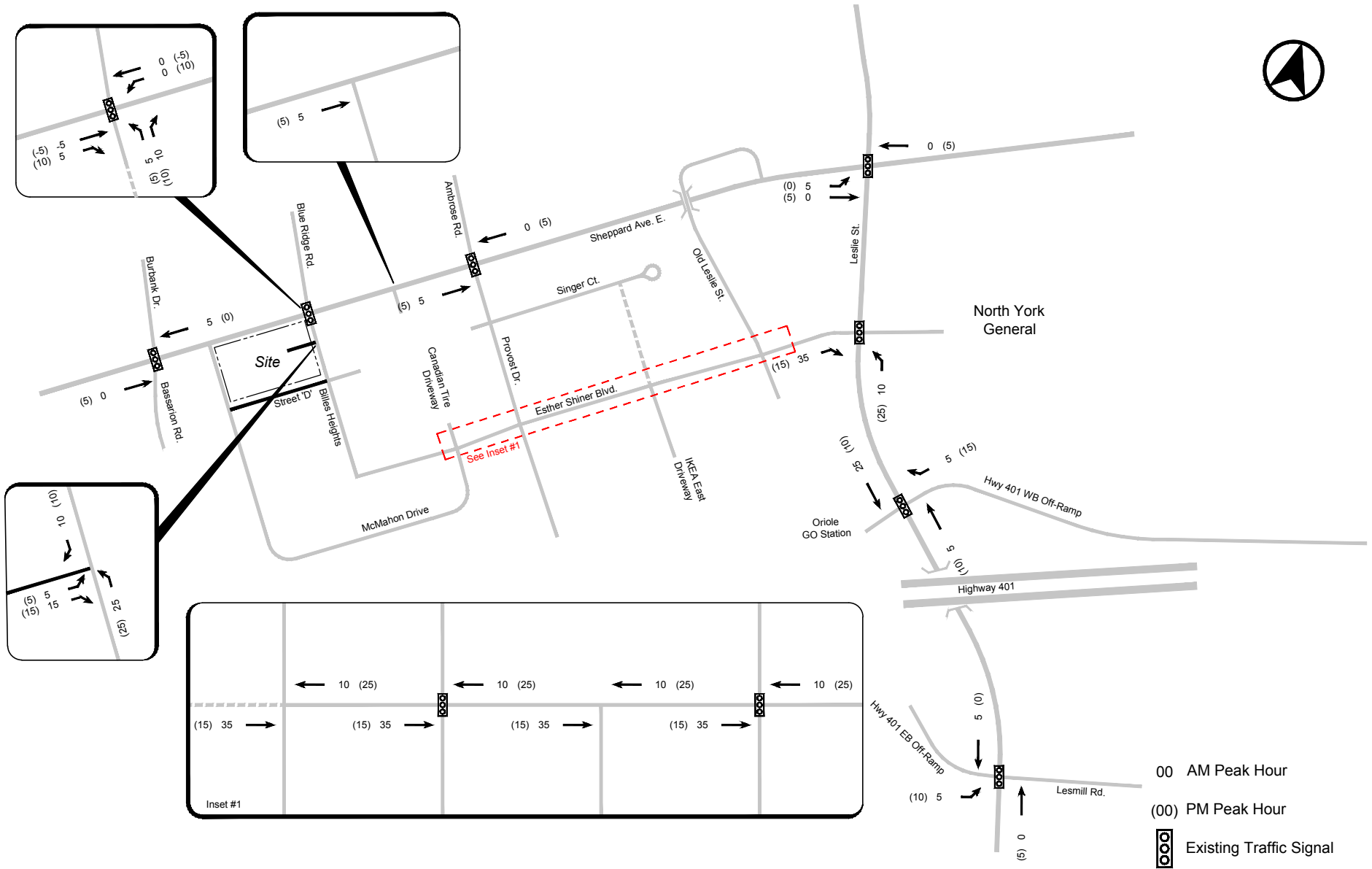
FUTURE BACKGROUND TRAFFIC VOLUMES



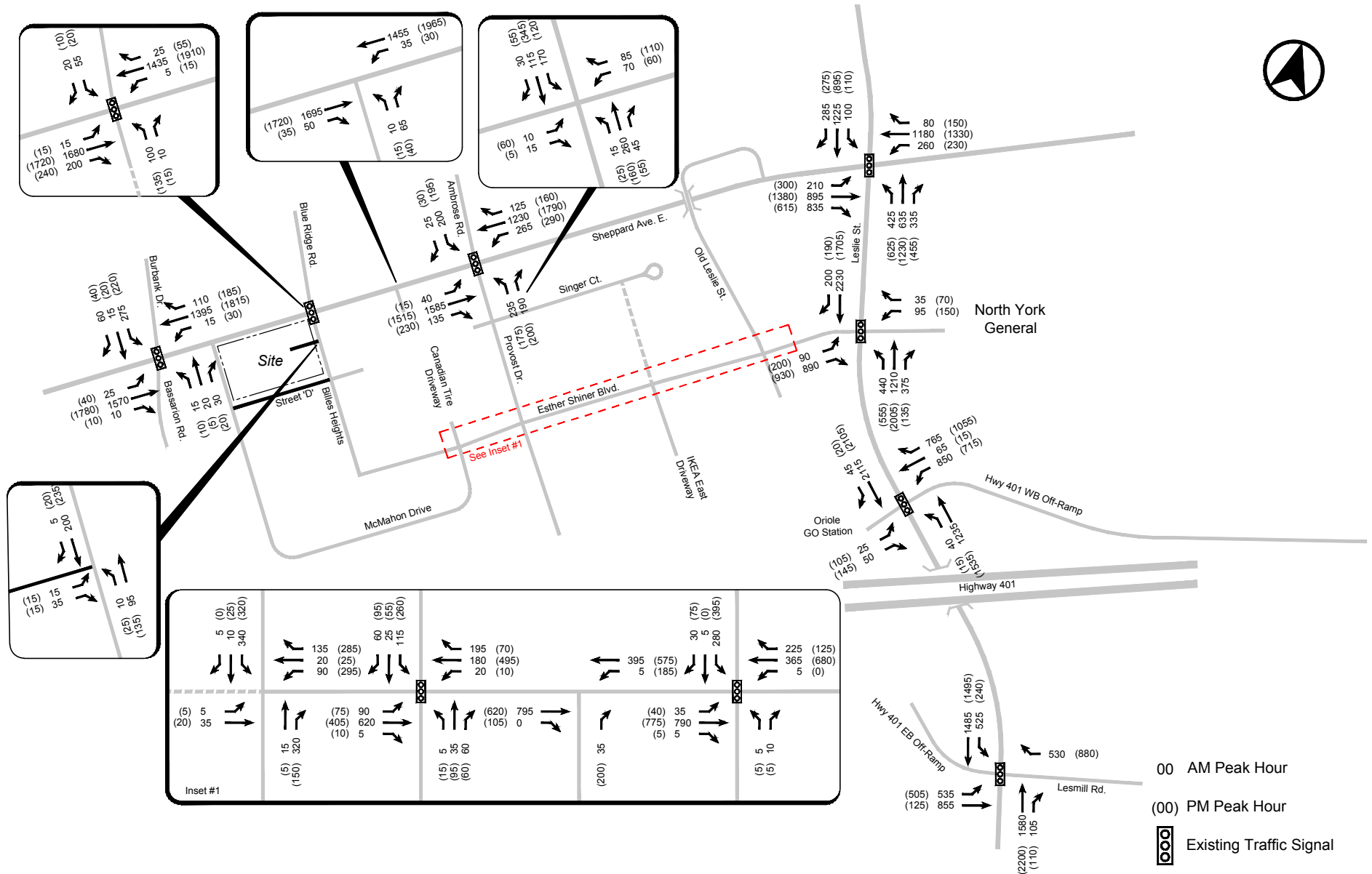
RESIDENTIAL SITE TRAFFIC VOLUMES



RETAIL "PASS-BY" SITE TRAFFIC VOLUMES



TOTAL SITE TRAFFIC VOLUMES



FUTURE TOTAL TRAFFIC VOLUMES

I TRAFFIC OPERATIONS

I.1 ANALYSIS METHODOLOGY AND ASSUMPTIONS

Key parameters and assumptions adopted in the assessment of operational characteristics of the area interim road network following development of Block 7 are outlined in the following sections and are consistent with the previously submitted application prepared by BA Group in support of the neighbouring sites, Blocks 11, 12, 13 and 15.

I.1.1 Intersection Capacity Analysis Methodology

Traffic operations analyses have been completed using the Synchro 10 (Version 10.3) capacity analysis software in accordance with the methodologies outlined in the *Highway Capacity Manual* (HCM) and the *City of Toronto's Guidelines for Using Synchro 9 (including SimTraffic 9)*, March 2016. The HCM 2000 methodology has been utilized in these analyses.

The key performance indicated of signalized intersection evaluation is an intersection performance index (volume to capacity ratio, or v/c), where a v/c index of 1.00 indicates 'at or near capacity' conditions.

The key performance indicator of the unsignalized intersection / driveway analyses is an average delay per vehicle (in seconds) and level of service (LOS) designation, where the LOS A (little delay) to LOS F (extended delay) range provides an understanding of the relative time a motorist may have to wait to complete a turn at an intersection or driveway.

I.1.2 Base Saturation Flow Rates

A base saturation flow rate of 1,900 passenger cars per hour of green time per lane (pcphgpl) has been adopted as the base assumption within all Synchro analysis detailed in this study.

I.1.3 Heavy Vehicle Assumptions

Heavy and medium truck percentages incorporated into the analyses were based upon information obtained from observations made during existing intersection turning movement counts.

The relative proportion of heavy vehicles within the general traffic stream was used as the basis for the heavy vehicle adjustment factor inputs adopted within the Synchro analysis for both existing and future scenarios.

I.1.4 Lost Time Adjustments

The City of Toronto Synchro 9 guidelines specify a base lost time adjustment factor of -1.0 seconds (i.e. a total loss time per phase equal to the amber plus all-red time minus 1 second). This default value was adopted in the analysis, unless otherwise specified in **Section I.1.8**.

I.1.5 Road Network

The existing road network configuration was assumed for this analysis and is consistent across all future scenarios. For the future scenarios, it was assumed that the planned road network as part of the development of the “West of Provost Land” would be fully constructed and operational prior to the development of Block 15.

The existing and future road network intersection lane configurations are shown in **Figure 2**.

I.1.6 Signal Timings

Existing signal timings, phasing plans, and cycle lengths were obtained from the City of Toronto. These parameters were adopted for the analysis of existing conditions at all intersections and have been optimized where necessary under future conditions.

Existing signal timing plans have been provided in **Attachment E**.

I.1.7 Peak Hour Factors

The City of Toronto *Guidelines for using Synchro 9 (including SimTraffic 9)*, dated March 18, 2016, specifies that default peak hour factors should be used except where site specific values can be calculated from existing traffic count information. These guidelines specify that a default peak hour factor of 0.90 should be used for through and left turn movements during the morning peak hour; and 0.95 for the through movements and 0.90 for the left turn movements during the afternoon peak hour.

The City of Toronto default values were used in the analysis of the proposed site driveway. At other area intersections, peak hour factors were calculated based on the existing traffic volume data extracted from the traffic counts utilized in this study for the operations analysis. The calculated peak hour factors are summarized in **Table 17**.

TABLE 17 SUMMARY OF CALCULATED PEAK HOUR FACTORS

Intersections	Morning Peak Hour	Afternoon Peak Hour
Signalized Intersections		
Leslie Street / Sheppard Avenue East	0.97	0.99
Leslie Street / Esther Shiner Boulevard	0.95	0.96
Sheppard Avenue East / Provost Drive & Ambrose Road	0.90	0.99
Sheppard Avenue East / Blue Ridge Road	0.90	0.95
Sheppard Avenue East / Burbank Drive & Bessarion Road	0.90	0.98
Esther Shiner Boulevard / Old Leslie Street	0.96	0.96
Leslie Street / Lesmill Road & Highway 401 EB of Ramps	0.96	0.99
Leslie Street / Oriole GO Station & Highway 401 WB of Ramps	0.96	0.96
Provost Drive / Esther Shiner Boulevard	0.92	0.98
Continued on Next Page		

Intersections	Morning Peak Hour	Afternoon Peak Hour
Unsignalized Intersections		
Provost Drive / Singer Court	0.92	0.94
Esther Shiner Boulevard / McMahon Drive	0.91	0.94
Esther Shiner Boulevard / IKEA Driveway	0.94	0.94
Sheppard Avenue East / CTC Mall Access	0.95	0.98

I.1.8 Calibration of Existing Movements

Where necessary, default base analysis inputs (i.e. lane utilization, protected turning lane factors and peak hour factors) were calibrated / adjusted in order that the traffic operations analyses of existing conditions appropriately reflect actual operating conditions. The calibrations of existing conditions analyses, where required, was undertaken to provide capacity / vehicle (v/c) ratios of no more than 1.0 under existing conditions under existing signal timings.

Key in this regard is that overserved hourly traffic volumes adopted in the analyses of existing conditions were, in fact, processed by the area intersections under existing signal timings. Turning movement capacity levels have to be, given this, at least equivalent to (if not nor than) the existing observed traffic volumes on each movement in order for such volumes to be *processed* through an intersection (i.e. a v/c ratio of 1.0 or less).

The calibrations assumptions that have been assumed as part of this study are listed below.

Sheppard Avenue East / Leslie Street

Weekday morning peak hour period

- eastbound left movement
 - o lost time adjusted from -1.0 to -2.0; and
 - o left turn factor (protected) adjusted from 0.95 to 1.0.
- eastbound right movement
 - o lost time adjusted from -1.0 to -3.0; and
 - o saturated flow rate (RTOR) adjusted from 65 to 290.
- westbound left movement
 - o lost time adjusted from -1.0 to -3.0; and
 - o left turn factor (protected) adjusted from 0.95 to 1.0.
- northbound left movement
 - o lost time adjusted from -1.0 to -3.0; and
 - o left turn factor (protected) adjusted from 0.95 to 1.0.
- northbound right movement
 - o saturated flow rate (RTOR) adjusted from 230 to 215.

Weekday afternoon peak hour period

- eastbound left movement
 - o lost time adjusted from -1.0 to -3.0; and
 - o left turn factor (protected) adjusted from 0.95 to 1.0.

- eastbound right movement
 - o lost time adjusted from -1.0 to -3.0; and
 - o saturated flow rate (RTOR) adjusted from 62 to 237.
- westbound left movement
 - o lost time adjusted from -1.0 to -2.0; and
 - o left turn factor (protected) adjusted from 0.95 to 1.0.
- northbound left movement
 - o lost time adjusted from -1.0 to -3.0; and
 - o left turn factor (protected) adjusted from 0.95 to 1.0.
- northbound right movement
 - o saturated flow rate (RTOR) adjusted from 273 to 183.
- southbound left movement
 - o lost time adjusted from -1.0 to -2.0.

Leslie Street / Esther Shiner Boulevard

Weekday morning peak hour period

- eastbound right movement
 - o saturated flow rate (RTOR) adjusted from 24 to 198.
- northbound left movement
 - o lost time adjusted from -1.0 to -2.0; and
 - o left turn factor (protected) adjusted from 0.95 to 1.0.

Weekday afternoon peak hour period

- eastbound right movement
 - o saturated flow rate (RTOR) adjusted from 26 to 217.
- northbound left movement
 - o lost time adjusted from -1.0 to -2.0; and
 - o left turn factor (protected) adjusted from 0.95 to 1.0.

Leslie Street / Oriole GO Station & Highway 401 Westbound Off-Ramp

Weekday morning peak hour period

- westbound left movement
 - o left turn factor (protected) adjusted from 0.95 to 1.0.
- northbound through movement
 - o lane utilization factor adjusted from 0.95 to 0.97.
- southbound through movement
 - o lane utilization factor adjusted from 0.91 to 0.95.

Weekday afternoon peak hour period

- westbound left movement
 - o left turn factor (protected) adjusted from 0.95 to 1.0.

Leslie Street / Lesmill Road & Highway 401 Eastbound Off-Ramp

Weekday morning peak hour period

- eastbound left movement
 - o left turn factor (protected) adjusted from 0.95 to 1.0.
- southbound left movement
 - o left turn factor (protected) adjusted from 0.95 to 1.0;
 - o peak hour factor adjusted from 0.96 to 1.00; and
 - o lost time adjusted from -1.0 to -3.0.

Weekday afternoon peak hour period

- eastbound left movement
 - o left turn factor (protected) adjusted from 0.95 to 1.0.
- southbound left movement
 - o left turn factor (protected) adjusted from 0.95 to 1.0; and
 - o lost time adjusted from -1.0 to -3.0.

It should be noted that calibration adjustments were applied under existing conditions (existing traffic and signal timing plans) and were carried forward under future conditions. The field studies are provided in **Attachment F**.

I.2 STUDY AREA

Traffic operations and impacts related to new traffic volumes have been reviewed at the following area intersections:

Signalized Intersections

- Leslie Street / Sheppard Avenue East;
- Leslie Street / Esther Shiner Boulevard;
- Sheppard Avenue East / Provost Drive & Ambrose Road;
- Sheppard Avenue East / Blue Ridge Road;
- Esther Shiner Boulevard / Provost Drive;
- Esther Shiner Boulevard / Old Leslie Street;
- Leslie Street / Lesmill Road & Highway 401 Eastbound Off-Ramp; and
- Leslie Street / Oriole GO Station & Highway 401 Westbound Off-Ramp.

Unsignalized Intersections

- Esther Shiner Boulevard / McMahon Drive & Canadian Tire Driveway;
- Provost Drive / Singer Court;
- Sheppard Avenue East / Canadian Tire Driveway; and
- Esther Shiner Boulevard / IKEA Driveway.

I.3 TRAFFIC ANALYSIS RESULTS

The traffic operations analysis results for the area signalized and unsignalized intersections are discussed below. The Synchro reports are provided in **Attachment G**.

I.3.1 Signalized Intersections

The traffic operations analysis results for the area signalized intersections are discussed below, summarized in **Table 18** and **Table 19**.

EXISTING AREA TRAFFIC OPERATIONS OF INTERSECTIONS

Currently, the area road network in the vicinity of the site, namely the Sheppard Avenue East and Leslie Street corridors, carry high volumes of traffic, typical to roads classified as Major Arterials. Traffic conditions along these corridors, particularly at the Leslie Street / Sheppard Avenue East and the Leslie Street / Esther Shiner Boulevard intersections generally operate at acceptable, but under busy during the weekday morning and afternoon peak hours.

Vehicle queueing on Leslie Street corridor are observed in the southbound direction during the weekday morning peak period and in the northbound direction during the weekday afternoon peak period. This is reflective of general commuter patterns traveling in and out of the southern portion of the City during weekdays.

On Sheppard Avenue East, the eastbound and southbound left movements are at Leslie Street are heavy during the weekday peak periods. These volumes comprise in a large number of motorists heading south to Highway 401 or travel further south into the City during the weekday morning peak hour and heading northbound during the weekday afternoon peak hour. Consequently, the eastbound and westbound left vehicle queueing may extend occasionally beyond the available storage.

Notwithstanding that, only a portion of the Concord Park Place lands have been constructed to date, there are a large number of vehicles making on eastbound right turn at the intersection of Leslie Street / Esther Shiner Boulevard during the weekday morning and afternoon peak hours heading south to Highway 401 or travel further south to the southern portions of the City. These high volumes are likely a result of motorist using Esther Shiner Boulevard as a cut-through to avoid the Sheppard Avenue East / Leslie Street intersection. Consequently, the eastbound right turn vehicles at the Esther Shiner Boulevard / Leslie Street intersection may experience occasional levels of delay during the morning and afternoon peak periods.

Leslie Street / Sheppard Avenue East

From an intersection traffic capacity perspective, at the key intersection of Leslie Street / Sheppard Avenue East, under existing conditions, this intersection operates at busy, yet acceptably during the weekday morning and afternoon peak hours with an overall volume to capacity (v/c) ratio of 0.85 and 0.92, respectively. In the afternoon peak hour, the eastbound and southbound left movements are approaching capacity with an individual v/c ratio of 0.97 and 1.00, respectively.

Leslie Street / Lesmill Road & Hwy 401 EB Off-Ramp

Under existing conditions the Leslie Street / Lesmill Road & Hwy 401 EB Off-Ramp signalized intersection operates under busy, yet acceptably during the weekday morning and afternoon peak hours with an overall volume to capacity (v/c) ratio of 0.93 and 0.73, respectively. In the morning peak hour, the southbound left movement is at capacity with an individual v/c ratio of 1.00.

All Other Signalized Intersections

All other intersections operate acceptably during the weekday morning and afternoon peak hours with an overall v/c ratio of 0.85 and 0.86 or better during the weekday morning and afternoon peak hours, respectively.

FUTURE AREA TRAFFIC OPERATIONS OF INTERSECTIONS

As summarized in **Table 18**, if allowances are made for background traffic growth associated with local land developments that are currently in the planning and construction stages, the Leslie Street / Sheppard Avenue East and the Leslie Street / Esther Shiner Boulevard intersections will begin to operate above the theoretical capacity. This condition occurs regardless of any development on the Block 7 site. All other intersections within the study area will continue to operate below capacity at v/c ratios of 0.93 or better during the weekday morning and afternoon peak hours.

The addition of traffic anticipated to be generated by the proposed Block 7 redevelopment will only further intensify the over capacity condition. It is noted, however, a characteristic of the HCM methodology (utilized in this analysis) is an exaggeration of incremental capacity impacts associated with traffic volumes increases in above capacity conditions. Essentially, the v/c ratio increases resulting from fixed traffic volume growth, and the v/c ratio increases exponentially once it surpasses a v/c ratio of 1.0.

Notwithstanding the above, based upon an analysis of the population growth, traffic growth over the past 15 years along the Sheppard Avenue East and Leslie Street corridors and the changing area travel mode characteristics in the area over the past 10 years, it is fully anticipated that the traffic volumes analyzed under the future background traffic scenario will never actually be realized.

An analysis of census tract data reveals that population within a 2-kilometre radius of Block 7 has increased by over 10,000 people since 2016, while traffic volumes at the intersection of Leslie Street / Sheppard Avenue East have remained relatively stable, as summarized in the data presented in Attachment VI. At the existing area apartment unit occupancy of approximately 2 persons per unit, this represents an increase in the order of 5,000 residential units in the last 5 years.

If traffic associated with this amount of development was forecast using current residential vehicular traffic trip generation rates, a gross increase in two-way vehicle trips of approximately 1,000 to 1,100 would be expected – a proportion of which would travel through the Leslie Street / Sheppard Avenue East intersection. However, as previously noted, an analysis of historical traffic volumes at the intersection indicates that these volume increases were never realized.

This indicates that there has been a change in area travel patterns in recent years, likely attributed to:

- a shift to other modes of travel (i.e. transit);
- vehicular travel outside of the peak periods; or
- alternate vehicle travel routes.

Based on Transportation Tomorrow Survey data, the area transit travel modes split has increased from 30-35% to 40-45% over the last 10 years. This travel mode shift is consistent with the relatively stable traffic volumes observed at the Leslie Street / Sheppard Avenue East intersection, despite the significant residential development that has occurred in the area in recent years.

Based on the foregoing, it is reasonable to assume that the trend of decreasing personal automobile use during the peak travel periods in favour of transit use will continue into the future. Understanding that it is not realistic for intersections to operate over capacity, an additional scenario was analyzed that considered the removal of vehicles from the network in order to maintain the intersections along the Leslie Street and Sheppard Avenue East corridors at capacity (i.e. v/c ratio of 1.00). The vehicles removed from the network represent the changes in area travel patterns due to the attributes as previously discussed.

Figure 12 illustrates the number of vehicles required to be removed from area network, in order to maintain stable capacity at the signalized intersections along the Leslie Street and Sheppard Avenue East corridors during the weekday morning and afternoon peak hours.

As part of the sensitivity analysis conducted, the capacity analysis results are summarized at the key signalized intersections in **Table 19**. A summary of the key intersections under future conditions is provided below.

Leslie Street / Sheppard Avenue East

Baseline Conditions

Under future background conditions, the intersection operates at a busy level of service during the weekday morning and afternoon peak hours with an overall v/c ratio of 1.04 and 0.97, respectively. In the morning peak hour, the eastbound right and westbound left movements are critical movements that are above (v/c ratio of 1.03) and approaching capacity (i.e. v/c ratio of 0.99), respectively. In the afternoon peak hour, the eastbound left movement is above capacity with an individual v/c ratio of 1.13.

Under future total conditions, with added site traffic activity, the intersection operates at a busy level of service during the weekday morning and afternoon peak hours with an overall v/c ratio of 1.04 and 0.97, respectively. In the morning peak hour, the eastbound right movement is above capacity with an individual v/c ratio of 1.03 and in the afternoon peak hour, the eastbound left movement is above capacity with an individual v/c ratio of 1.13.

Sensitivity Analysis Condition

Under future background, sensitivity conditions, the intersection operates at a busy but at acceptable levels of service during the weekday morning and afternoon peak hours with an overall v/c ratio of 0.95 and 0.93, respectively.

Under future total conditions, sensitivity conditions, with added site traffic activity, the intersection will continue operate at a busy but at acceptable levels of service during the weekday morning and afternoon peak hours with an overall v/c ratio of 0.95 and 0.94, respectively. It is noteworthy that the overall intersection experiences a 4% increase or less over future background conditions.

Leslie Street / Esther Shiner Boulevard

Baseline Conditions

Under future background conditions, the intersection operates at busy levels of service during the weekday morning and afternoon peak hours with an overall v/c ratio of 1.09 and 1.01, respectively. In the morning peak hour, the northbound left and southbound through movements are above capacity with an individual v/c ratio of 1.01 and 1.13, respectively. In the afternoon peak hour, the northbound left movement is a critical movement operating above capacity with an individual v/c ratio of 1.02.

Under future total conditions, with added site traffic activity, the intersection operates at busy levels of service during the weekday morning and afternoon peak hours with an overall v/c ratio of 1.11 and 1.03, respectively. In the morning peak hour, the northbound left and southbound through movements are above capacity with an individual v/c ratio of 1.04 and 1.13, respectively. In the afternoon peak hour, the northbound left movement is a critical movement operating above capacity with an individual v/c ratio of 1.07. Note that the overall intersection experiences a 3% increase or less over future background conditions.

Signal timings have been optimized under future scenarios and the existing cycle length has been increased from 125 seconds to 140 seconds in the afternoon peak hour, in order to maintain coordination along Leslie Street with adjacent signalized intersections.

Sensitivity Analysis Condition

Under future background, sensitivity conditions, the intersection operates at a busy but at acceptable levels of service during the weekday morning and afternoon peak hours with an overall v/c ratio of 1.03 and 0.98, respectively. Note that the overall v/c is above theoretical capacity, but all individual movements operate below theoretical capacity.

Under future total conditions, sensitivity conditions, with added site traffic activity, the intersection will continue operate at a busy but at acceptable levels of service during the weekday morning and afternoon peak hours with an overall v/c ratio of 1.06 and 1.00, respectively. It is noteworthy that the overall intersection experiences a 3% increase or less over future background conditions. Note that the overall v/c is above theoretical capacity, but all individual movements operate below theoretical capacity.

Leslie Street / Oriole GO Station & Hwy 401 WB Off-Ramp

Baseline Conditions

Under future background conditions, the intersection operates at busy, yet acceptably during the weekday morning and afternoon peak hours with an overall v/c ratio of 0.80 and 0.94, respectively. In the morning peak hour, the westbound left movement is approaching capacity with an individual v/c ratio of 0.95. In the afternoon peak hour, the westbound right and northbound through movements are critical movements approaching capacity with an individual v/c ratio of 0.96 and 0.97, respectively.

Under future total conditions, with added site traffic activity, the intersection operates at busy, yet acceptably during the weekday morning and afternoon peak hours with an overall v/c ratio of 0.81 and 0.95, respectively. In the morning peak hour, the westbound left movement is approaching capacity with an individual v/c ratio of 0.95. In the afternoon peak hour, the westbound right and northbound through movements are critical movements approaching capacity with an individual v/c ratio of 0.98. Note that the overall intersection experiences a 2% increase or less over future background conditions.

Signal timings have been optimized under future scenarios and the existing cycle length has been increased from 125 seconds to 140 seconds in the afternoon peak hour, in order to maintain coordination along Leslie Street with adjacent signalized intersections.

Sensitivity Analysis Condition

Under future background, sensitivity conditions, the intersection operates at a busy but at acceptable levels of service during the weekday morning and afternoon peak hours with an overall v/c ratio of 0.77 and 0.94, respectively.

Under future total conditions, sensitivity conditions, with added site traffic activity, the intersection will continue operate at a busy but at acceptable levels of service during the weekday morning and afternoon peak hours with an overall v/c ratio of 0.77 and 0.95, respectively. It is noteworthy that the overall intersection experiences a 2% increase or less over future background conditions.

Leslie Street / Lesmill Road & Hwy 401 EB Off-Ramp

Baseline Conditions

Under future background conditions, the intersection operates at busy, yet acceptably during the weekday morning and afternoon peak hours with an overall v/c ratio of 0.94 and 0.75, respectively. In the morning peak hour, the eastbound left and southbound left movements are approaching capacity with an individual v/c ratio of 0.96 and 1.00, respectively.

Under future total conditions, with added site traffic activity, the intersection operates at busy, yet acceptably during the weekday morning and afternoon peak hours with an overall v/c ratio of 0.93 and 0.75, respectively. In the morning peak hour, the southbound left movement is at capacity with an individual v/c ratio of 1.00. Note that the overall intersection experiences a minor 1% increase or less over future background conditions.

Signal timings have been optimized under future scenarios and the existing cycle length has been increased from 125 seconds to 140 seconds in the afternoon peak hour, in order to maintain coordination along Leslie Street with adjacent signalized intersections.

Sensitivity Analysis Condition

Under future background, sensitivity conditions, the intersection operates at a busy but at acceptable levels of service during the weekday morning and afternoon peak hours with an overall v/c ratio of 0.96 and 0.75, respectively.

Under future total conditions, sensitivity conditions, with added site traffic activity, the intersection will continue operate at a busy but at acceptable levels of service during the weekday morning and afternoon peak hours with an overall v/c ratio of 0.96 and 0.75, respectively. It is noteworthy that the overall intersection experiences a 1% increase or less over future background conditions.

Sheppard Avenue East / Provost Drive & Ambrose Road

Baseline Condition

Under future background conditions, the intersection operates acceptably during the weekday morning and afternoon peak hours with an overall v/c ratio of 0.90 and 0.84, respectively. In the morning peak hour, the eastbound through and westbound left movements are above capacity with an individual v/c ratio of 1.01 and 1.04, respectively. In the afternoon peak hour, the westbound left movement is at capacity with an individual v/c ratio of 1.00.

Under future total conditions, with added site traffic activity, the intersection operates at a busy level of service during the weekday morning and afternoon peak hours with an overall v/c ratio of 0.90 and 0.84, respectively. In the morning peak hour, the eastbound through and westbound left movements are above capacity with an individual v/c ratio of 1.02 and 1.04, respectively. In the afternoon peak hour, the westbound left movement is at capacity with an individual v/c ratio of 1.00.

Sensitivity Analysis Condition

Under future background, sensitivity conditions, the intersection operates at a busy but at acceptable levels of service during the weekday morning and afternoon peak hours with an overall v/c ratio of 0.88 and 0.82, respectively.

Under future total conditions, sensitivity conditions, with added site traffic activity, the intersection will continue operate at a busy but at acceptable levels of service during the weekday morning and afternoon peak hours with an overall v/c ratio of 0.88 and 0.82, respectively.

All Other Signalized Intersections

All other intersections operate acceptably during the weekday morning and afternoon peak hours with an overall v/c ratio of 0.82 and 0.81 or better during the weekday morning and afternoon peak hours, respectively.

Based on the foregoing, the traffic generated by the proposed development can be acceptably accommodated at all the area signalized intersections.

TABLE 18 SIGNALIZED INTERSECTIONS CAPACITY ANALYSIS RESULTS

Intersection / Key Movements	Existing		Future Background		Future Total		Future Background (No Change)		Future Total (No Change)	
	v/c	LOS	v/c	LOS	v/c	LOS	v/c	LOS	v/c	LOS
Leslie Street / Sheppard Avenue East										
EBL	0.81 (1.00)	D (F)	0.95 (1.13)	F (F)	0.97 (1.13)	F (F)	0.88 (1.03)	E (F)	0.97 (1.15)	F (F)
EBT	0.53 (0.86)	D (D)	0.59 (0.88)	D (D)	0.59 (0.89)	D (D)	0.58 (0.86)	D (D)	0.59 (0.88)	D (D)
EBR	0.68 (0.56)	C (C)	1.03 (0.69)	E (C)	1.03 (0.69)	E (C)	0.99 (0.64)	E (C)	1.03 (0.69)	E (C)
WBL	0.86 (0.89)	D (E)	0.99 (0.97)	F (F)	0.99 (0.97)	F (F)	0.98 (0.97)	F (F)	0.99 (0.97)	F (F)
WBTR	0.82 (0.97)	D (E)	0.89 (0.99)	D (E)	0.89 (1.00)	D (E)	0.86 (0.98)	D (E)	0.89 (0.99)	D (E)
NBL	0.77 (0.63)	D (E)	0.73 (0.98)	D (F)	0.73 (0.98)	D (F)	0.66 (0.96)	D (E)	0.73 (0.98)	D (F)
NBT	0.37 (0.68)	B (C)	0.37 (0.84)	B (D)	0.37 (0.84)	B (D)	0.37 (0.84)	B (D)	0.37 (0.84)	B (D)
NBR	0.36 (0.53)	C (C)	0.34 (0.64)	C (C)	0.34 (0.64)	C (C)	0.34 (0.64)	C (C)	0.34 (0.64)	C (C)
SBL	0.42 (0.97)	D (F)	0.46 (0.71)	D (D)	0.46 (0.71)	D (D)	0.46 (0.71)	D (D)	0.46 (0.71)	D (D)
SBTR	0.89 (0.72)	D (D)	1.00 (0.85)	E (D)	1.00 (0.85)	E (D)	0.97 (0.84)	E (D)	1.00 (0.85)	E (D)
Overall	0.85 (0.92)	D (D)	1.04 (0.97)	D (E)	1.04 (0.97)	D (E)	1.01 (0.95)	D (E)	1.04 (0.97)	D (E)

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Intersection / Key Movements	Existing		Future Background		Future Total		Future Background (No Change)		Future Total (No Change)	
	v/c	LOS	v/c	LOS	v/c	LOS	v/c	LOS	v/c	LOS
Leslie Street / Esther Shiner Boulevard										
EBL	0.16 (0.40)	D (D)	0.22 (0.44)	D (D)	0.22 (0.44)	D (D)	0.22 (0.43)	D (C)	0.22 (0.41)	D (C)
EBR	0.67 (0.75)	C (C)	0.93 (0.89)	D (C)	0.97 (0.91)	D (D)	0.94 (0.91)	D (C)	0.97 (0.91)	D (C)
WBL	0.24 (0.32)	D (C)	0.21 (0.31)	D (D)	0.21 (0.31)	D (D)	0.21 (0.30)	D (C)	0.21 (0.29)	D (C)
WBR	0.03 (0.07)	D (C)	0.02 (0.08)	C (D)	0.02 (0.08)	C (D)	0.02 (0.07)	C (C)	0.02 (0.06)	C (C)
NBL	0.83 (0.89)	D (D)	1.01 (1.02)	F (F)	1.04 (1.07)	F (F)	0.95 (1.16)	E (F)	1.04 (1.14)	F (F)
NBT	0.37 (0.58)	B (C)	0.39 (0.64)	C (B)	0.39 (0.64)	C (B)	0.38 (0.69)	C (B)	0.39 (0.67)	C (B)
NBR	0.29 (0.11)	F (C)	0.28 (0.10)	F (C)	0.28 (0.10)	F (C)	0.28 (0.11)	F (B)	0.28 (0.10)	F (B)
SBT	0.90 (0.80)	D (D)	1.13 (1.00)	F (D)	1.13 (1.00)	F (D)	1.11 (1.04)	F (E)	1.13 (1.02)	F (E)
SBR	0.14 (0.12)	E (C)	0.14 (0.13)	F (C)	0.14 (0.13)	F (C)	0.14 (0.14)	F (C)	0.14 (0.13)	F (C)
Overall	0.85 (0.84)	D (C)	1.09 (1.01)	E (D)	1.11 (1.03)	E (D)	1.08 (1.08)	E (D)	1.11 (1.07)	E (D)
Leslie Street / Oriole GO Station & Hwy 401 WB Off-Ramp										
EBL	0.36 (0.70)	E (E)	0.35 (0.77)	E (E)	0.36 (0.77)	E (E)	0.35 (0.76)	E (E)	0.35 (0.73)	E (E)
EBR	0.03 (0.10)	A (A)	0.03 (0.10)	A (A)	0.03 (0.10)	A (A)	0.03 (0.10)	A (A)	0.03 (0.10)	A (A)
WBL	0.92 (0.90)	E (E)	0.95 (0.82)	E (E)	0.95 (0.82)	E (E)	0.95 (0.92)	E (E)	0.95 (0.89)	E (E)
WBTR	0.61 (0.54)	D (D)	0.67 (0.92)	D (E)	0.68 (0.93)	D (F)	0.66 (0.95)	D (F)	0.67 (0.90)	D (E)
WBR	0.26 (0.57)	D (D)	0.30 (0.96)	D (F)	0.31 (0.98)	D (F)	0.28 (1.00)	D (F)	0.30 (0.94)	D (F)
NBL	0.67 (0.29)	E (C)	0.77 (0.30)	F (D)	0.77 (0.30)	F (D)	0.77 (0.29)	F (C)	0.77 (0.27)	F (C)
NBT	0.66 (0.88)	C (C)	0.68 (0.97)	C (D)	0.69 (0.98)	C (D)	0.66 (1.04)	C (E)	0.69 (1.00)	C (D)
SBTR	0.69 (0.85)	B (C)	0.79 (0.93)	B (C)	0.80 (0.94)	B (C)	0.79 (0.97)	B (C)	0.80 (0.95)	B (C)
Overall	0.74 (0.86)	C (D)	0.80 (0.94)	C (D)	0.81 (0.95)	C (D)	0.80 (0.97)	C (D)	0.81 (0.93)	C (D)
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Intersection / Key Movements	Existing		Future Background		Future Total		Future Background (No Change)		Future Total (No Change)	
	v/c	LOS	v/c	LOS	v/c	LOS	v/c	LOS	v/c	LOS
Leslie Street / Lesmill Road & Hwy 401 EB Off-Ramp										
EBL	0.96 (0.56)	E (D)	0.96 (0.70)	E (E)	0.96 (0.71)	E (E)	0.96 (0.65)	E (D)	0.96 (0.66)	E (D)
EBLT	0.91 (0.47)	E (D)	0.90 (0.52)	E (D)	0.91 (0.52)	E (D)	0.91 (0.62)	E (D)	0.91 (0.49)	E (D)
WBR	0.37 (0.59)	A (A)	0.35 (0.58)	A (A)	0.35 (0.58)	A (A)	0.35 (0.59)	A (A)	0.35 (0.58)	A (A)
NBT	0.89 (0.75)	D (C)	0.90 (0.78)	D (C)	0.90 (0.79)	D (C)	0.88 (0.84)	D (C)	0.90 (0.83)	D (C)
NBR	0.14 (0.11)	C (B)	0.13 (0.11)	C (B)	0.13 (0.11)	C (B)	0.14 (0.11)	C (B)	0.13 (0.11)	C (B)
SBL	1.00 (0.73)	E (C)	1.00 (0.76)	E (D)	1.00 (0.77)	E (D)	0.99 (0.76)	E (C)	1.01 (0.74)	E (C)
SBT	0.68 (0.56)	B (B)	0.69 (0.59)	B (B)	0.69 (0.59)	B (B)	0.69 (0.62)	B (B)	0.69 (0.62)	B (B)
Overall	0.93 (0.73)	D (B)	0.94 (0.75)	D (C)	0.93 (0.75)	D (C)	0.92 (0.77)	D (C)	0.93 (0.76)	D (C)
Sheppard Avenue East / Provost Drive & Ambrose Road										
EBL	0.37 (0.20)	C (B)	0.30 (0.23)	B (C)	0.30 (0.23)	B (C)	-- (--)	-- (--)	-- (--)	-- (--)
EBT	0.82 (0.87)	C (C)	1.01 (0.99)	D (D)	1.02 (0.99)	D (D)	-- (--)	-- (--)	-- (--)	-- (--)
EBR	0.29 (0.21)	B (B)	0.13 (0.27)	B (B)	0.13 (0.27)	B (B)	-- (--)	-- (--)	-- (--)	-- (--)
WBL	0.71 (0.78)	C (D)	1.04 (1.00)	F (F)	1.04 (1.00)	F (F)	-- (--)	-- (--)	-- (--)	-- (--)
WBTR	0.70 (0.80)	B (C)	0.67 (0.94)	B (C)	0.67 (0.94)	B (C)	-- (--)	-- (--)	-- (--)	-- (--)
NBL	0.45 (0.56)	C (D)	0.52 (0.38)	C (C)	0.52 (0.38)	C (C)	-- (--)	-- (--)	-- (--)	-- (--)
NBR	0.24 (0.26)	C (C)	0.29 (0.30)	C (C)	0.29 (0.30)	C (C)	-- (--)	-- (--)	-- (--)	-- (--)
SBL	0.49 (0.43)	C (C)	0.44 (0.42)	C (C)	0.44 (0.42)	C (C)	-- (--)	-- (--)	-- (--)	-- (--)
SBR	0.02 (0.02)	C (C)	0.02 (0.02)	C (C)	0.02 (0.02)	C (C)	-- (--)	-- (--)	-- (--)	-- (--)
Overall	0.71 (0.77)	C (C)	0.90 (0.84)	D (D)	0.90 (0.84)	D (D)	-- (--)	-- (--)	-- (--)	-- (--)
Continued on Next Page...										

Intersection / Key Movements	Existing		Future Background		Future Total		Future Background (No Change)		Future Total (No Change)	
	v/c	LOS	v/c	LOS	v/c	LOS	v/c	LOS	v/c	LOS
Sheppard Avenue East / Blue Ridge Road										
EBL	0.09 (0.14)	A (A)	0.12 (0.23)	A (A)	0.12 (0.23)	A (A)	-- (--)	-- (--)	-- (--)	-- (--)
EBT	0.60 (0.61)	A (A)	0.71 (0.69)	A (A)	0.71 (0.69)	A (A)	-- (--)	-- (--)	-- (--)	-- (--)
EBR	0.19 (0.21)	A (A)	0.21 (0.23)	A (A)	0.21 (0.25)	A (A)	-- (--)	-- (--)	-- (--)	-- (--)
WBL	0.03 (0.03)	A (A)	0.05 (0.04)	A (A)	0.06 (0.23)	A (A)	-- (--)	-- (--)	-- (--)	-- (--)
WBTR	0.55 (0.69)	A (A)	0.62 (0.79)	A (A)	0.62 (0.79)	A (A)	-- (--)	-- (--)	-- (--)	-- (--)
NBL	0.43 (0.50)	D (D)	0.44 (0.52)	D (D)	0.46 (0.56)	D (D)	-- (--)	-- (--)	-- (--)	-- (--)
NBR	0.00 (0.00)	A (D)	0.00 (0.00)	A (D)	0.01 (0.02)	D (D)	-- (--)	-- (--)	-- (--)	-- (--)
SBL	0.30 (0.08)	D (D)	0.26 (0.08)	D (D)	0.25 (0.08)	D (D)	-- (--)	-- (--)	-- (--)	-- (--)
SBR	0.01 (0.01)	D (D)	0.01 (0.01)	D (D)	0.01 (0.01)	D (D)	-- (--)	-- (--)	-- (--)	-- (--)
Overall	0.58 (0.66)	A (A)	0.68 (0.75)	A (A)	0.68 (0.75)	A (A)	-- (--)	-- (--)	-- (--)	-- (--)
Sheppard Avenue East / Bessarion Road & Burbank Drive										
EBL	0.27 (0.49)	B (C)	0.39 (0.64)	C (D)	0.39 (0.64)	C (D)	-- (--)	-- (--)	-- (--)	-- (--)
EBTR	0.71 (0.67)	B (B)	0.83 (0.76)	C (B)	0.83 (0.76)	C (B)	-- (--)	-- (--)	-- (--)	-- (--)
WBL	0.17 (0.26)	B (A)	0.28 (0.39)	C (B)	0.28 (0.40)	C (B)	-- (--)	-- (--)	-- (--)	-- (--)
WBTR	0.72 (0.77)	B (B)	0.79 (0.87)	B (B)	0.80 (0.87)	B (B)	-- (--)	-- (--)	-- (--)	-- (--)
NBL	0.05 (0.04)	C (C)	0.05 (0.04)	C (C)	0.05 (0.04)	C (C)	-- (--)	-- (--)	-- (--)	-- (--)
NBTR	0.08 (0.03)	C (C)	0.10 (0.03)	C (C)	0.10 (0.04)	C (C)	-- (--)	-- (--)	-- (--)	-- (--)
SBL	0.86 (0.79)	D (D)	0.87 (0.79)	E (D)	0.87 (0.79)	E (D)	-- (--)	-- (--)	-- (--)	-- (--)
SBTR	0.13 (0.10)	C (C)	0.15 (0.13)	C (C)	0.16 (0.13)	C (C)	-- (--)	-- (--)	-- (--)	-- (--)
Overall	0.76 (0.77)	C (B)	0.84 (0.85)	C (B)	0.84 (0.85)	C (B)	-- (--)	-- (--)	-- (--)	-- (--)
Continued on Next Page...										

Intersection / Key Movements	Existing		Future Background		Future Total		Future Background (No Change)		Future Total (No Change)	
	v/c	LOS	v/c	LOS	v/c	LOS	v/c	LOS	v/c	LOS
Esther Shiner Boulevard / Provost Drive										
EBLTR	0.36 (0.42)	A (B)	0.78 (0.68)	B (B)	0.81 (0.73)	B (B)	-- (--)	-- (--)	-- (--)	-- (--)
WBL	0.05 (0.04)	A (B)	0.06 (0.04)	A (A)	0.07 (0.04)	A (A)	-- (--)	-- (--)	-- (--)	-- (--)
WBT	0.10 (0.21)	A (B)	0.19 (0.54)	A (B)	0.20 (0.56)	A (B)	-- (--)	-- (--)	-- (--)	-- (--)
WBR	0.12 (0.15)	A (B)	0.15 (0.05)	A (A)	0.15 (0.05)	A (A)	-- (--)	-- (--)	-- (--)	-- (--)
NBLTR	0.04 (0.42)	B (C)	0.22 (0.44)	B (C)	0.22 (0.44)	B (C)	-- (--)	-- (--)	-- (--)	-- (--)
SBL	0.63 (0.44)	C (B)	0.48 (0.67)	C (C)	0.48 (0.67)	C (C)	-- (--)	-- (--)	-- (--)	-- (--)
SBT	0.03 (0.04)	B (B)	0.07 (0.09)	B (B)	0.07 (0.09)	B (B)	-- (--)	-- (--)	-- (--)	-- (--)
SBR	0.04 (0.04)	B (B)	0.05 (0.07)	B (B)	0.05 (0.07)	B (B)	-- (--)	-- (--)	-- (--)	-- (--)
Overall	0.47 (0.45)	B (B)	0.69 (0.71)	B (B)	0.72 (0.74)	B (B)	-- (--)	-- (--)	-- (--)	-- (--)
Esther Shiner Boulevard / Old Leslie Street										
EBL	0.09 (0.13)	A (B)	0.11 (0.20)	A (B)	0.11 (0.21)	A (B)	-- (--)	-- (--)	-- (--)	-- (--)
EBTR	0.29 (0.36)	A (B)	0.48 (0.52)	B (B)	0.50 (0.53)	B (B)	-- (--)	-- (--)	-- (--)	-- (--)
WBL	0.02 (0.00)	A (A)	0.03 (0.00)	A (A)	0.03 (0.00)	A (A)	-- (--)	-- (--)	-- (--)	-- (--)
WBTR	0.22 (0.36)	A (B)	0.31 (0.54)	A (B)	0.32 (0.56)	A (B)	-- (--)	-- (--)	-- (--)	-- (--)
NBL	0.01 (0.01)	B (B)	0.01 (0.01)	B (B)	0.01 (0.01)	B (B)	-- (--)	-- (--)	-- (--)	-- (--)
NBTR	0.01 (0.00)	B (B)	0.01 (0.00)	B (B)	0.01 (0.00)	B (B)	-- (--)	-- (--)	-- (--)	-- (--)
SBL	0.63 (0.75)	C (C)	0.70 (0.81)	C (C)	0.70 (0.81)	C (C)	-- (--)	-- (--)	-- (--)	-- (--)
SBTR	0.03 (0.05)	B (B)	0.03 (0.05)	B (B)	0.03 (0.05)	B (B)	-- (--)	-- (--)	-- (--)	-- (--)
Overall	0.42 (0.54)	B (B)	0.57 (0.67)	B (B)	0.58 (0.68)	B (B)	-- (--)	-- (--)	-- (--)	-- (--)

TABLE 19 SIGNALIZED INTERSECTIONS CAPACITY ANALYSIS RESULTS (SENSITIVITY SCENARIO)

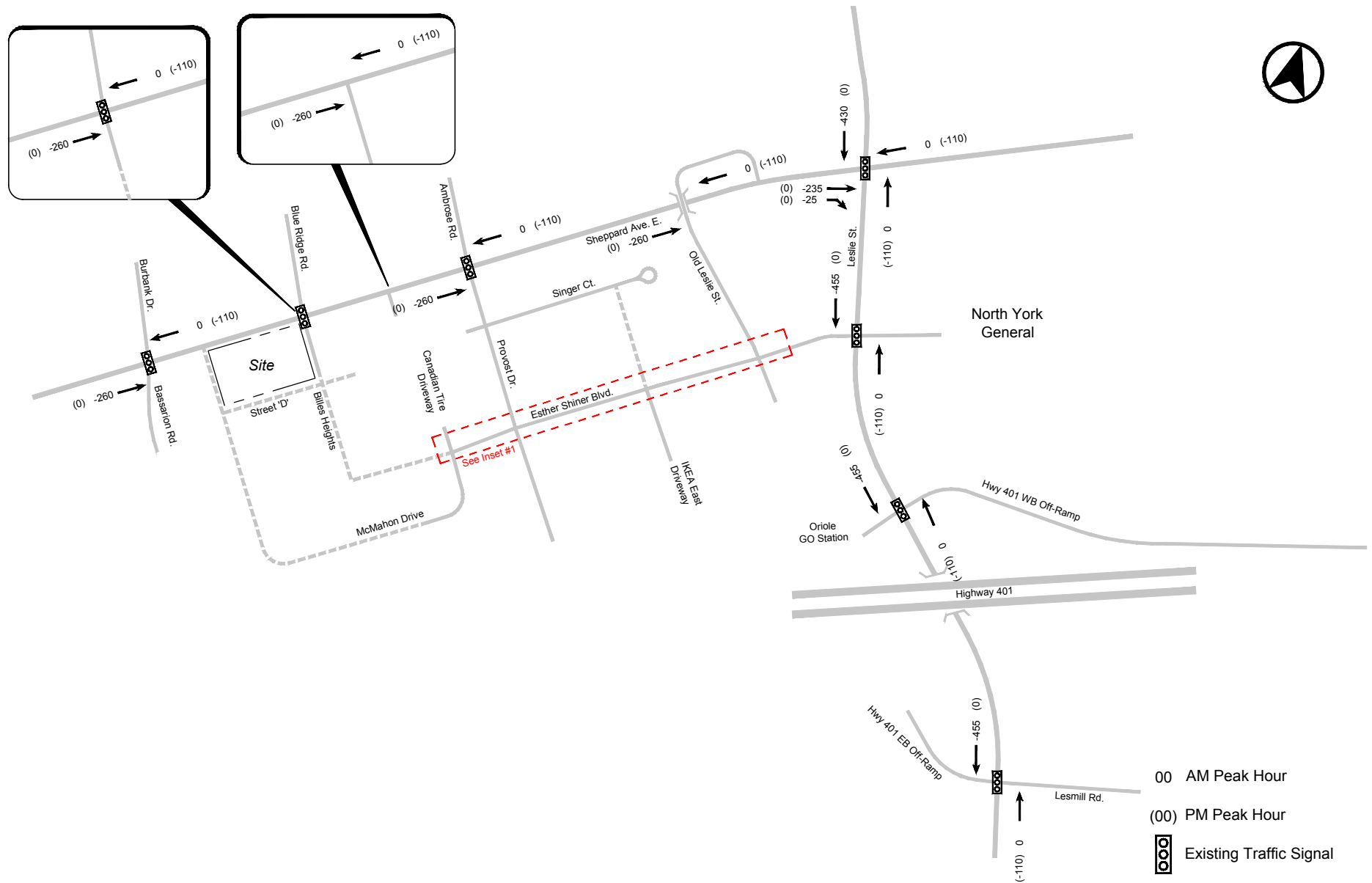
Intersection / Key Movements	Existing		Future Background		Future Total	
	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS
Leslie Street / Sheppard Avenue East						
EBL	0.81 (1.00)	D (F)	0.92 (0.98)	E (F)	0.94 (1.00)	F (F)
EBT	0.53 (0.86)	D (D)	0.45 (0.84)	D (D)	0.45 (0.84)	D (D)
EBR	0.68 (0.56)	C (C)	1.00 (0.72)	E (C)	1.00 (0.72)	E (C)
WBL	0.86 (0.89)	D (E)	0.81 (0.97)	D (F)	0.81 (0.97)	D (F)
WBTR	0.82 (0.97)	D (E)	0.92 (1.00)	E (E)	0.92 (1.00)	E (E)
NBL	0.77 (0.63)	D (E)	0.70 (0.99)	D (F)	0.70 (0.99)	D (F)
NBT	0.37 (0.68)	B (C)	0.39 (0.77)	B (D)	0.39 (0.77)	B (D)
NBR	0.36 (0.53)	C (C)	0.37 (0.62)	C (D)	0.37 (0.62)	C (D)
SBL	0.42 (0.97)	D (F)	0.52 (0.64)	D (D)	0.52 (0.64)	D (D)
SBTR	0.89 (0.72)	D (D)	0.79 (0.57)	D (D)	0.79 (0.57)	D (D)
Overall	0.85 (0.92)	D (D)	0.95 (0.93)	D (E)	0.95 (0.94)	D (E)
Leslie Street / Esther Shiner Boulevard						
EBL	0.16 (0.40)	D (D)	0.24 (0.43)	D (C)	0.24 (0.43)	D (C)
EBR	0.67 (0.75)	C (C)	0.95 (0.87)	D (C)	0.99 (0.88)	E (C)
WBL	0.24 (0.32)	D (C)	0.22 (0.30)	D (C)	0.22 (0.30)	D (C)
WBR	0.03 (0.07)	D (C)	0.03 (0.07)	C (C)	0.03 (0.07)	C (C)
NBL	0.83 (0.89)	D (D)	0.98 (0.96)	E (D)	1.00 (0.99)	E (D)
NBT	0.37 (0.58)	B (C)	0.42 (0.66)	C (B)	0.42 (0.66)	C (B)
NBR	0.29 (0.11)	F (C)	0.29 (0.11)	F (A)	0.29 (0.11)	F (A)
SBT	0.90 (0.80)	D (D)	1.00 (0.99)	E (E)	1.00 (1.00)	E (E)
SBR	0.14 (0.12)	E (C)	0.15 (0.14)	F (C)	0.15 (0.14)	F (D)
Overall	0.85 (0.84)	D (C)	1.03 (0.98)	E (C)	1.06 (1.00)	E (D)
Continued on Next Page...						

Intersection / Key Movements	Existing		Future Background		Future Total	
	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS
Leslie Street / Oriole GO Station & Hwy 401 WB Off-Ramp						
EBL	0.36 (0.70)	E (E)	0.37 (0.75)	E (E)	0.37 (0.75)	E (E)
EBR	0.03 (0.10)	A (A)	0.03 (0.10)	A (A)	0.03 (0.10)	A (A)
WBL	0.92 (0.90)	E (E)	0.98 (0.89)	E (E)	0.98 (0.89)	E (E)
WBTR	0.61 (0.54)	D (D)	0.72 (0.92)	D (E)	0.72 (0.93)	D (E)
WBR	0.26 (0.57)	D (D)	0.35 (0.96)	D (F)	0.35 (0.98)	D (F)
NBL	0.67 (0.29)	E (C)	0.58 (0.29)	D (C)	0.61 (0.29)	D (C)
NBT	0.66 (0.88)	C (C)	0.71 (0.99)	C (D)	0.72 (1.00)	C (D)
SBTR	0.69 (0.85)	B (C)	0.65 (0.84)	B (C)	0.66 (0.84)	B (C)
Overall	0.74 (0.86)	C (D)	0.77 (0.94)	D (D)	0.77 (0.95)	D (D)
Leslie Street / Lesmill Road & Hwy 401 EB Off-Ramp						
EBL	0.96 (0.56)	E (D)	0.99 (0.66)	F (D)	0.99 (0.67)	F (D)
EBLT	0.91 (0.47)	E (D)	0.93 (0.48)	E (D)	0.94 (0.49)	E (D)
WBR	0.37 (0.59)	A (A)	0.37 (0.59)	A (A)	0.37 (0.59)	A (A)
NBT	0.89 (0.75)	D (C)	0.94 (0.79)	D (C)	0.94 (0.80)	D (C)
NBR	0.14 (0.11)	C (B)	0.14 (0.11)	C (B)	0.14 (0.11)	C (B)
SBL	1.00 (0.73)	E (C)	1.00 (0.74)	E (C)	1.00 (0.74)	E (C)
SBT	0.68 (0.56)	B (B)	0.50 (0.46)	B (B)	0.50 (0.47)	B (B)
Overall	0.93 (0.73)	D (B)	0.96 (0.75)	D (C)	0.96 (0.75)	D (C)
Sheppard Avenue East / Provost Drive & Ambrose Road						
EBL	0.37 (0.20)	C (B)	0.45 (0.23)	C (C)	0.45 (0.23)	C (C)
EBT	0.82 (0.87)	C (C)	1.00 (0.96)	D (D)	1.00 (0.97)	D (D)
EBR	0.29 (0.21)	B (B)	0.16 (0.28)	C (B)	0.16 (0.28)	C (B)
WBL	0.71 (0.78)	C (D)	0.98 (0.96)	F (E)	0.98 (0.96)	F (E)
WBTR	0.70 (0.80)	B (C)	0.75 (0.89)	B (C)	0.75 (0.90)	B (C)
NBL	0.45 (0.56)	C (D)	0.57 (0.38)	D (C)	0.57 (0.38)	D (C)
NBR	0.24 (0.26)	C (C)	0.31 (0.29)	C (C)	0.31 (0.29)	C (C)
SBL	0.49 (0.43)	C (C)	0.49 (0.43)	C (C)	0.49 (0.43)	C (C)
SBR	0.02 (0.02)	C (C)	0.02 (0.02)	C (C)	0.02 (0.02)	C (C)
Overall	0.71 (0.77)	C (C)	0.88 (0.82)	D (C)	0.88 (0.82)	D (C)
Continued on Next Page...						

Intersection / Key Movements	Existing		Future Background		Future Total	
	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS
Sheppard Avenue East / Blue Ridge Road						
EBL	0.09 (0.14)	A (A)	0.12 (0.18)	A (A)	0.12 (0.18)	A (A)
EBT	0.60 (0.61)	A (A)	0.60 (0.66)	A (A)	0.60 (0.66)	A (A)
EBR	0.19 (0.21)	A (A)	0.20 (0.23)	A (A)	0.21 (0.25)	A (A)
WBL	0.03 (0.03)	A (A)	0.04 (0.04)	A (A)	0.04 (0.20)	A (A)
WBTR	0.55 (0.69)	A (A)	0.62 (0.74)	A (A)	0.62 (0.74)	A (A)
NBL	0.43 (0.50)	D (D)	0.44 (0.52)	D (D)	0.46 (0.56)	D (D)
NBR	0.00 (0.00)	A (D)	0.00 (0.00)	A (D)	0.01 (0.02)	D (D)
SBL	0.30 (0.08)	D (D)	0.26 (0.08)	D (D)	0.25 (0.08)	D (D)
SBR	0.01 (0.01)	D (D)	0.01 (0.01)	D (D)	0.01 (0.01)	D (D)
Overall	0.58 (0.66)	A (A)	0.60 (0.71)	A (A)	0.60 (0.72)	A (A)
Sheppard Avenue East / Bessarion Road & Burbank Drive						
EBL	0.27 (0.49)	B (C)	0.39 (0.64)	C (D)	0.39 (0.64)	C (D)
EBTR	0.71 (0.67)	B (B)	0.69 (0.72)	B (B)	0.69 (0.73)	B (B)
WBL	0.17 (0.26)	B (A)	0.17 (0.33)	B (B)	0.17 (0.33)	B (B)
WBTR	0.72 (0.77)	B (B)	0.79 (0.82)	B (B)	0.80 (0.82)	B (B)
NBL	0.05 (0.04)	C (C)	0.05 (0.04)	C (C)	0.05 (0.04)	C (C)
NBTR	0.08 (0.03)	C (C)	0.08 (0.03)	C (C)	0.08 (0.03)	C (C)
SBL	0.86 (0.79)	D (D)	0.87 (0.79)	E (D)	0.87 (0.79)	E (D)
SBTR	0.13 (0.10)	C (C)	0.15 (0.12)	C (C)	0.16 (0.12)	C (C)
Overall	0.76 (0.77)	C (B)	0.82 (0.81)	C (B)	0.82 (0.81)	C (B)

Notes:

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



REMOVAL OF EXISTING TRAFFIC VOLUMES

I.3.2 Unsignalized Intersection Analysis

Traffic operations at all unsignalized intersections within the study area are at acceptable level of service under all scenarios without any need for road improvements or mitigation measures. All movements will function at LOS A to LOS E in the future scenarios. The results of the capacity analysis undertaken at the unsignalized intersections are summarized in **Table 20**.

Vehicular access to the site will be provided via the future Billes Heights. The driveway will provide a convenient two-way vehicular access to the future Billy Heights connection through the “West of Provost” lands to Sheppard Avenue East. This driveway will provide access to the proposed parking garage, pick-up / drop-off facilities and the loading facility for the residential and retail uses on Block 7 site. The driveway will operate acceptably with a LOS B or better under future total scenario.

TABLE 20 UNSIGNALIZED INTERSECTIONS CAPACITY ANALYSIS RESULTS

	Existing		Future Background		Future Total	
	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS
Sheppard Avenue East / CTC Access						
WBL	14.6 (14.2)	B (B)	17.2 (16.2)	C (C)	17.3 (16.3)	C (C)
NBL	31.5 (31.9)	D (D)	33.9 (21.9)	D (C)	34.3 (21.8)	D (C)
NBR	10.9 (11.5)	B (B)	10.8 (12.2)	B (B)	10.8 (12.2)	B (B)
Esther Shiner Boulevard /IKEA Access						
WBL	8.4 (9.1)	A (A)	9.4 (10.2)	A (B)	9.6 (10.3)	A (B)
NBR	11.2 (14.8)	B (B)	13.3 (17.0)	B (C)	14.2 (17.7)	B (C)
Esther Shiner Boulevard / McMahon Drive						
EBLT	8.1 (8.4)	A (A)	9.9 (10.4)	A (B)	10.5 (10.6)	B (B)
WBLR	8.4 (9.4)	A (A)	13.1 (48.1)	B (E)	14.1 (62.8)	B (F)
NBTR	7.8 (7.8)	A (A)	13.4 (11.7)	B (B)	14.6 (11.9)	B (B)
SBLT	9.8 (12.1)	A (B)	20.1 (26.6)	C (D)	22.3 (27.2)	C (D)
Provost Drive / Singer Court						
EBLR	12.3 (24.9)	B (C)	15.6 (43.0)	C (E)	15.6 (43.0)	C (E)
WBLR	14.1 (14.8)	B (B)	29.9 (20.7)	D (C)	29.9 (20.7)	D (C)
NBL	7.9 (8.1)	A (A)	7.6 (8.3)	A (A)	7.6 (8.3)	A (A)
SBL	8.2 (8.5)	A (A)	9.1 (8.4)	A (A)	9.1 (8.4)	A (A)
Billes Heights / Site Access						
EBLR	-- (--)	-- (--)	-- (--)	-- (--)	10.1 (11.5)	B (B)
NBLT	-- (--)	-- (--)	-- (--)	-- (--)	0.8 (1.4)	A (A)

Notes:

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

ATTACHMENT A: Reduced Scale Architectural Plans



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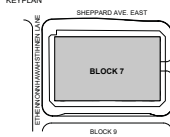
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KEY PLAN



Concord Adex Block 7

BLOCK 7, NORTH YORK
ON M2C 2K5

PARKING LEVEL 3

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SP-04

1125T
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- Legend**
- Circulation
 - Exit Stair
 - Residential Common Area
 - Shaft

Parking Legend



TYPICAL PARKING SPACE
NO OBSTRUCTIONS



TYPICAL PARKING SPACE
TWO-SIDE OBSTRUCTION



TYPICAL PARKING SPACE
TWO-SIDE OBSTRUCTION



TYPICAL PARKING SPACE
BARRIER FREE



TYPICAL BICYCLE SPACE
STANDARD POSITION
MIN. 1000mm VERTICAL CLEARANCE



TYPICAL BICYCLE SPACE
STANDARD POSITION
MIN. 1000mm VERTICAL CLEARANCE



TYPICAL BICYCLE SPACE
STANDARD POSITION
MIN. 1000mm VERTICAL CLEARANCE



TYPICAL BICYCLE SPACE
STANDARD POSITION
MIN. 1000mm VERTICAL CLEARANCE



TYPICAL BICYCLE SPACE
STANDARD POSITION
MIN. 1000mm VERTICAL CLEARANCE



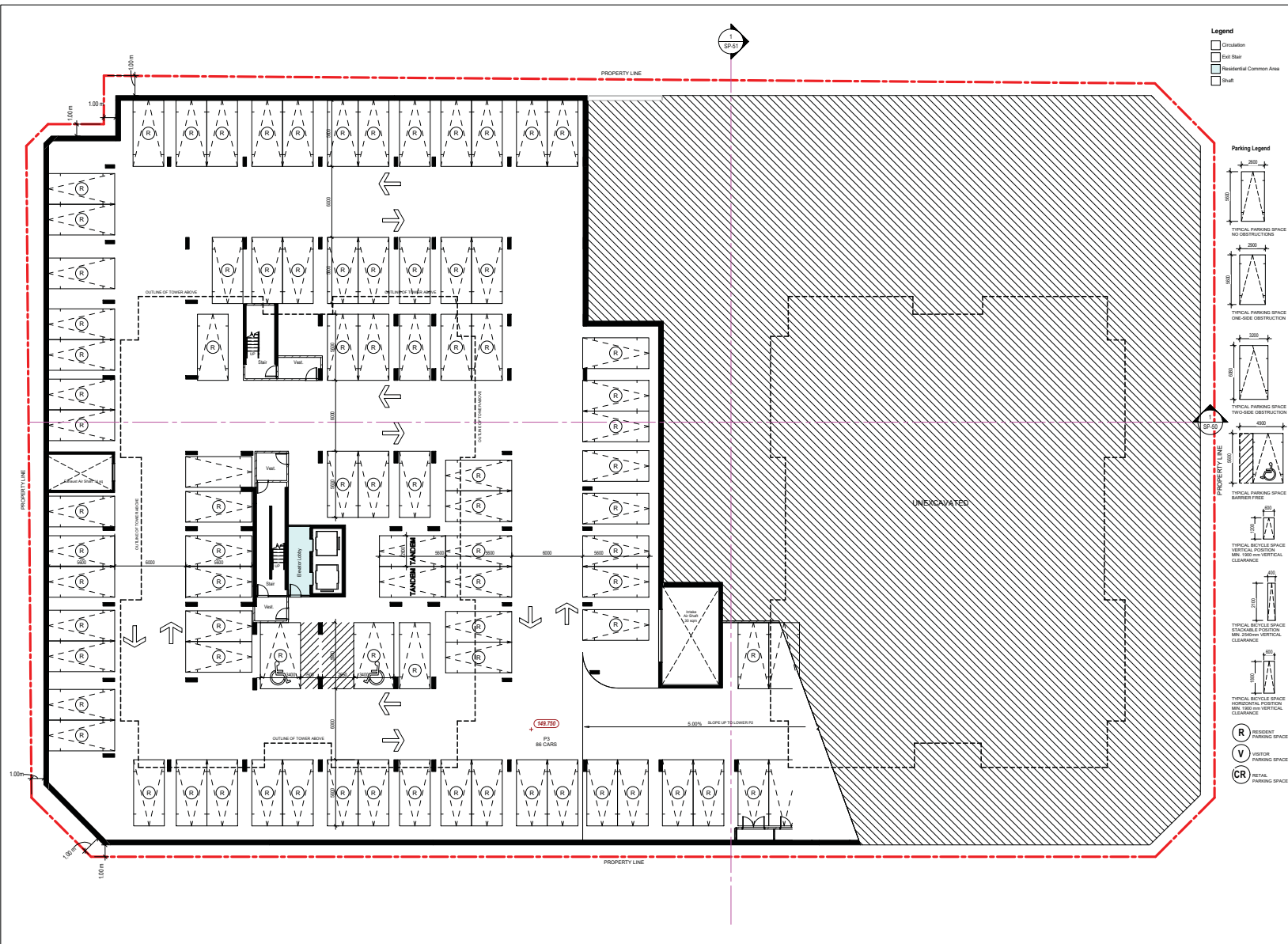
TYPICAL BICYCLE SPACE
STANDARD POSITION
MIN. 1000mm VERTICAL CLEARANCE



TYPICAL BICYCLE SPACE
STANDARD POSITION
MIN. 1000mm VERTICAL CLEARANCE

LEVEL P3
SCALE: 1:150

0m 3m 6m 9m 12m 15m
SCALE: 1:150



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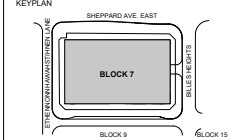
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KEYPLAN



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ARCHITECTS

SIXTH FLOOR
LICENCE
4840

PROJECT
NORTH

N
TRUE NORTH

16° 22' 38" EAST

Concord Adex Block 7

BLOCK 7, NORTH YORK
ON M2K 2X9

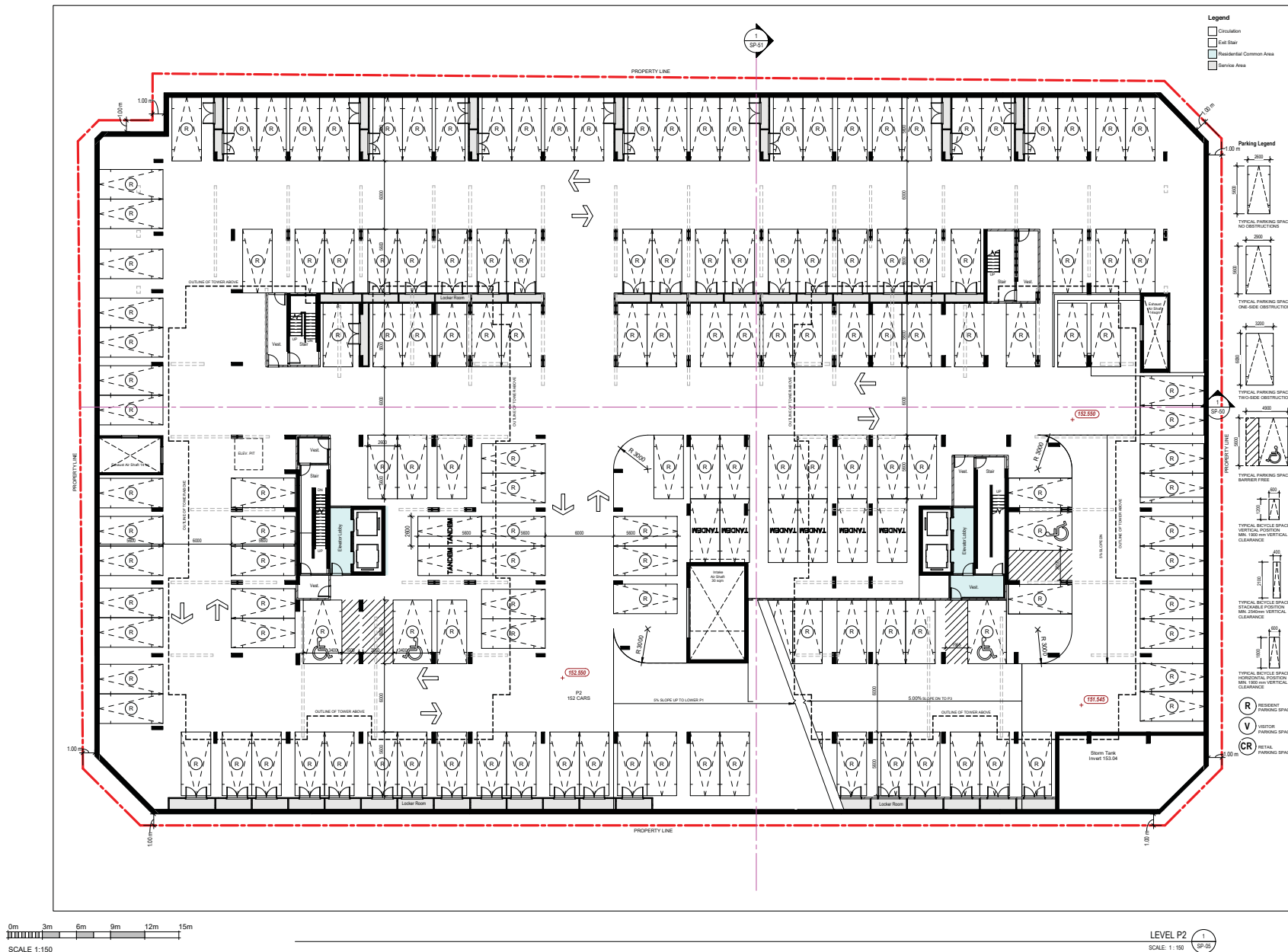
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SP-05

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KEYPLAN

SHEPARD AVE. EAST

CITY OF PORTLAND WATER DIVISION LINE

BLOCK 7

BLAKE ST. HEIGHTS

BLOCK 9

BLOCK 15

Concord Adex Block 7

BLOCK 7, NORTH YORK
ON M2K 2X9

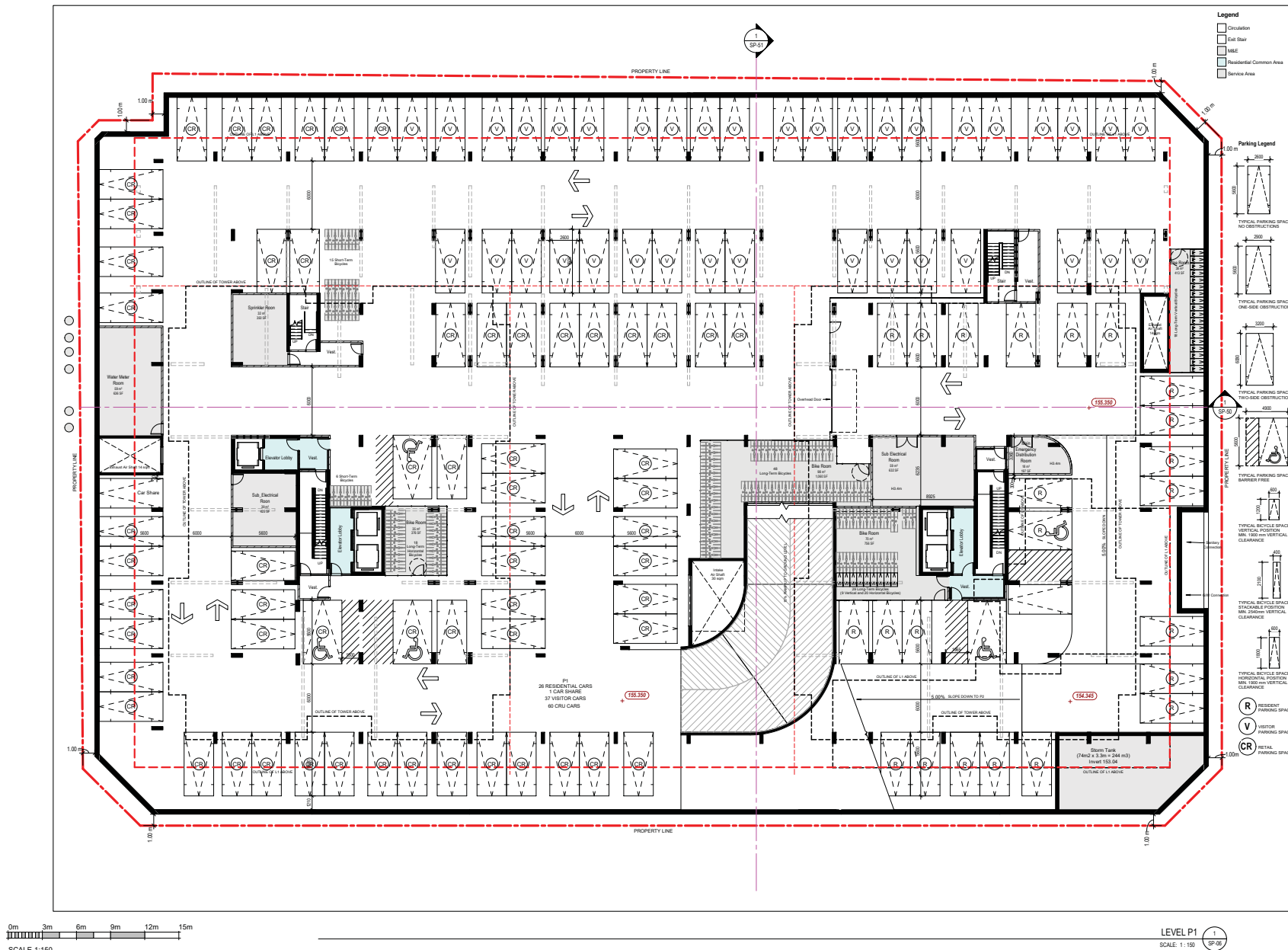
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SP-06

11225T

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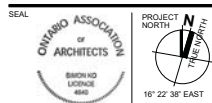
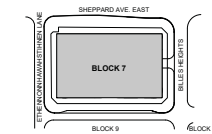
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KEY PLAN



Concord Adex Block 7

BLOCK 7, NORTH YORK
ON M2C 2K5

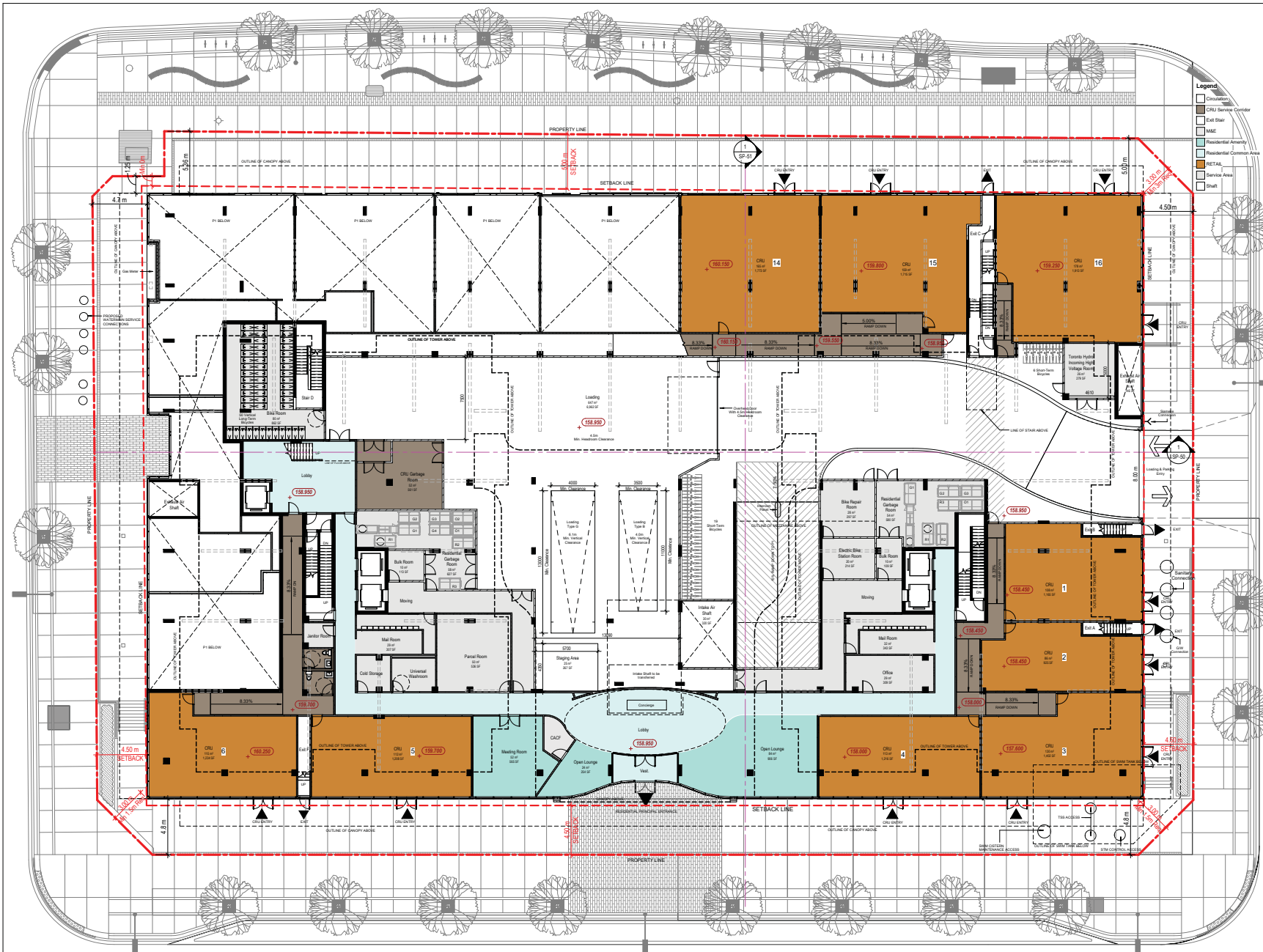
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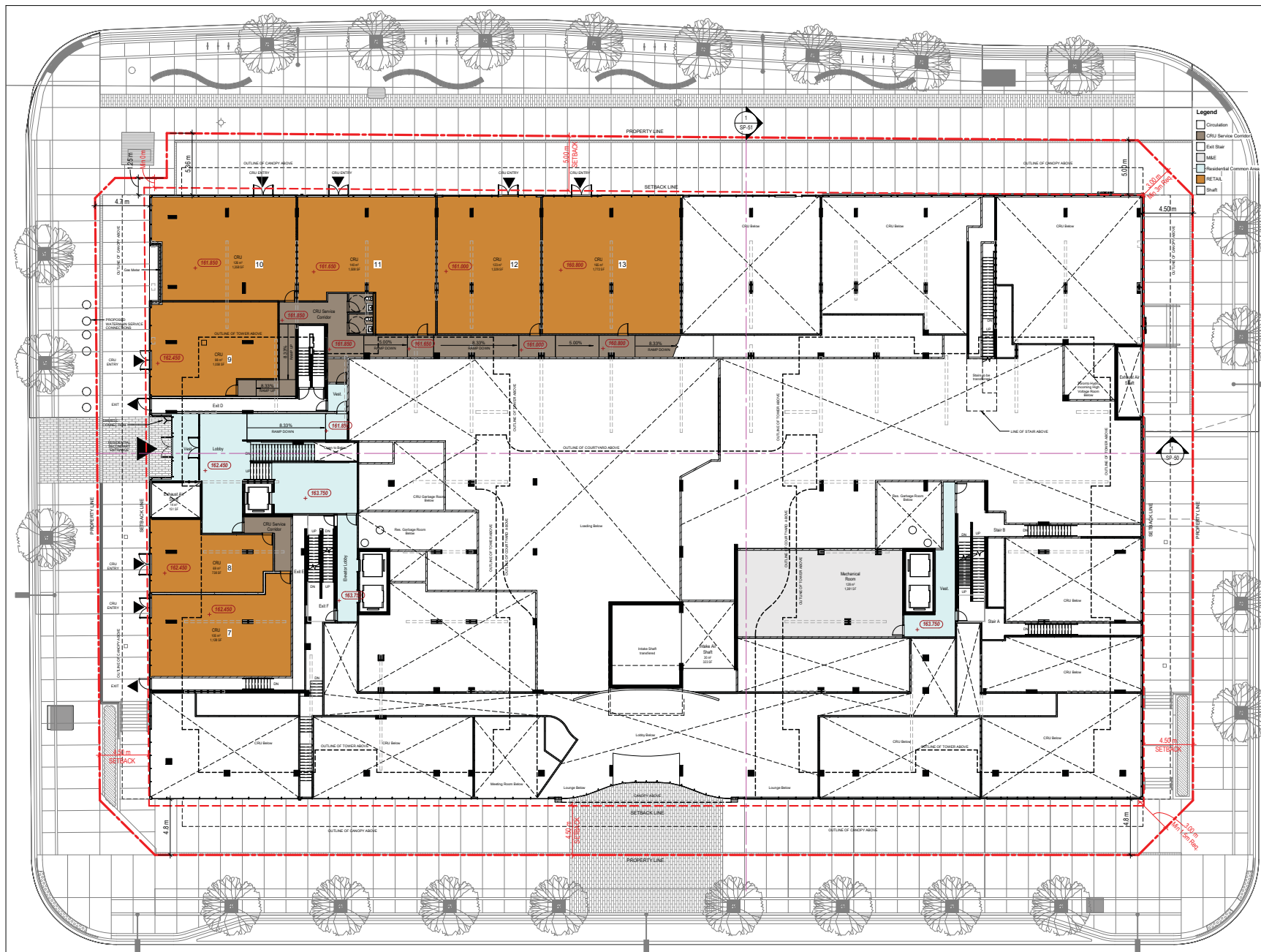
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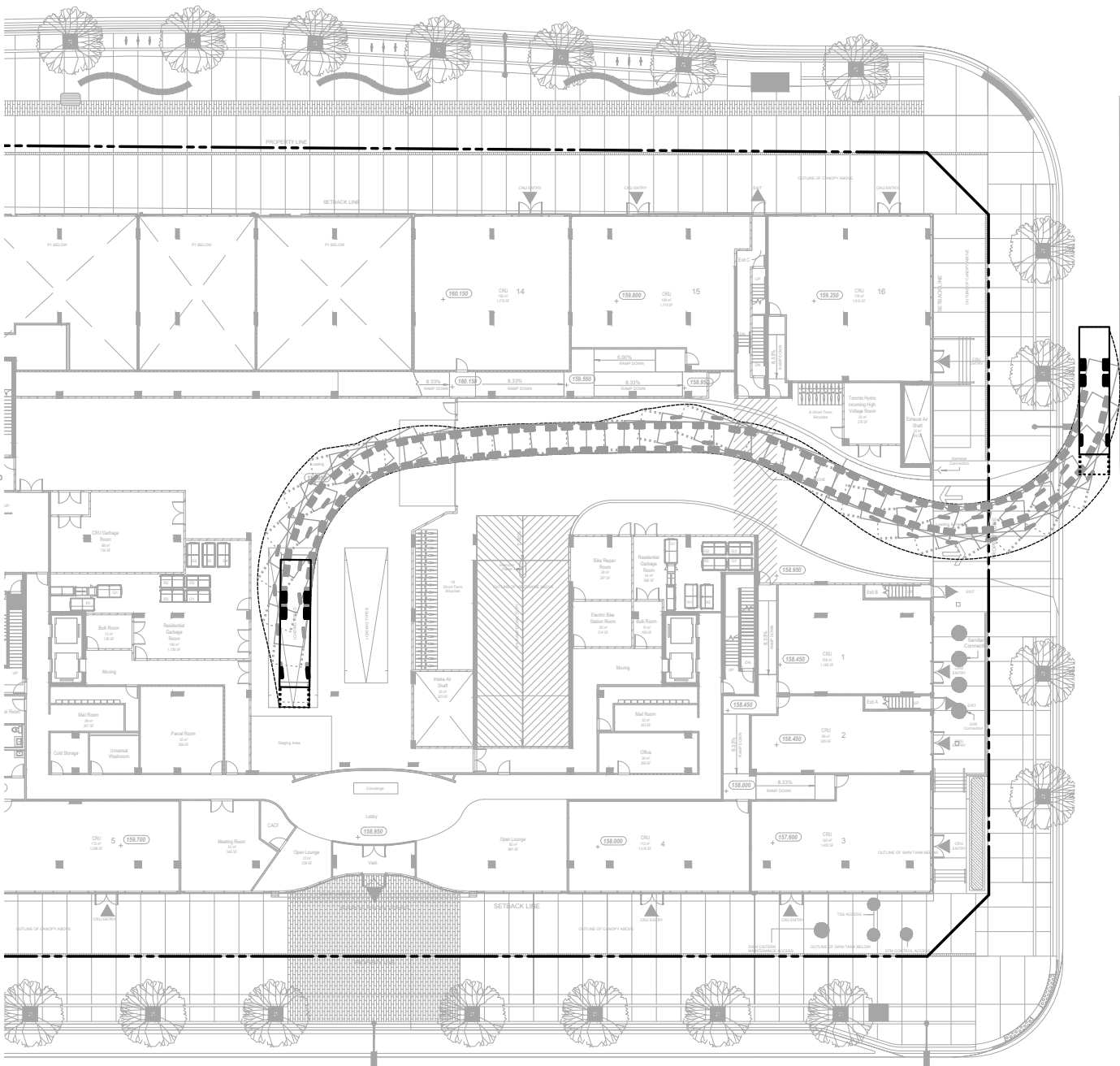




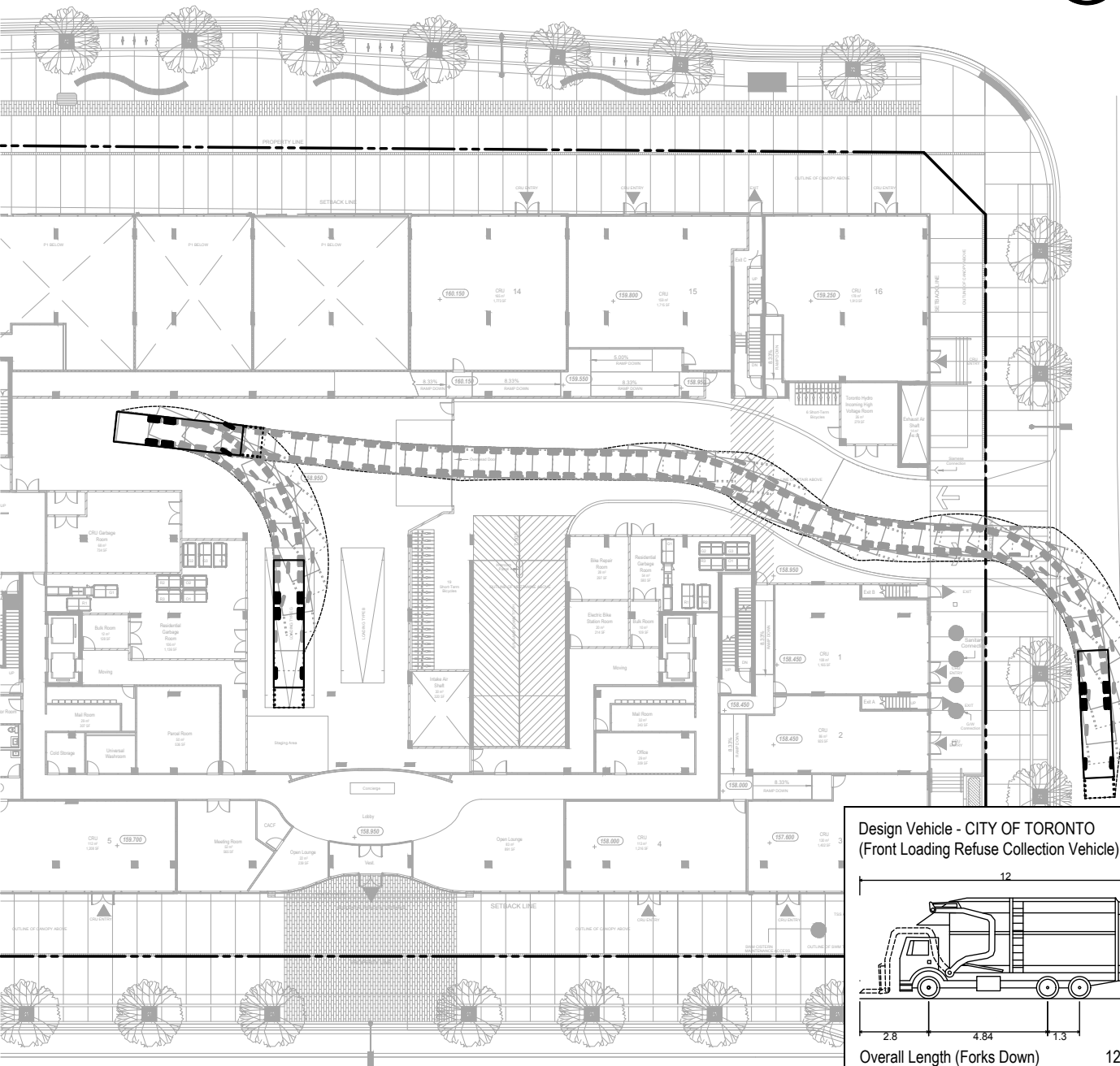
ATTACHMENT B: Vehicular Manoeuvring Diagrams



INBOUND



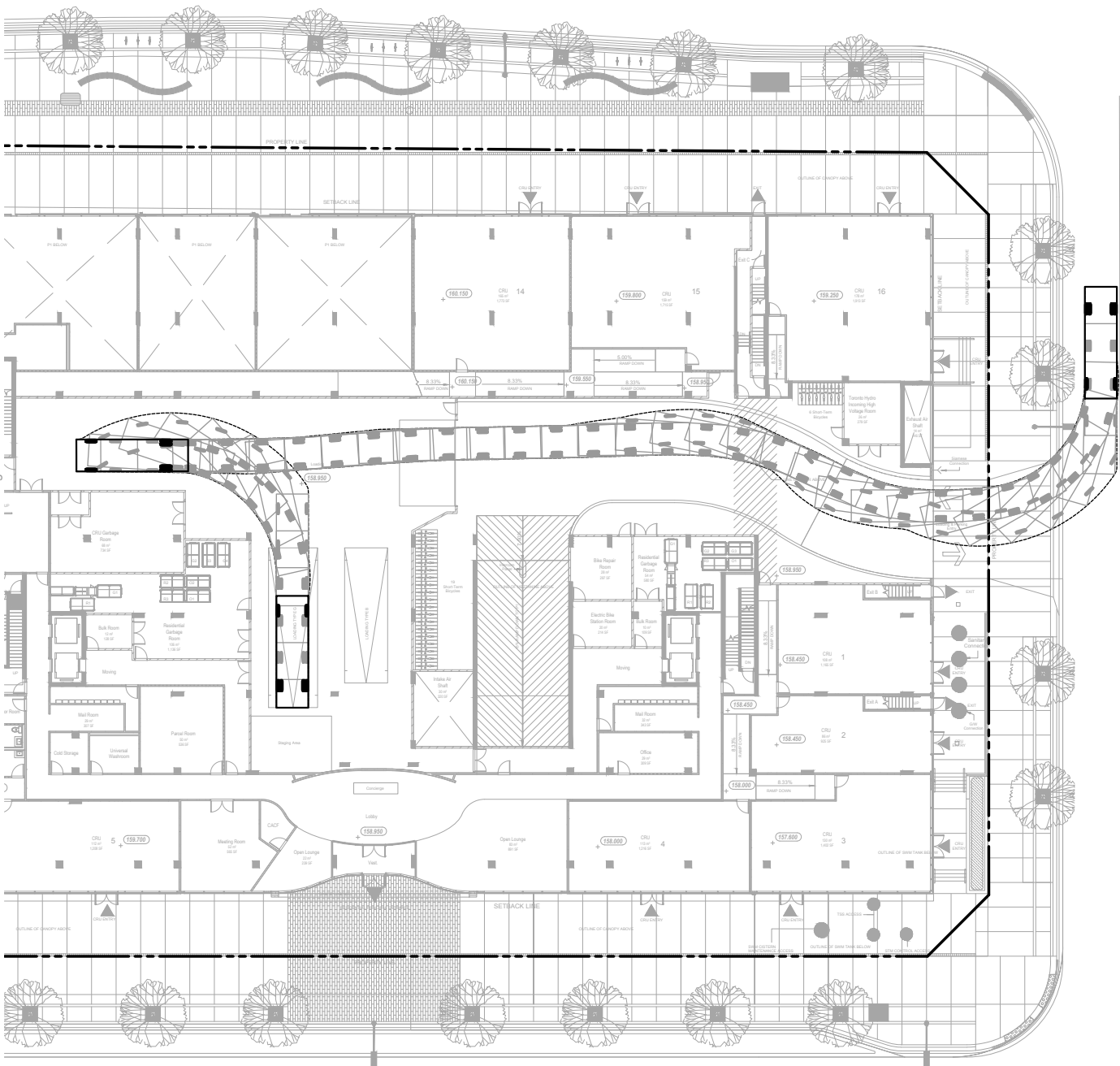
OUTBOUND



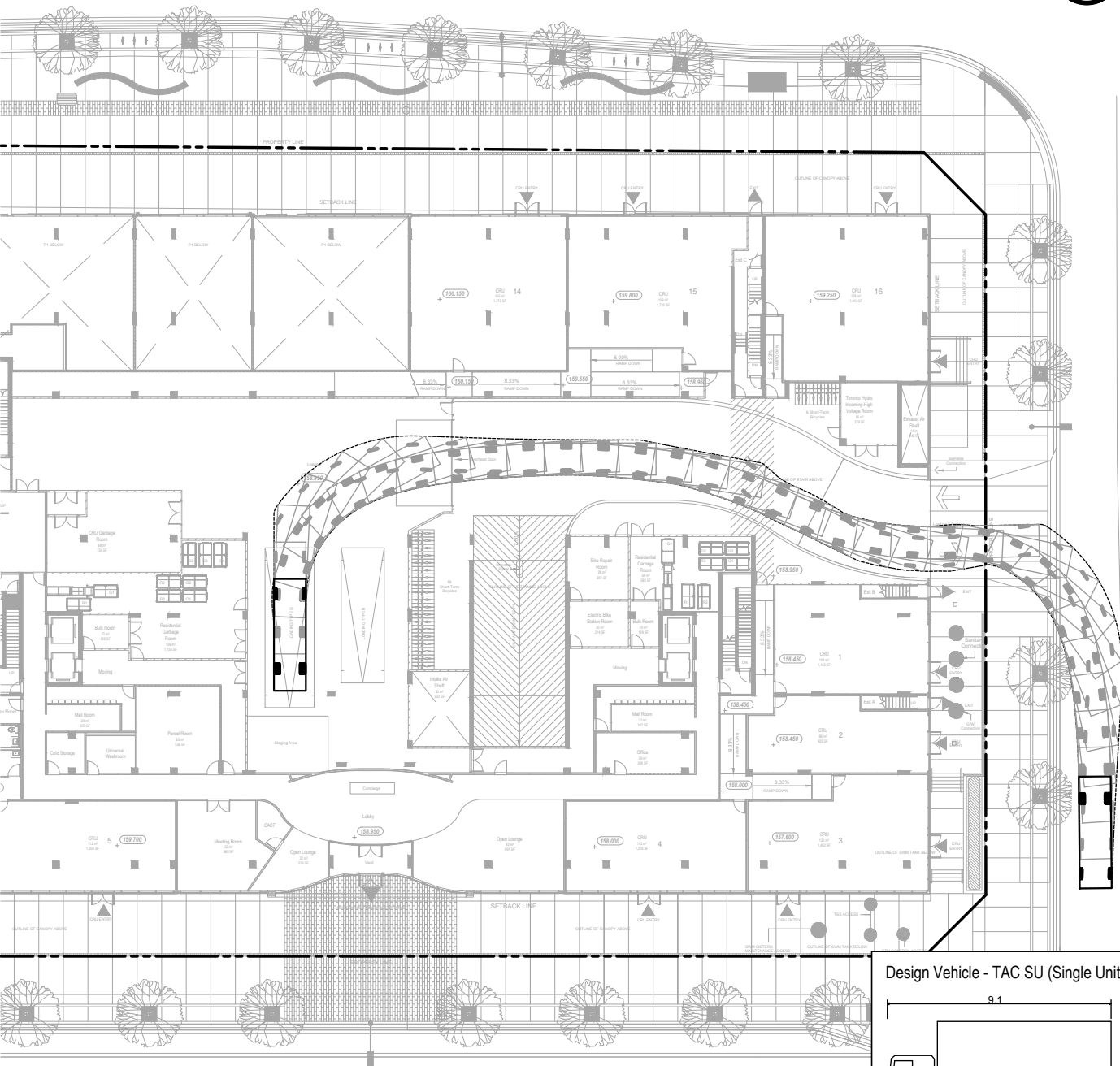
Design Vehicle - CITY OF TORONTO
(Front Loading Refuse Collection Vehicle)

Overall Length (Forks Down) 12.00m
Overall Length (Forks Up) 10.00m*
Overall Width 2.45m
Overall Body Height 4.10m
Outside Turning Radius 14.00m
Inside Turning Radius 9.50m
(Dimensions as per City of Toronto Requirements for Garbage, Recycling and Organics Collection Services for New Developments and Redevelopments, May 2012)
* Field measured by BA Group, Aug. 8/11

INBOUND



OUTBOUND



Design Vehicle - TAC SU (Single Unit Truck)

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

[illegible]

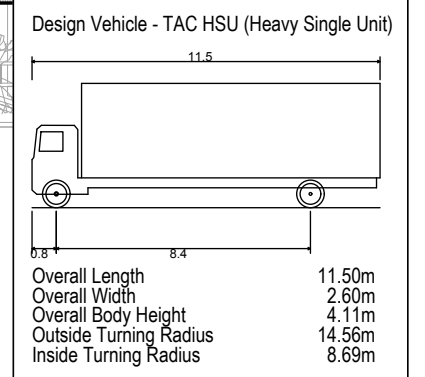
Filename: J:\7238-19\Block 7\BA\Site Plan Review\2019\07-Dec17-19\BA-Block7-SPR-R08-7238-19.dwg

Date Plotted: December 18, 2019

This architectural floor plan illustrates the layout of the Design Vehicle - TAC HSU (Heavy Single). The plan is divided into several functional areas, including:

- Top Section:** Features a series of rooms labeled CRU 14, CRU 15, and CRU 16, each with a specific area (e.g., 170.150, 170.170, 170.170). These are separated by a "SETBACK LINE" and "CRU ENTRY" points.
- Left Section:** Includes a "CRU Garage" (170.170), "Bull Room" (170.170), "Meeting" room, "Map Room" (170.170), "Cold Storage", "Universal Workshop", and "Personal Room" (170.170).
- Central Section:** Contains a large "CRU 1" (170.170) and "CRU 2" (170.170) area, a "CRU 3" (170.170), and a "CRU 4" (170.170). It also includes a "CRU 5" (170.170) and a "CRU 6" (170.170).
- Right Section:** Features a "CRU 7" (170.170) and a "CRU 8" (170.170), along with a "CRU 9" (170.170) and a "CRU 10" (170.170).
- Bottom Section:** Includes a "CRU 11" (170.170) and a "CRU 12" (170.170), a "CRU 13" (170.170) and a "CRU 14" (170.170), and a "CRU 15" (170.170) and a "CRU 16" (170.170).

The plan also shows various corridors, stairs, and structural elements like "CRU ENTRY", "CRU EXIT", and "CRU ENTRY". A "SETBACK LINE" is indicated throughout the plan. The overall layout is designed to accommodate a heavy single vehicle, with a total area of 11.5.



BLOCK 7
VEHICULAR MANOEUVRING DIAGRAM
TYPE G LOADING SPACE
TAC HEAVY SINGLE UNIT TRUCK (HSU)

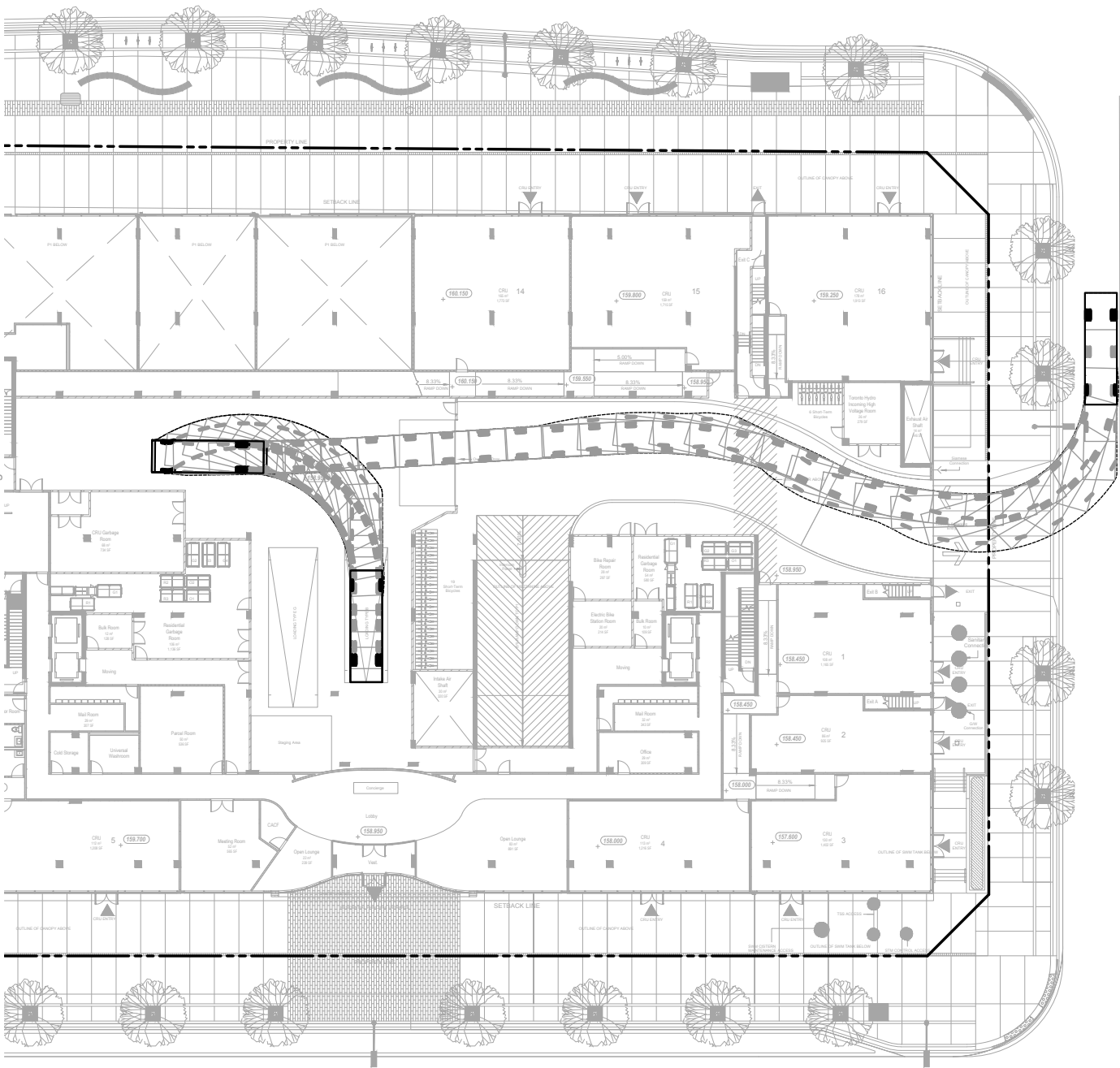
Project: BLOCK 7
Project No. 7238-19
Date: JULY 19, 2019
Revised: DECEMBER 17, 2019

Scale 0 5 10 15 20m

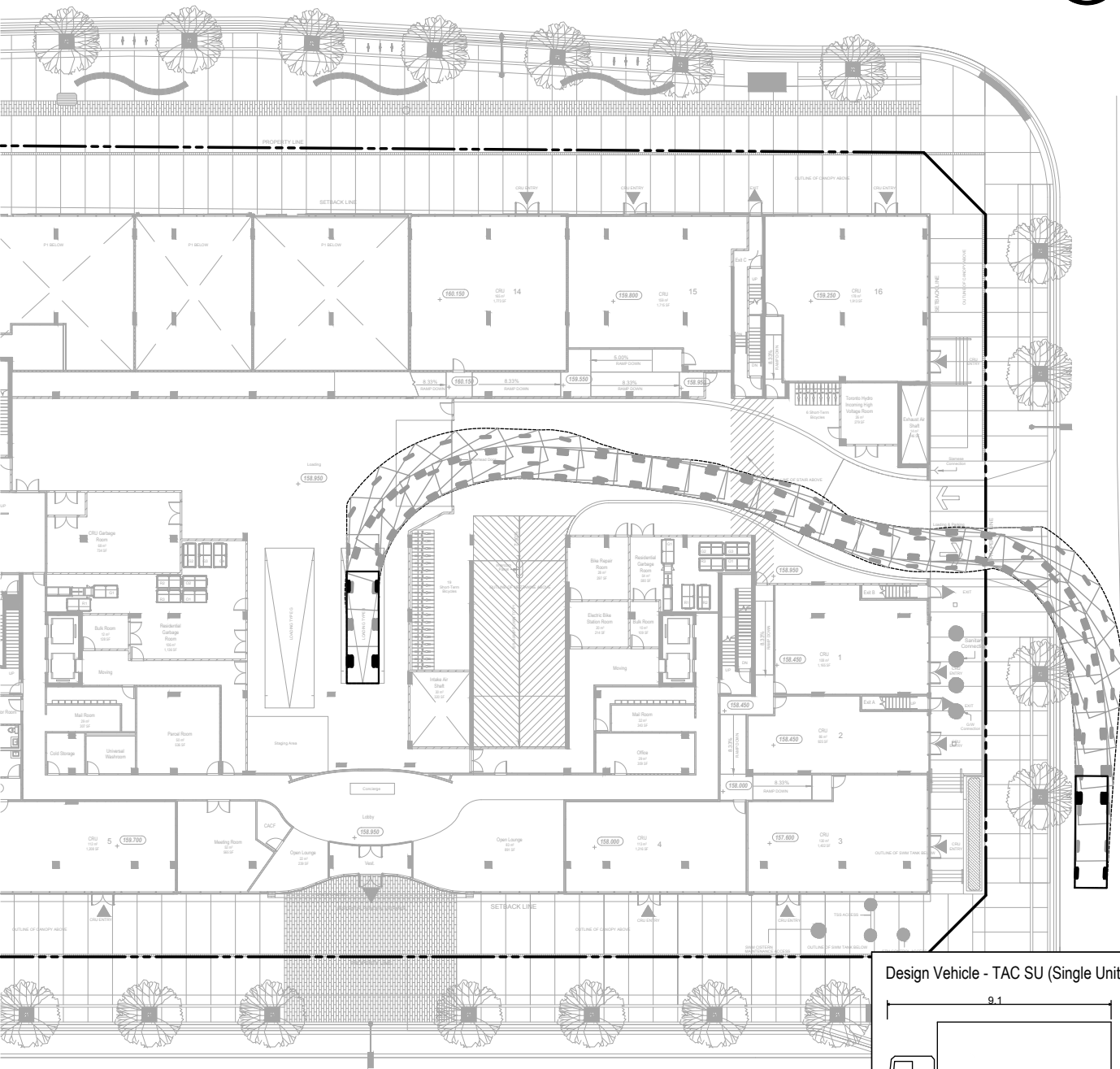
1:500

Drawing No. VMD-03

INBOUND



OUTBOUND

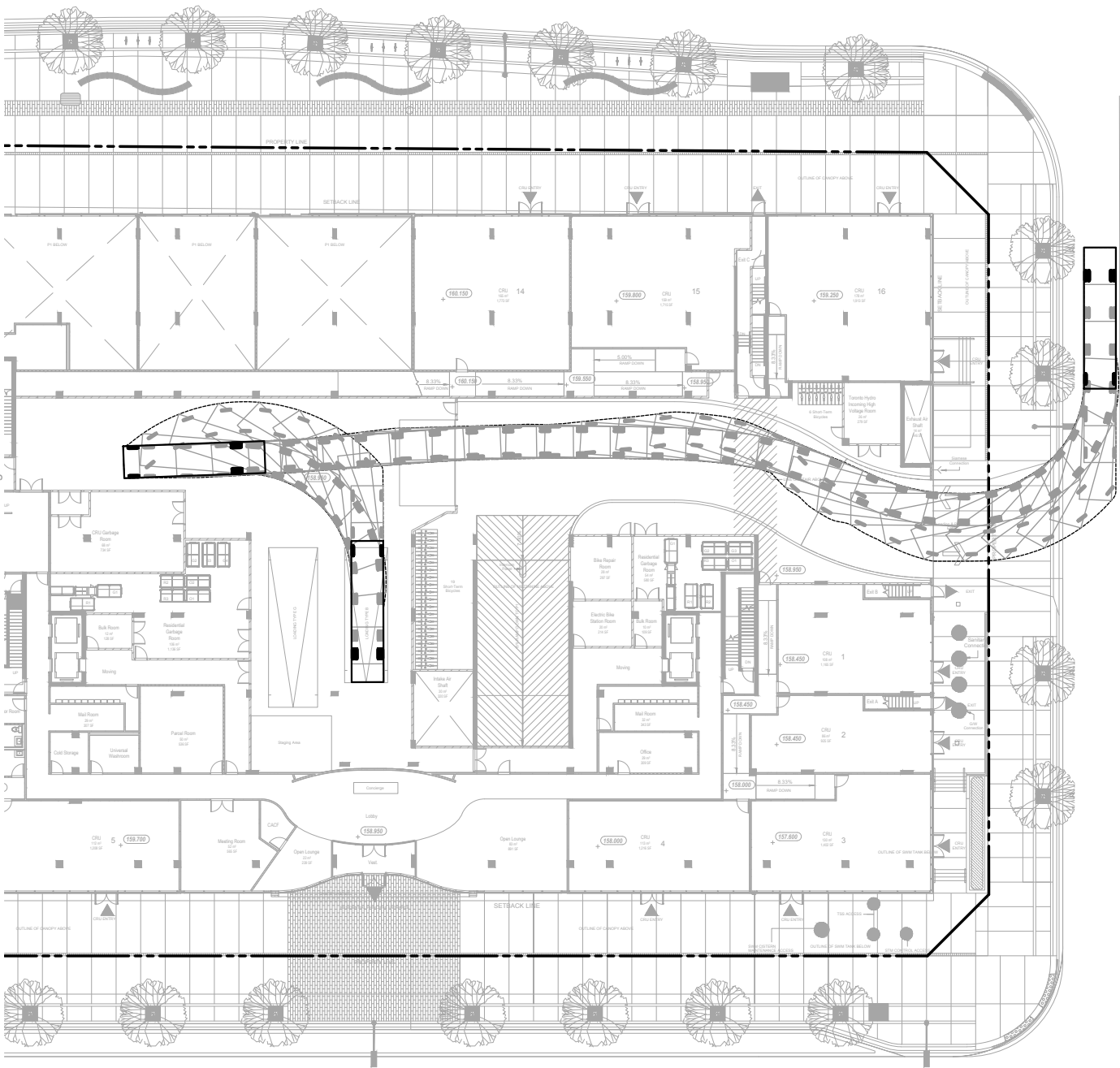


Design Vehicle - TAC SU (Single Unit Truck)

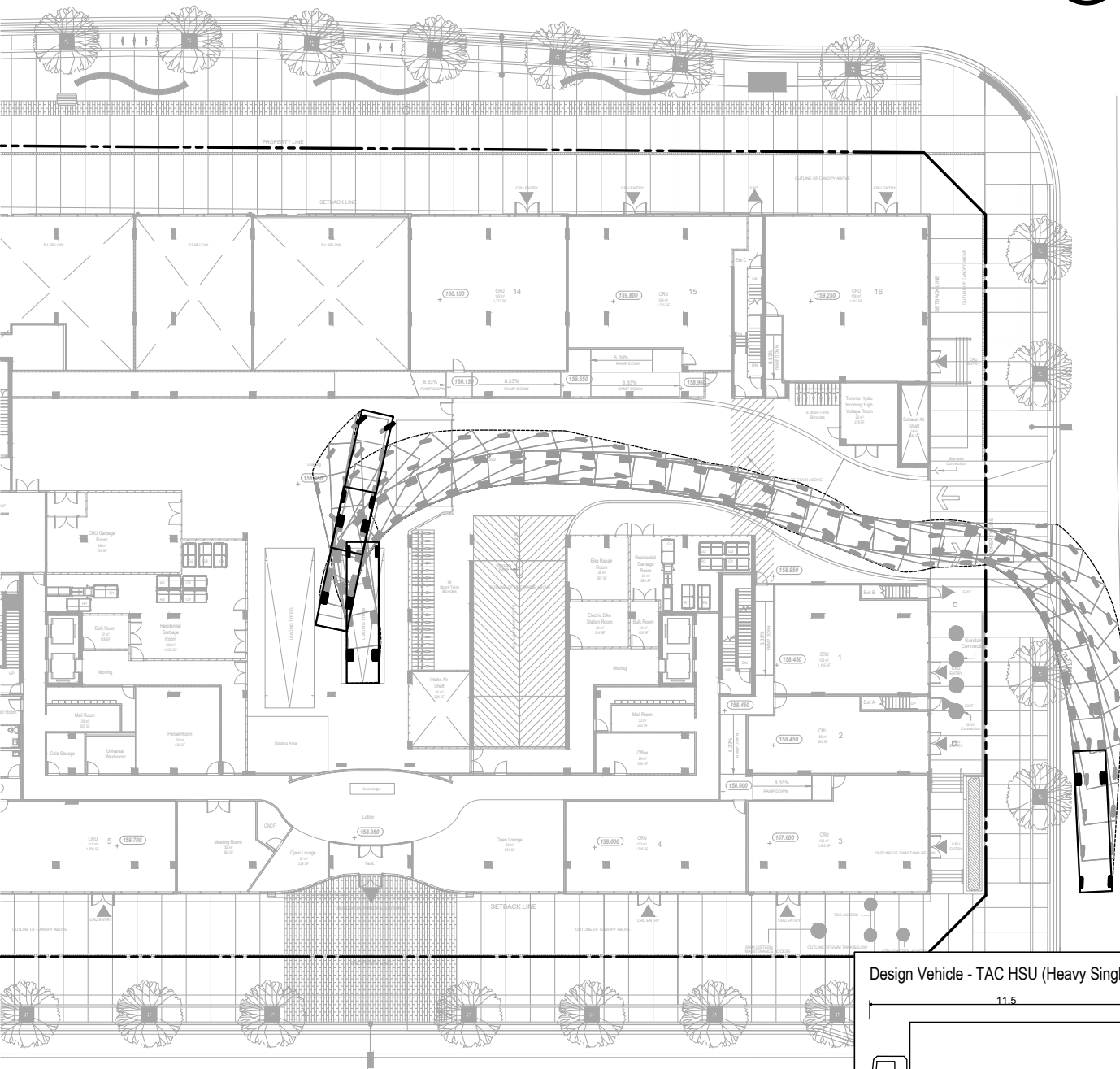
9.1
2.60
4.11
13.40
8.60

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

INBOUND



OUTBOUND



Design Vehicle - TAC HSU (Heavy Single Unit)

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



BLOCK 7
VEHICULAR MANOEUVRING DIAGRAM
TYPE B LOADING SPACE
TAC HEAVY SINGLE UNIT TRUCK (HSU)

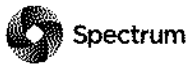
Project: BLOCK 7
Project No. 7238-19
Date: JULY 19, 2019
Revised: DECEMBER 17, 2019

Scale 1:500

Drawing No. VMD-05

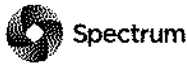
ATTACHMENT C: Existing Traffic Manoeuvre Counts





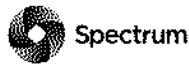
Turning Movement Count (2 . BLUE RIDGE RD & SHEPPARD AVE)

Start Time	N Approach BLUE RIDGE RD						E Approach SHEPPARD AVE E						S Approach BLUE RIDGE RD						W Approach SHEPPARD AVE E						Int. Total (15 min)	Int. Total (1 hr)	
	Right N-W	Thru N-S	Left N-E	U-Turn N-N	Peds N-	Approach Total	Right E-N	Thru E-W	Left E-S	U-Turn E-E	Peds E-	Approach Total	Right S-E	Thru S-N	Left S-W	U-Turn S-S	Peds S-	Approach Total	Right W-S	Thru W-E	Left W-N	U-Turn W-W	Peds W-	Approach Total			
07:30:00	4	0	6	0	2	10	4	344	0	0	0	348	0	0	10	0	4	10	22	270	4	0	0	296	664		
07:45:00	6	0	4	0	3	10	6	352	2	0	1	360	0	0	16	0	6	16	25	265	6	0	1	296	682		
08:00:00	4	0	10	0	2	14	7	339	2	0	1	348	0	0	24	0	17	24	37	335	2	0	2	374	760		
08:15:00	2	0	13	0	2	15	7	279	1	0	0	287	0	0	14	0	14	14	44	367	5	0	0	416	732	2838	
08:30:00	6	0	16	0	4	22	7	312	0	0	1	319	0	0	21	0	12	21	58	350	3	0	3	411	773	2947	
08:45:00	7	0	18	0	7	25	6	374	0	0	0	380	0	0	21	0	13	21	49	398	4	0	4	451	877	3142	
09:00:00	4	0	7	0	11	11	7	324	0	0	5	331	0	0	12	0	10	12	45	317	4	1	0	367	721	3103	
09:15:00	5	0	7	0	4	12	4	270	2	0	2	276	0	0	18	0	12	18	37	326	4	0	0	367	673	3044	
BREAK																											
16:00:00	6	0	3	0	4	9	8	390	1	0	6	399	4	0	34	0	16	38	49	370	2	0	0	421	867		
16:15:00	2	0	9	0	2	11	11	408	0	1	2	420	2	0	30	0	24	32	62	396	2	0	1	460	923		
16:30:00	2	0	9	0	17	11	12	380	0	0	9	392	6	2	50	0	13	58	42	386	2	0	2	430	891		
16:45:00	4	0	6	0	4	10	8	462	1	0	2	471	3	0	33	0	14	36	57	388	1	0	2	446	963	3644	
17:00:00	1	1	5	0	5	7	17	397	0	0	3	414	0	0	23	0	18	23	54	380	6	0	0	440	884	3661	
17:15:00	3	0	4	0	1	7	15	422	1	0	2	438	3	1	30	0	14	34	49	384	1	0	0	434	913	3651	
17:30:00	3	0	7	0	8	10	17	405	2	0	3	424	1	1	34	0	12	36	50	382	5	0	1	437	907	3667	
17:45:00	4	0	6	0	9	10	4	424	3	0	3	431	0	4	23	0	5	27	60	409	5	0	3	474	942	3646	
Grand Total	63	1	130	0	85	194	140	5882	15	1	40	6038	19	8	393	0	204	420	740	5723	56	1	19	6520	13172	-	
Approach%	32.5%	0.5%	67%	0%	-	-	2.3%	97.4%	0.2%	0%	-	-	4.5%	1.9%	93.6%	0%	-	-	11.3%	87.8%	0.9%	0%	-	-	-	-	
Totals %	0.5%	0%	1%	0%	-	1.5%	1.1%	44.7%	0.1%	0%	-	45.8%	0.1%	0.1%	3%	0%	-	3.2%	5.6%	43.4%	0.4%	0%	-	49.5%	-	-	
Heavy	1	0	1	0	-	-	1	136	0	0	-	-	0	0	1	0	-	-	6	158	2	0	-	-	-	-	
Heavy %	1.6%	0%	0.8%	0%	-	-	0.7%	2.3%	0%	0%	-	-	0%	0%	0.3%	0%	-	-	0.8%	2.8%	3.6%	0%	-	-	-	-	
Bicycles	0	0	0	0	-	-	0	1	0	0	-	-	0	1	0	0	-	-	0	1	0	0	-	-	-	-	
Bicycle %	0%	0%	0%	0%	-	-	0%	0%	0%	0%	-	-	0%	12.5%	0%	0%	-	-	0%	0%	0%	0%	-	-	-	-	

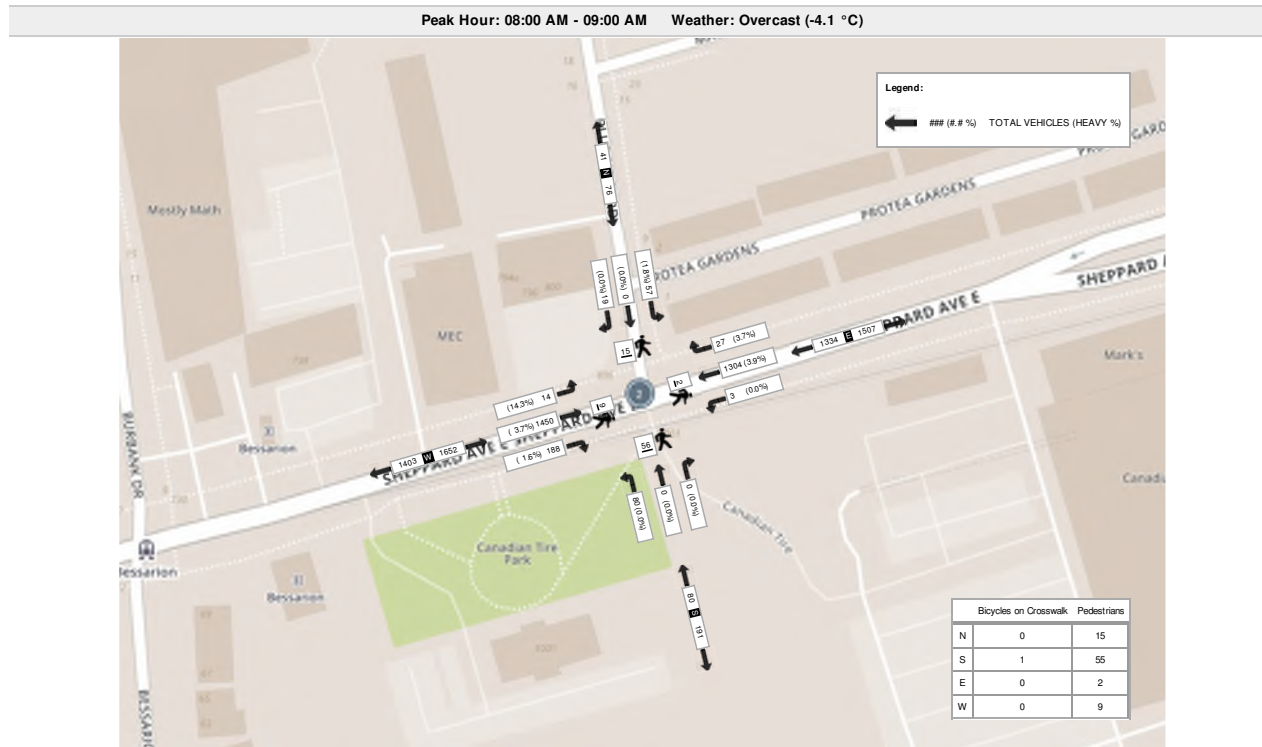
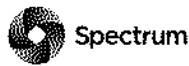


Peak Hour: 08:00 AM - 09:00 AM Weather: Overcast (-4.1 °C)

Start Time	N Approach BLUE RIDGE RD						E Approach SHEPPARD AVE E						S Approach BLUE RIDGE RD						W Approach SHEPPARD AVE E						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
08:00:00	4	0	10	0	2	14	7	339	2	0	1	348	0	0	24	0	17	24	37	335	2	0	2	374	760
08:15:00	2	0	13	0	2	15	7	279	1	0	0	287	0	0	14	0	14	14	44	367	5	0	0	416	732
08:30:00	6	0	16	0	4	22	7	312	0	0	1	319	0	0	21	0	12	21	58	350	3	0	3	411	773
08:45:00	7	0	18	0	7	25	6	374	0	0	0	380	0	0	21	0	13	21	49	398	4	0	4	451	877
Grand Total	19	0	57	0	15	76	27	1304	3	0	2	1334	0	0	80	0	56	80	188	1450	14	0	9	1652	3142
Approach%	25%	0%	75%	0%	-	-	2%	97.8%	0.2%	0%	-	-	0%	0%	100%	0%	-	-	11.4%	87.8%	0.8%	0%	-	-	-
Totals %	0.6%	0%	1.8%	0%	-	2.4%	0.9%	41.5%	0.1%	0%	-	42.5%	0%	0%	2.5%	0%	-	2.5%	6%	46.1%	0.4%	0%	-	52.6%	-
PHF	0.68	0	0.79	0	-	0.76	0.96	0.87	0.38	0	-	0.88	0	0	0.83	0	-	0.83	0.81	0.91	0.7	0	-	0.92	-
Heavy	0	0	1	0	-	1	1	51	0	0	-	52	0	0	0	0	-	0	3	54	2	0	-	59	-
Heavy %	0%	0%	1.8%	0%	-	1.3%	3.7%	3.9%	0%	0%	-	3.9%	0%	0%	0%	0%	-	0%	1.6%	3.7%	14.3%	0%	-	3.6%	-
Lights	19	0	56	0	-	75	26	1253	3	0	-	1282	0	0	80	0	-	80	185	1396	12	0	-	1593	-
Lights %	100%	0%	98.2%	0%	-	98.7%	96.3%	96.1%	100%	0%	-	96.1%	0%	0%	100%	0%	-	100%	98.4%	96.3%	85.7%	0%	-	96.4%	-
Single-Unit Trucks	0	0	0	0	-	0	1	25	0	0	-	26	0	0	0	0	-	0	2	32	2	0	-	36	-
Single-Unit Trucks %	0%	0%	0%	0%	-	0%	3.7%	1.9%	0%	0%	-	1.9%	0%	0%	0%	0%	-	0%	1.1%	2.2%	14.3%	0%	-	2.2%	-
Buses	0	0	1	0	-	1	0	24	0	0	-	24	0	0	0	0	-	0	1	21	0	0	-	22	-
Buses %	0%	0%	1.8%	0%	-	1.3%	0%	1.8%	0%	0%	-	1.8%	0%	0%	0%	0%	-	0%	0.5%	1.4%	0%	0%	-	1.3%	-
Articulated Trucks	0	0	0	0	-	0	0	2	0	0	-	2	0	0	0	0	-	0	0	1	0	0	-	1	-
Articulated Trucks %	0%	0%	0%	0%	-	0%	0%	0.2%	0%	0%	-	0.1%	0%	0%	0%	0%	-	0%	0%	0.1%	0%	0%	-	0.1%	-
Pedestrians	-	-	-	-	15	-	-	-	-	-	2	-	-	-	-	-	55	-	-	-	-	-	9	-	-
Pedestrians%	-	-	-	-	18.3%	-	-	-	-	-	2.4%	-	-	-	-	-	67.1%	-	-	-	-	-	11%	-	-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-
Bicycles on Crosswalk%	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	1.2%	-	-	-	-	-	0%	-	-
Bicycles on Road	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	-
Bicycles on Road%	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-



Peak Hour: 04:45 PM - 05:45 PM Weather: Partly Cloudy (0.1 °C)																									
Start Time	N Approach BLUE RIDGE RD						E Approach SHEPPARD AVE E						S Approach BLUE RIDGE RD						W Approach SHEPPARD AVE E						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
16:45:00	4	0	6	0	4	10	8	462	1	0	2	471	3	0	33	0	14	36	57	388	1	0	2	446	963
17:00:00	1	1	5	0	5	7	17	397	0	0	3	414	0	0	23	0	18	23	54	380	6	0	0	440	884
17:15:00	3	0	4	0	1	7	15	422	1	0	2	438	3	1	30	0	14	34	49	384	1	0	0	434	913
17:30:00	3	0	7	0	8	10	17	405	2	0	3	424	1	1	34	0	12	36	50	382	5	0	1	437	907
Grand Total	11	1	22	0	18	34	57	1686	4	0	10	1747	7	2	120	0	58	129	210	1534	13	0	3	1757	3567
Approach%	32.4%	2.9%	64.7%	0%	-	-	3.3%	96.5%	0.2%	0%	-	-	5.4%	1.6%	93%	0%	-	-	12%	87.3%	0.7%	0%	-	-	
Totals %	0.3%	0%	0.6%	0%	0.9%	0.9%	1.6%	46%	0.1%	0%	47.6%	0.2%	0.1%	3.3%	0%	3.5%	5.7%	41.8%	0.4%	0%	47.9%	-	-		
PHF	0.69	0.25	0.79	0	0.85	0.84	0.91	0.5	0	0.93	0.58	0.5	0.88	0	0.9	0.92	0.99	0.54	0	0.98	-	-			
Heavy	0	0	0	0	0	0	0	18	0	0	18	0	0	1	0	1	1	24	0	0	25	-	-		
Heavy %	0%	0%	0%	0%	0%	0%	0%	1.1%	0%	0%	1%	0%	0%	0.8%	0%	0.8%	0.5%	1.6%	0%	0%	1.4%	-	-		
Lights	11	1	22	0	34	57	1668	4	0	1729	7	2	119	0	128	209	1510	13	0	1732	-	-			
Lights %	100%	100%	100%	0%	100%	100%	98.9%	100%	0%	99%	100%	100%	99.2%	0%	99.2%	99.5%	98.4%	100%	0%	98.6%	-	-			
Single-Unit Trucks	0	0	0	0	0	0	0	8	0	0	8	0	0	1	0	1	14	0	0	15	-	-			
Single-Unit Trucks %	0%	0%	0%	0%	0%	0%	0%	0.5%	0%	0%	0.5%	0%	0%	0.8%	0%	0.8%	0.5%	0.9%	0%	0%	0.9%	-	-		
Buses	0	0	0	0	0	0	0	8	0	0	8	0	0	0	0	0	9	0	0	9	-	-			
Buses %	0%	0%	0%	0%	0%	0%	0%	0.5%	0%	0%	0.5%	0%	0%	0%	0%	0%	0%	0.6%	0%	0%	0.5%	-	-		
Articulated Trucks	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	1	0	0	1	-	-			
Articulated Trucks %	0%	0%	0%	0%	0%	0%	0%	0.1%	0%	0%	0.1%	0%	0%	0%	0%	0%	0%	0.1%	0%	0%	0.1%	-	-		
Pedestrians	-	-	-	-	18	-	-	-	-	-	10	-	-	-	-	56	-	-	-	-	3	-	-		
Pedestrians%	-	-	-	-	20.2%	-	-	-	-	-	11.2%	-	-	-	-	62.9%	-	-	-	-	3.4%	-	-		
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	2	-	-	-	-	0	-	-		
Bicycles on Crosswalk%	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	2.2%	-	-	-	-	0%	-	-		
Bicycles on Road	0	0	0	0	0	-	0	0	0	0	0	-	0	1	0	0	0	-	0	0	0	0	-		
Bicycles on Road%	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-		

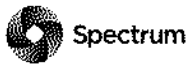


Peak Hour: 04:45 PM - 05:45 PM Weather: Partly Cloudy (0.1 °C)

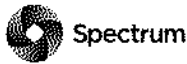


Turning Movement Count (1 . BURBANK DR & SHEPPARD AVE)

Start Time	N Approach BURBANK DR						E Approach SHEPPARD AVE E						S Approach BESSARIAN RD						W Approach SHEPPARD AVE E						Int. Total (15 min)	Int. Total (1 hr)	
	Right N-W	Thru N-S	Left N-E	U-Turn N-N	Peds N	Approach Total	Right E-N	Thru E-W	Left E-S	U-Turn E-E	Peds E	Approach Total	Right S-E	Thru S-N	Left S-W	U-Turn S-S	Peds S	Approach Total	Right W-S	Thru W-E	Left W-N	U-Turn W-W	Peds W	Approach Total			
07:30:00	5	2	30	0	2	37	23	331	0	0	1	354	4	3	1	0	3	8	0	252	2	0	0	254	653		
07:45:00	14	3	50	0	8	67	24	338	1	2	2	365	5	3	1	0	4	9	0	237	6	0	1	243	684		
08:00:00	9	4	69	0	4	82	19	352	2	0	2	373	10	4	5	1	4	20	2	308	3	0	0	313	788		
08:15:00	11	3	67	0	5	81	20	268	2	0	1	290	7	4	2	0	18	13	1	316	5	0	4	322	706	2831	
08:30:00	19	2	63	0	11	94	39	285	2	0	2	326	8	3	3	0	21	14	2	354	4	0	2	360	784	2962	
08:45:00	19	8	77	0	9	104	32	340	11	0	1	383	5	11	3	0	27	19	4	350	13	1	11	368	874	3152	
09:00:00	21	3	53	0	9	77	21	311	5	1	2	338	5	1	1	0	24	7	1	336	9	0	3	346	768	3132	
09:15:00	11	1	46	0	7	58	13	267	2	0	7	282	4	2	1	0	18	7	3	300	10	0	1	313	660	3086	
BREAK																											
16:00:00	14	2	46	0	7	62	39	390	5	0	3	434	4	4	4	0	11	12	2	379	11	0	2	392	900		
16:15:00	12	2	40	0	1	54	37	390	4	0	3	431	4	0	0	0	16	4	1	411	11	0	1	423	912		
16:30:00	9	3	37	0	12	49	35	390	8	0	1	433	8	3	4	0	15	15	4	338	6	0	3	348	845		
16:45:00	10	4	44	0	3	58	38	419	8	0	5	465	1	1	1	0	11	3	1	382	3	0	1	386	912	3569	
17:00:00	13	2	44	0	4	59	37	408	5	0	5	450	5	3	1	0	20	9	2	411	8	0	2	421	939	3608	
17:15:00	4	4	58	0	8	66	43	389	9	0	2	441	3	1	5	0	13	9	3	372	14	0	1	389	905	3601	
17:30:00	14	3	62	0	7	79	54	380	6	0	2	440	5	1	2	0	13	8	2	379	14	0	2	395	922	3678	
17:45:00	10	9	54	0	6	73	51	398	8	1	4	458	7	0	0	0	9	7	1	402	6	0	1	409	947	3713	
Grand Total	195	55	840	0	103	1090	525	5656	78	4	43	6263	85	44	34	1	227	164	29	5527	125	1	35	5682	13199	-	
Approach%	17.9%	5%	77.1%	0%	-	-	8.4%	90.3%	1.2%	0.1%	-	-	51.8%	26.8%	20.7%	0.6%	-	-	0.5%	97.3%	2.2%	0%	-	-	-	-	
Totals %	1.5%	0.4%	6.4%	0%	-	8.3%	4%	42.9%	0.6%	0%	-	47.5%	0.6%	0.3%	0.3%	0%	-	1.2%	0.2%	41.9%	0.9%	0%	-	43%	-	-	
Heavy	7	3	12	0	-	-	18	95	2	0	-	-	1	0	1	0	-	-	1	120	2	0	-	-	-	-	
Heavy %	3.6%	5.5%	1.4%	0%	-	-	3.4%	1.7%	2.6%	0%	-	-	1.2%	0%	2.9%	0%	-	-	3.4%	2.2%	1.6%	0%	-	-	-	-	
Bicycles	0	0	0	0	-	-	0	0	0	0	-	-	0	0	0	0	-	-	0	3	0	0	-	-	-	-	
Bicycle %	0%	0%	0%	0%	-	-	0%	0%	0%	0%	-	-	0%	0%	0%	0%	-	-	0%	0.1%	0%	0%	-	-	-	-	

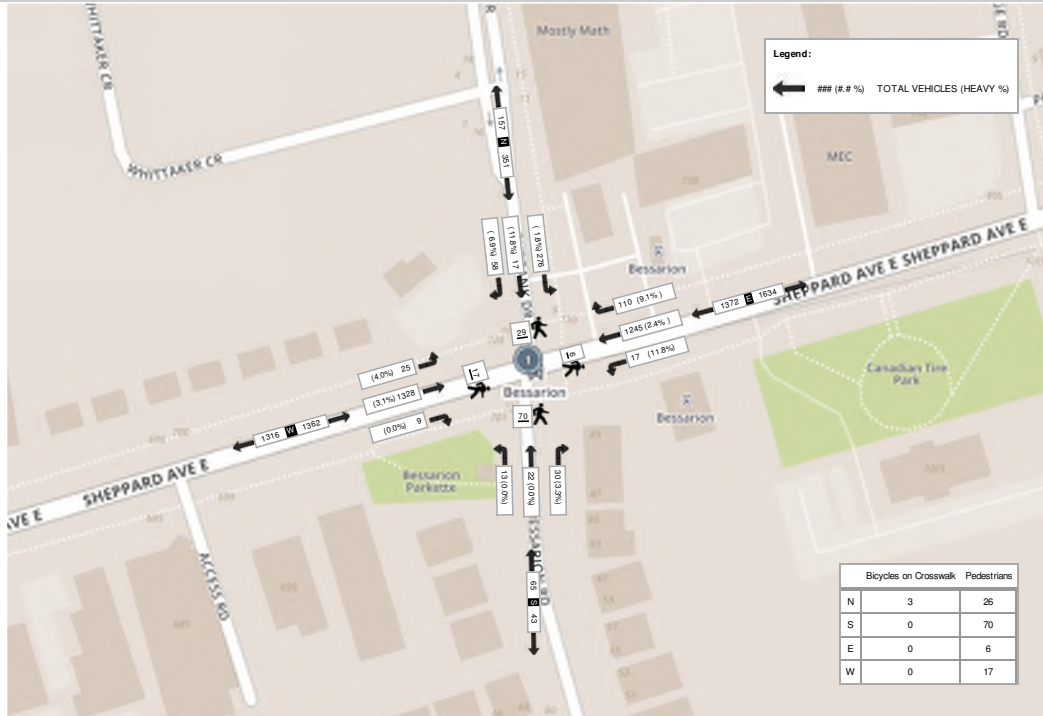


Peak Hour: 08:00 AM - 09:00 AM Weather: Overcast (-4.1 °C)																										
Start Time	N Approach BURBANK DR						E Approach SHEPPARD AVE E						S Approach BESSARION RD						W Approach SHEPPARD AVE E						Int. Total (15 min)	
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total		
08:00:00	9	4	69	0	4	82	19	352	2	0	2	373	10	4	5	1	4	20	2	308	3	0	0	313	788	
08:15:00	11	3	67	0	5	81	20	268	2	0	1	290	7	4	2	0	18	13	1	316	5	0	4	322	706	
08:30:00	19	2	63	0	11	84	39	285	2	0	2	326	8	3	3	0	21	14	2	354	4	0	2	360	784	
08:45:00	19	8	77	0	9	104	32	340	11	0	1	383	5	11	3	0	27	19	4	350	13	1	11	368	874	
Grand Total	58	17	276	0	29	351	110	1245	17	0	6	1372	30	22	13	1	70	66	9	1328	25	1	17	1363	3152	
Approach%	16.5%	4.8%	78.6%	0%	-	-	8%	90.7%	1.2%	0%	-	-	45.5%	33.3%	19.7%	1.5%	-	0.7%	97.4%	1.8%	0.1%	-	-	-	-	
Totals %	1.8%	0.5%	8.8%	0%	11.1%	3.5%	39.5%	0.5%	0%	43.5%	1%	0.7%	0.4%	0%	2.1%	0.3%	42.1%	0.8%	0%	43.2%	-	-	-	-	-	
PHF	0.76	0.53	0.9	0	0.84	0.71	0.88	0.39	0	0.9	0.75	0.5	0.65	0.25	0.83	0.56	0.94	0.48	0.25	0.93	-	-	-	-	-	
Heavy	4	2	5	0	11	10	30	2	0	42	1	0	0	0	1	0	41	1	0	42	-	-	-	-	-	
Heavy %	6.9%	11.8%	1.8%	0%	3.1%	9.1%	2.4%	11.8%	0%	3.1%	3.3%	0%	0%	0%	1.5%	0%	3.1%	4%	0%	3.1%	-	-	-	-	-	
Lights	54	15	271	0	340	100	1215	15	0	1330	29	22	13	1	65	9	1287	24	1	1321	-	-	-	-	-	
Lights %	93.1%	88.2%	98.2%	0%	96.9%	90.9%	97.6%	88.2%	0%	96.9%	96.7%	100%	100%	100%	98.5%	100%	96.9%	96%	100%	96.9%	-	-	-	-	-	
Single-Unit Trucks	1	1	3	0	5	1	16	0	0	17	0	0	0	0	0	0	20	0	0	20	-	-	-	-	-	
Single-Unit Trucks %	1.7%	5.9%	1.1%	0%	1.4%	0.9%	1.3%	0%	0%	1.2%	0%	0%	0%	0%	0%	0%	1.5%	0%	0%	1.5%	-	-	-	-	-	
Buses	3	1	2	0	6	9	11	2	0	22	1	0	0	0	1	0	18	1	0	19	-	-	-	-	-	
Buses %	5.2%	5.9%	0.7%	0%	1.7%	8.2%	0.9%	11.8%	0%	1.6%	3.3%	0%	0%	0%	1.5%	0%	1.4%	4%	0%	1.4%	-	-	-	-	-	
Articulated Trucks	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	3	0	0	3	-	-	-	-	-	
Articulated Trucks %	0%	0%	0%	0%	0%	0%	0%	0.2%	0%	0%	0.2%	0%	0%	0%	0%	0%	0%	0.2%	0%	0%	0.2%	-	-	-	-	-
Pedestrians	-	-	-	-	26	-	-	-	-	6	-	-	-	-	70	-	-	-	-	17	-	-	-	-	-	
Pedestrians%	-	-	-	-	21.3%	-	-	-	-	4.9%	-	-	-	-	57.4%	-	-	-	-	13.9%	-	-	-	-	-	
Bicycles on Crosswalk	-	-	-	-	3	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-	-	-	-	
Bicycles on Crosswalk%	-	-	-	-	2.5%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	-	
Bicycles on Road	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	-	
Bicycles on Road%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	-	

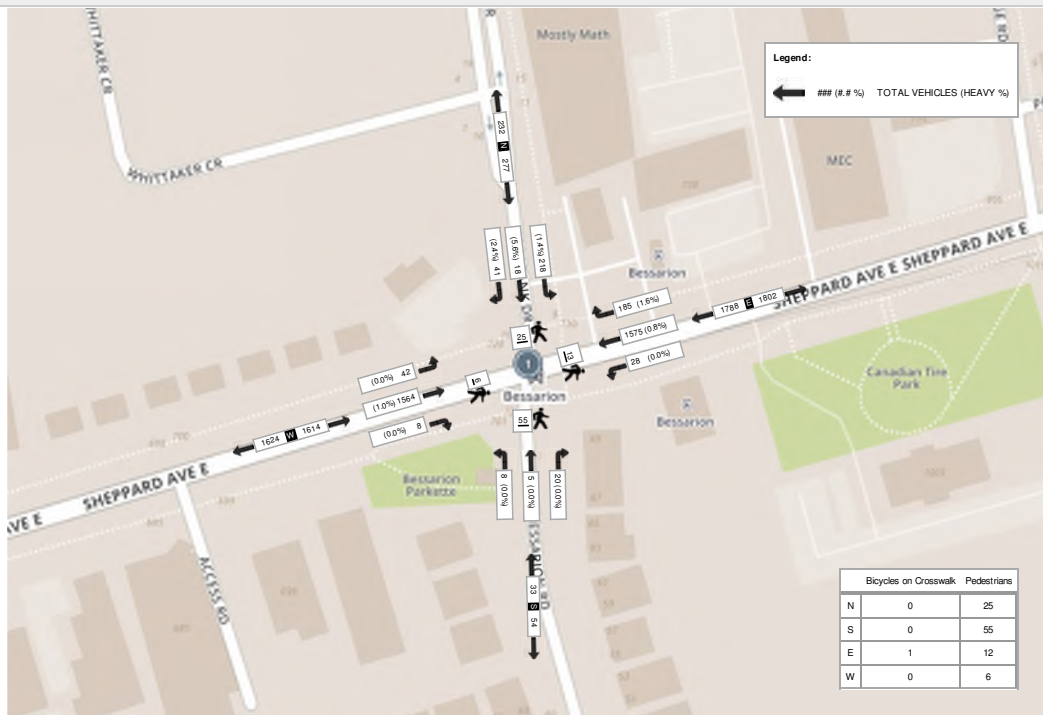


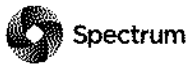
Peak Hour: 05:00 PM - 06:00 PM Weather: Partly Cloudy (0.1 °C)																									
Start Time	N Approach BURBANK DR						E Approach SHEPPARD AVE E						S Approach BESSARION RD						W Approach SHEPPARD AVE E						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
17:00:00	13	2	44	0	4	59	37	408	5	0	5	450	5	3	1	0	20	9	2	411	8	0	2	421	939
17:15:00	4	4	58	0	8	66	43	389	9	0	2	441	3	1	5	0	13	9	3	372	14	0	1	389	905
17:30:00	14	3	62	0	7	79	54	380	6	0	2	440	5	1	2	0	13	8	2	379	14	0	2	395	922
17:45:00	10	9	54	0	6	73	51	398	8	1	4	458	7	0	0	0	9	7	1	402	6	0	1	409	947
Grand Total	41	18	218	0	25	277	185	1575	28	1	13	1789	20	5	8	0	55	33	8	1564	42	0	6	1614	3713
Approach%	14.8%	6.5%	78.7%	0%	-	-	10.3%	88%	1.6%	0.1%	-	-	60.6%	15.2%	24.2%	0%	-	0.5%	96.9%	2.6%	0%	-	-	-	-
Totals %	1.1%	0.5%	5.9%	0%	7.5%	5%	42.4%	0.8%	0%	48.2%	0.5%	0.1%	0.2%	0%	0.9%	0.2%	42.1%	1.1%	0%	43.5%	-	-	-	-	-
PHF	0.73	0.5	0.88	0	0.88	0.86	0.97	0.78	0.25	0.98	0.71	0.42	0.4	0	0.92	0.67	0.95	0.75	0	0.96	-	-	-	-	-
Heavy	1	1	3	0	5	3	13	0	0	16	0	0	0	0	0	0	16	0	0	16	0	0	16	-	-
Heavy %	2.4%	5.6%	1.4%	0%	1.8%	1.6%	0.8%	0%	0%	0.9%	0%	0%	0%	0%	0%	0%	1%	0%	0%	1%	-	-	-	-	-
Lights	40	17	215	0	272	182	1562	28	1	1773	20	5	8	0	33	8	1548	42	0	1598	-	-	-	-	-
Lights %	97.6%	94.4%	98.6%	0%	98.2%	98.4%	99.2%	100%	100%	99.1%	100%	100%	100%	0%	100%	100%	99%	100%	0%	99%	-	-	-	-	-
Single-Unit Trucks	1	1	2	0	4	1	6	0	0	7	0	0	0	0	0	0	10	0	0	10	-	-	-	-	-
Single-Unit Trucks %	2.4%	5.6%	0.9%	0%	1.4%	0.5%	0.4%	0%	0%	0.4%	0%	0%	0%	0%	0%	0%	0.6%	0%	0%	0.6%	-	-	-	-	-
Buses	0	0	1	0	1	2	5	0	0	7	0	0	0	0	0	0	5	0	0	5	-	-	-	-	-
Buses %	0%	0%	0.5%	0%	0.4%	1.1%	0.3%	0%	0%	0.4%	0%	0%	0%	0%	0%	0%	0.3%	0%	0%	0.3%	-	-	-	-	-
Articulated Trucks	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	-	-	-	-	-
Articulated Trucks %	0%	0%	0%	0%	0%	0%	0.1%	0%	0%	0.1%	0%	0%	0%	0%	0%	0%	0.1%	0%	0%	0.1%	-	-	-	-	-
Pedestrians	-	-	-	-	25	-	-	-	-	12	-	-	-	-	55	-	-	-	-	6	-	-	-	-	-
Pedestrians%	-	-	-	-	25.3%	-	-	-	-	12.1%	-	-	-	-	55.6%	-	-	-	-	6.1%	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	1	-	-	-	-	0	-	-	-	-	0	-	-	-	-	-
Bicycles on Crosswalk%	-	-	-	-	0%	-	-	-	-	1%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	-
Bicycles on Road	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	1	0	0	0	-	-
Bicycles on Road%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	-

Peak Hour: 08:00 AM - 09:00 AM Weather: Overcast (-4.1 °C)



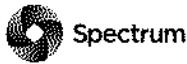
Peak Hour: 05:00 PM - 06:00 PM Weather: Partly Cloudy (0.1 °C)





Turning Movement Count (9 - ESTHER SHINER BLVD & IKEA EAST DRIVEWAY)

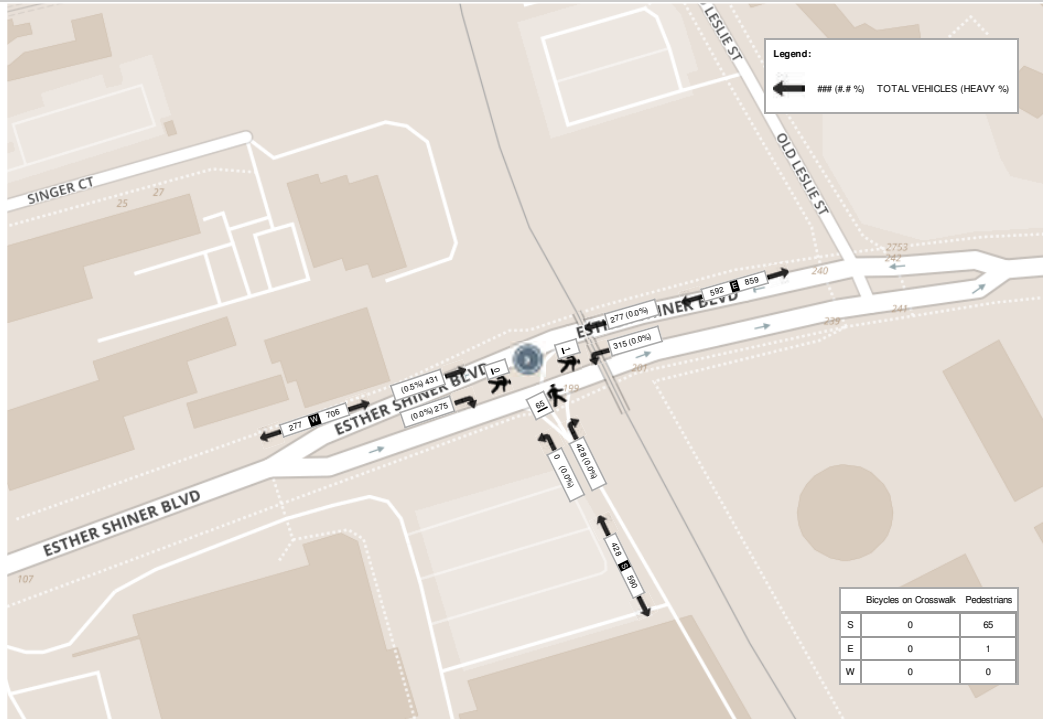
Start Time	N Approach ESTHER SHINER BLVD						E Approach IKEA EAST DRIVEWAY						S Approach ESTHER SHINER BLVD						W Approach IKEA EAST DRIVEWAY						Int. Total (15 min)	Int. Total (1 hr)
	Right N-W	Thru N-S	Left N-E	U-Turn N-N	Peds N	Approach Total	Right E-N	Thru E-W	Left E-S	U-Turn E-E	Peds E	Approach Total	Right S-E	Thru S-N	Left S-W	U-Turn S-S	Peds S	Approach Total	Right W-S	Thru W-E	Left W-N	U-Turn W-W	Peds W	Approach Total		
11:00:00	0	0	0	0	3	0	0	55	71	0	0	126	48	0	0	0	14	48	49	76	0	0	0	125	299	
11:15:00	0	0	0	0	5	0	0	38	77	0	0	115	63	0	0	0	6	63	45	97	0	0	0	142	320	
11:30:00	0	0	0	0	3	0	0	53	55	0	0	108	74	0	0	0	10	74	43	92	0	0	0	135	317	
11:45:00	0	0	0	0	7	0	0	63	62	0	0	125	77	0	0	0	10	77	42	71	0	0	0	113	315	1251
12:00:00	0	0	0	0	7	0	0	60	95	0	0	155	68	0	0	0	6	68	46	84	0	0	0	130	353	1305
12:15:00	0	0	0	0	13	0	0	56	85	0	0	141	54	0	0	0	8	54	47	108	0	0	0	155	350	1335
12:30:00	0	0	0	0	4	0	0	51	65	0	0	116	67	0	0	0	8	67	69	122	0	0	0	191	374	1392
12:45:00	0	0	0	0	5	0	0	57	75	0	0	132	61	0	0	0	17	61	51	93	0	0	0	144	337	1414
13:00:00	0	0	0	0	6	0	0	75	81	0	1	156	94	0	0	0	18	94	58	83	0	0	0	141	391	1452
13:15:00	0	0	0	0	7	0	0	76	67	0	0	143	86	0	0	0	20	86	68	92	0	0	0	160	389	1491
13:30:00	0	0	0	0	11	0	0	74	85	0	0	159	76	0	0	0	9	76	53	98	0	0	0	151	386	1503
13:45:00	0	0	0	0	5	0	0	78	88	0	0	166	91	0	0	0	18	91	57	87	0	0	0	144	401	1567
14:00:00	0	0	0	0	8	0	0	67	83	0	0	150	85	0	0	0	14	85	61	82	0	0	0	143	378	1554
14:15:00	0	0	0	0	14	0	0	65	90	0	0	155	72	0	0	0	4	72	56	108	0	0	2	164	391	1556
14:30:00	0	0	0	0	8	0	0	77	83	1	0	161	97	0	0	0	20	97	56	99	0	0	0	155	413	1583
14:45:00	0	0	0	0	5	0	0	75	81	0	0	156	112	0	0	0	20	112	68	103	0	0	0	171	439	1621
15:00:00	0	0	0	0	9	0	0	72	90	0	0	162	108	0	0	0	9	108	70	104	0	0	0	174	444	1687
15:15:00	0	0	0	0	7	0	0	65	77	0	0	142	101	0	0	0	17	101	69	111	0	0	0	180	423	1719
15:30:00	0	0	0	0	4	0	0	65	67	1	1	133	107	0	0	0	19	107	68	113	0	0	0	181	421	1727
15:45:00	0	0	0	0	4	0	0	72	76	1	0	149	111	0	0	0	4	111	64	104	0	0	0	168	428	1716
Grand Total	0	0	0	0	135	0	0	1294	1553	3	2	2850	1652	0	0	0	251	1652	1140	1927	0	0	2	3067	7569	-
Approach%	0%	0%	0%	0%	-	0%	45.4%	54.5%	0.1%	-	100%	0%	0%	0%	-	37.2%	62.8%	0%	0%	-	-	-	-	-	-	-
Totals %	0%	0%	0%	0%	0%	0%	17.1%	20.5%	0%	37.7%	21.8%	0%	0%	0%	21.8%	15.1%	25.5%	0%	0%	40.5%	-	-	-	-	-	-
Heavy	0	0	0	0	-	0	12	1	0	-	1	0	0	0	-	3	12	0	0	-	-	-	-	-	-	-
Heavy %	0%	0%	0%	0%	-	0%	0.9%	0.1%	0%	-	0.1%	0%	0%	0%	-	0.3%	0.6%	0%	0%	-	-	-	-	-	-	-
Bicycles	0	0	0	0	-	0	1	0	0	-	0	0	0	0	-	0	1	0	0	-	-	-	-	-	-	-
Bicycle %	0%	0%	0%	0%	-	0%	0.1%	0%	0%	-	0%	0%	0%	0%	-	0%	0.1%	0%	0%	-	-	-	-	-	-	-



Peak Hour: 02:45 PM - 03:45 PM Weather: Light Rain (9.4 °C)

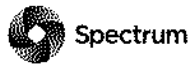
Start Time	N Approach ESTHER SHINER BLVD						E Approach IKEA EAST DRIVEWAY						S Approach ESTHER SHINER BLVD						W Approach IKEA EAST DRIVEWAY						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
14:45:00	0	0	0	0	5	0	0	75	81	0	0	156	112	0	0	0	20	112	68	103	0	0	0	171	439
15:00:00	0	0	0	0	9	0	0	72	90	0	0	162	108	0	0	0	9	108	70	104	0	0	0	174	444
15:15:00	0	0	0	0	7	0	0	65	77	0	0	142	101	0	0	0	17	101	69	111	0	0	0	180	423
15:30:00	0	0	0	0	4	0	0	65	67	1	1	133	107	0	0	0	19	107	68	113	0	0	0	181	421
Grand Total	0	0	0	0	25	0	0	277	315	1	1	593	428	0	0	0	65	428	275	431	0	0	0	706	1727
Approach%	0%	0%	0%	0%	-	0%	46.7%	53.1%	0.2%	-	100%	0%	0%	0%	-	39%	61%	0%	0%	-	-	-	-	-	-
Totals %	0%	0%	0%	0%	0%	0%	16%	18.2%	0.1%	34.3%	24.8%	0%	0%	0%	24.8%	15.9%	25%	0%	0%	40.9%	-	-	-	-	-
PHF	0	0	0	0	0	0	0	0.92	0.88	0.25	0.92	0.96	0	0	0	0.96	0.98	0.95	0	0	0.98	-	-	-	-
Heavy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	-	-	-	-	-
Heavy %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0.5%	0%	0%	0.3%	-	-	-	-	-
Lights	0	0	0	0	0	0	0	277	315	1	1	593	428	0	0	0	65	428	275	429	0	0	0	704	-
Lights %	0%	0%	0%	0%	0%	0%	0%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	100%	100%	99.5%	0%	0%	0%	99.7%	-
Single-Unit Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	-
Single-Unit Trucks %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0.2%	0%	0%	0%	0.1%	-
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
Buses %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	-
Articulated Trucks %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0.2%	0%	0%	0%	0.1%	-
Pedestrians	-	-	-	-	25	-	-	-	-	-	1	-	-	-	-	-	65	-	-	-	-	-	0	-	-
Pedestrians%	-	-	-	-	27.5%	-	-	-	-	-	1.1%	-	-	-	-	-	71.4%	-	-	-	-	-	0%	-	-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
Bicycles on Crosswalk %	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-
Bicycles on Road	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	-
Bicycles on Road %	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-

Peak Hour: 02:45 PM - 03:45 PM Weather: Light Rain (9.4 °C)

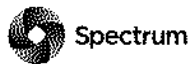


Turning Movement Count (2 . LESLIE ST & ESTHER SHINER BLVD)

Start Time	N Approach LESLIE ST						E Approach NORTH YORK GENERAL HOSPITAL						S Approach LESLIE ST						W Approach ESTHER SHINER BLVD						Int. Total (15 min)	Int. Total (1 hr)	
	Right N-W	Thru N-S	Left N-E	U-Turn N-N	Peds N:	Approach Total	Right E-N	Thru E-W	Left E-S	U-Turn E-E	Peds E:	Approach Total	Right S-E	Thru S-N	Left S-W	U-Turn S-S	Peds S:	Approach Total	Right W-S	Thru W-E	Left W-N	U-Turn W-W	Peds W:	Approach Total			
07:30:00	37	495	0	0	9	532	11	0	44	0	1	55	97	197	43	1	0	338	110	0	11	0	3	121	1046		
07:45:00	41	487	0	0	14	528	17	0	22	0	1	39	95	261	90	0	0	446	117	0	9	0	0	126	1139		
08:00:00	50	486	0	0	5	536	14	0	29	0	4	43	106	277	62	3	0	448	135	0	8	0	2	143	1170		
08:15:00	37	446	0	0	21	483	3	0	21	0	3	24	86	243	56	1	0	386	145	0	15	0	2	160	1053	4408	
08:30:00	47	523	0	0	9	570	7	0	20	0	4	27	91	280	76	0	0	447	151	0	23	0	2	174	1218	4580	
08:45:00	63	416	0	0	18	479	13	1	23	0	5	37	94	328	94	1	0	517	131	2	10	0	2	143	1176	4617	
09:00:00	55	433	0	0	12	488	12	0	19	0	0	31	83	280	74	0	0	437	120	0	15	0	3	135	1091	4538	
09:15:00	45	443	0	0	12	488	12	1	17	0	0	30	63	290	83	0	2	436	97	0	9	0	2	106	1060	4545	
BREAK																											
16:00:00	55	342	0	0	20	397	23	0	77	0	1	100	34	429	84	0	1	547	155	0	31	0	7	186	1230		
16:15:00	29	365	0	0	15	394	31	0	61	0	0	92	28	405	83	1	0	517	133	0	39	0	5	172	1175		
16:30:00	46	351	0	0	15	397	37	1	57	0	2	95	26	483	70	0	0	579	126	0	28	0	1	154	1225		
16:45:00	35	301	0	0	24	336	21	0	61	0	1	82	39	412	65	0	0	516	125	1	51	0	4	177	1111	4741	
17:00:00	39	290	0	0	21	329	19	0	48	0	5	67	31	428	72	1	0	532	177	0	52	0	7	229	1157	4668	
17:15:00	34	416	0	0	9	450	14	0	34	0	5	48	32	415	89	0	0	536	206	0	44	0	2	250	1284	4777	
17:30:00	39	373	0	0	12	412	27	0	43	0	5	70	33	437	87	3	0	560	157	1	36	0	3	194	1236	4788	
17:45:00	47	413	0	0	8	460	10	0	25	0	3	35	40	447	86	0	0	573	135	0	45	0	2	180	1248	4925	
Grand Total	699	6580	0	0	224	7279	271	3	601	0	40	875	978	5612	1214	11	3	7815	2220	4	426	0	47	2650	18619	-	
Approach%	9.6%	90.4%	0%	0%	-	-	31%	0.3%	68.7%	0%	-	-	12.5%	71.8%	15.5%	0.1%	-	-	83.8%	0.2%	16.1%	0%	-	-	-	-	
Totals %	3.8%	35.3%	0%	0%	-	39.1%	1.5%	0%	3.2%	0%	4.7%	5.3%	30.1%	6.5%	0.1%	-	42%	-	11.9%	0%	2.3%	0%	-	14.2%	-	-	
Heavy	11	134	0	0	-	-	1	0	22	0	-	-	32	130	30	0	-	-	25	0	19	0	-	-	-	-	
Heavy %	1.6%	2%	0%	0%	-	-	0.4%	0%	3.7%	0%	-	-	3.3%	2.3%	2.5%	0%	-	-	1.1%	0%	4.5%	0%	-	-	-	-	
Bicycles	0	1	0	0	-	-	0	1	0	0	-	-	0	0	0	0	-	-	0	0	0	0	-	-	-	-	
Bicycle %	0%	0%	0%	0%	-	-	0%	33.3%	0%	0%	-	-	0%	0%	0%	0%	-	-	0%	0%	0%	0%	-	-	-	-	

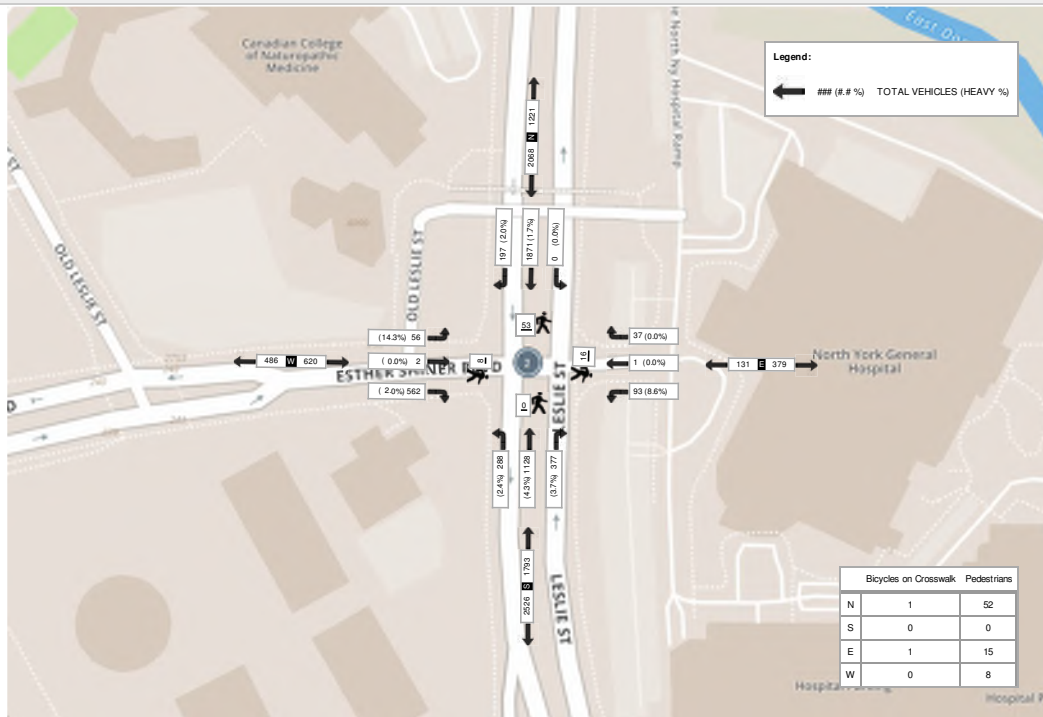


Peak Hour: 08:00 AM - 09:00 AM Weather: Scattered Clouds (-3.13 °C)																									
Start Time	N Approach LESLIE ST						E Approach NORTH YORK GENERAL HOSPITAL						S Approach LESLIE ST						W Approach ESTHER SHINER BLVD						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
08:00:00	50	486	0	0	5	536	14	0	29	0	4	43	106	277	62	3	0	448	135	0	8	0	2	143	1170
08:15:00	37	446	0	0	21	483	3	0	21	0	3	24	86	243	56	1	0	386	145	0	15	0	2	160	1053
08:30:00	47	523	0	0	9	570	7	0	20	0	4	27	91	280	76	0	0	447	151	0	23	0	2	174	1218
08:45:00	63	416	0	0	18	479	13	1	23	0	5	37	94	328	94	1	0	517	131	2	10	0	2	143	1176
Grand Total	197	1871	0	0	53	2068	37	1	93	0	16	131	377	1128	288	5	0	1798	562	2	56	0	8	620	4617
Approach%	9.5%	90.5%	0%	0%	-	-	28.2%	0.8%	71%	0%	-	-	21%	62.7%	16%	0.3%	-	-	90.6%	0.3%	9%	0%	-	-	-
Totals %	4.3%	40.5%	0%	0%	-	44.8%	0.8%	0%	2%	0%	-	2.8%	8.2%	24.4%	6.2%	0.1%	-	38.9%	12.2%	0%	1.2%	0%	-	13.4%	-
PHF	0.78	0.89	0	0	-	0.91	0.66	0.25	0.8	0	-	0.76	0.89	0.86	0.77	0.42	-	0.87	0.93	0.25	0.61	0	-	0.89	-
Heavy	4	31	0	0	-	35	0	0	8	0	-	8	14	48	7	0	-	69	11	0	8	0	-	19	-
Heavy %	2%	1.7%	0%	0%	-	1.7%	0%	0%	8.6%	0%	-	6.1%	3.7%	4.3%	2.4%	0%	-	3.8%	2%	0%	14.3%	0%	-	3.1%	-
Lights	193	1840	0	0	-	2033	37	1	85	0	-	123	363	1080	281	5	-	1729	551	2	48	0	-	601	-
Lights %	98%	98.3%	0%	0%	-	98.3%	100%	100%	91.4%	0%	-	93.9%	96.3%	95.7%	97.6%	100%	-	96.2%	98%	100%	85.7%	0%	-	96.9%	-
Single-Unit Trucks	4	18	0	0	-	22	0	0	4	0	-	4	11	31	3	0	-	45	7	0	2	0	-	9	-
Single-Unit Trucks %	2%	1%	0%	0%	-	1.1%	0%	0%	4.3%	0%	-	3.1%	2.9%	2.7%	1%	0%	-	2.5%	1.2%	0%	3.6%	0%	-	1.5%	-
Buses	0	10	0	0	-	10	0	0	3	0	-	3	3	16	3	0	-	22	4	0	6	0	-	10	-
Buses %	0%	0.5%	0%	0%	-	0.5%	0%	0%	3.2%	0%	-	2.3%	0.8%	1.4%	1%	0%	-	1.2%	0.7%	0%	10.7%	0%	-	1.6%	-
Articulated Trucks	0	3	0	0	-	3	0	0	1	0	-	1	0	1	1	0	-	2	0	0	0	0	-	0	-
Articulated Trucks %	0%	0.2%	0%	0%	-	0.1%	0%	0%	1.1%	0%	-	0.8%	0%	0.1%	0.3%	0%	-	0.1%	0%	0%	0%	0%	-	0%	-
Pedestrians	-	-	-	-	52	-	-	-	-	15	-	-	-	-	-	0	-	-	-	-	-	8	-	-	-
Pedestrians%	-	-	-	-	67.5%	-	-	-	-	19.5%	-	-	-	-	-	0%	-	-	-	-	-	10.4%	-	-	-
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-
Bicycles on Crosswalk%	-	-	-	-	1.3%	-	-	-	-	1.3%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-
Bicycles on Road	0	1	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	-
Bicycles on Road%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-

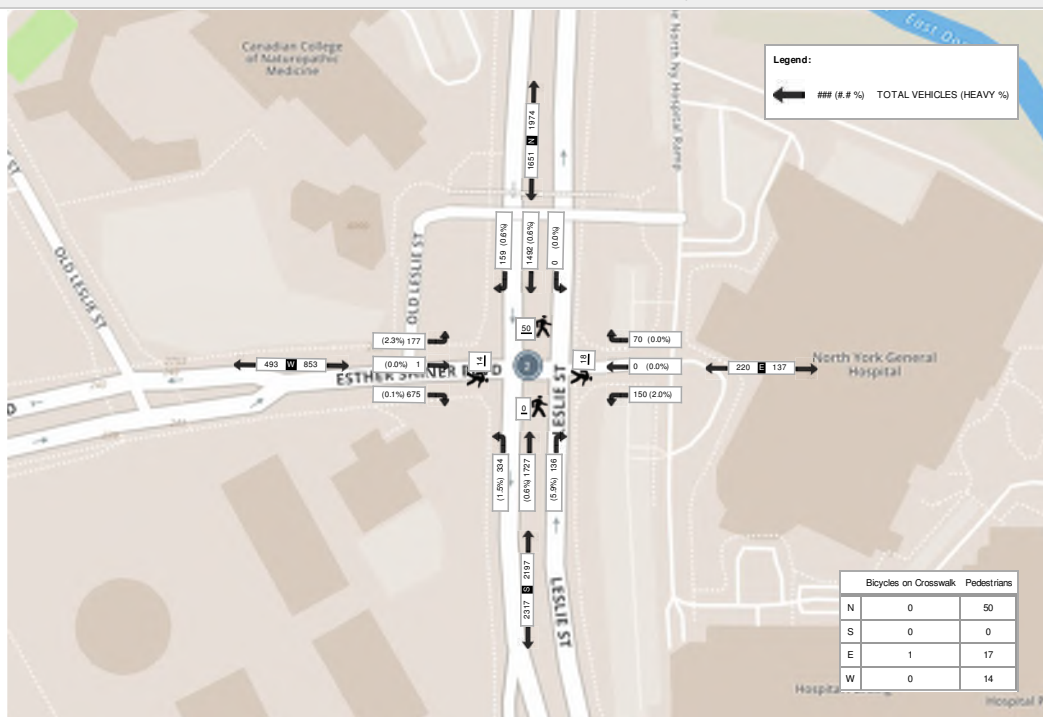


Peak Hour: 05:00 PM - 06:00 PM Weather: Clear Sky (7.7 °C)																									
Start Time	N Approach LESLIE ST						E Approach NORTH YORK GENERAL HOSPITAL						S Approach LESLIE ST						W Approach ESTHER SHINER BLVD						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
17:00:00	39	290	0	0	21	329	19	0	48	0	5	67	31	428	72	1	0	532	177	0	52	0	7	229	1157
17:15:00	34	416	0	0	9	450	14	0	34	0	5	48	32	415	89	0	0	536	206	0	44	0	2	250	1284
17:30:00	39	373	0	0	12	412	27	0	43	0	5	70	33	437	87	3	0	560	157	1	36	0	3	194	1236
17:45:00	47	413	0	0	8	460	10	0	25	0	3	35	40	447	86	0	0	573	135	0	45	0	2	180	1248
Grand Total	159	1492	0	0	50	1651	70	0	150	0	18	220	136	1727	334	4	0	2201	675	1	177	0	14	853	4925
Approach%	9.6%	90.4%	0%	0%	-	-	31.8%	0%	68.2%	0%	-	-	6.2%	78.5%	15.2%	0.2%	-	-	79.1%	0.1%	20.8%	0%	-	-	-
Totals %	3.2%	30.3%	0%	0%	-	33.5%	1.4%	0%	3%	0%	-	4.5%	2.8%	35.1%	6.8%	0.1%	-	44.7%	13.7%	0%	3.6%	0%	-	17.3%	-
PHF	0.85	0.9	0	0	-	0.9	0.65	0	0.78	0	-	0.79	0.85	0.97	0.94	0.33	-	0.96	0.82	0.25	0.85	0	-	0.85	-
Heavy	1	9	0	0	-	10	0	0	3	0	-	3	8	11	5	0	-	24	1	0	4	0	-	5	-
Heavy %	0.6%	0.6%	0%	0%	-	0.6%	0%	0%	2%	0%	-	1.4%	5.9%	0.6%	1.5%	0%	-	1.1%	0.1%	0%	2.3%	0%	-	0.6%	-
Lights	158	1483	0	0	-	1641	70	0	147	0	-	217	128	1716	329	4	-	2177	674	1	173	0	-	848	-
Lights %	99.4%	99.4%	0%	0%	-	99.4%	100%	0%	98%	0%	-	98.6%	94.1%	99.4%	98.5%	100%	-	98.9%	99.9%	100%	97.7%	0%	-	99.4%	-
Single-Unit Trucks	1	5	0	0	-	6	0	0	1	0	-	1	4	8	2	0	-	14	1	0	0	0	-	1	-
Single-Unit Trucks %	0.6%	0.3%	0%	0%	-	0.4%	0%	0%	0.7%	0%	-	0.5%	2.9%	0.5%	0.6%	0%	-	0.6%	0.1%	0%	0%	0%	-	0.1%	-
Buses	0	3	0	0	-	3	0	0	2	0	-	2	4	1	3	0	-	8	0	0	3	0	-	3	-
Buses %	0%	0.2%	0%	0%	-	0.2%	0%	0%	1.3%	0%	-	0.9%	2.9%	0.1%	0.9%	0%	-	0.4%	0%	0%	1.7%	0%	-	0.4%	-
Articulated Trucks	0	1	0	0	-	1	0	0	0	0	-	0	0	2	0	0	-	2	0	0	1	0	-	1	-
Articulated Trucks %	0%	0.1%	0%	0%	-	0.1%	0%	0%	0%	0%	-	0%	0%	0.1%	0%	0%	-	0.1%	0%	0%	0.6%	0%	-	0.1%	-
Pedestrians	-	-	-	-	50	-	-	-	-	17	-	-	-	-	-	0	-	-	-	-	-	-	14	-	-
Pedestrians%	-	-	-	-	61%	-	-	-	-	20.7%	-	-	-	-	-	0%	-	-	-	-	-	-	17.1%	-	-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
Bicycles on Crosswalk%	-	-	-	-	0%	-	-	-	-	1.2%	-	-	-	-	-	0%	-	-	-	-	-	-	0%	-	-
Bicycles on Road	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	-
Bicycles on Road%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	-	0%	-	-

Peak Hour: 08:00 AM - 09:00 AM Weather: Scattered Clouds (-3.13 °C)



Peak Hour: 05:00 PM - 06:00 PM Weather: Clear Sky (7.7 °C)



Turning Movement Count (4 . LESLIE ST & HWY 401 EB RAMPS)

Start Time	N Approach LESLIE ST							NE Approach HWY 401 EB ON RAMP [FROM NB LESLIE ST]			E Approach LESMILL RD					SE Approach		S Approach LESLIE ST					W Approach HWY 401 EB OFF RAMP					NW Approach HWY 401 EB ON RAMP		Int. Total (15 min)	Int. Total (1 hr)			
	Hard Right N:W	Right N:W	Thru N:S	Left N:E	U- Turn N:N	Peds N:	Approach Total	Peds NE:	Approach Total	Right E:N	Thru E:W	Left E:S	U- Turn E:E	Peds E:	Approach Total	Right SE:NE	Approach Total	Right S:E	Thru S:N	Left S:W	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	U- Turn W:W	Peds W:	Approach Total	Peds NW:			Approach Total		
07:30:00	169	0	326	106	3	0	604	1	0	106	0	0	0	0	106	124	124	7	279	0	0	286	142	132	110	0	0	384	0	0	1504			
07:45:00	136	0	316	135	1	0	588	0	0	136	0	0	0	0	136	131	131	9	307	0	4	316	134	163	99	0	0	396	0	0	1567			
08:00:00	165	0	385	133	2	0	685	9	0	120	0	0	0	6	120	146	146	23	380	0	0	403	135	152	99	0	0	386	0	0	1740			
08:15:00	148	0	336	123	1	0	608	2	0	139	0	0	0	0	139	171	171	24	366	0	5	390	114	230	110	0	4	454	4	0	1762	6573		
08:30:00	156	0	354	117	1	0	628	3	0	151	0	0	0	2	151	187	187	26	420	0	3	446	156	216	122	0	2	494	3	0	1906	6975		
08:45:00	168	0	349	142	0	0	659	4	0	123	0	0	0	2	123	164	164	32	387	0	8	419	150	197	122	0	5	469	5	0	1834	7242		
09:00:00	165	0	349	142	1	0	657	2	0	119	0	0	0	1	119	149	149	23	338	0	6	361	185	212	119	0	0	516	0	0	1802	7304		
09:15:00	155	0	329	111	0	0	595	0	0	110	0	0	0	2	110	129	129	14	310	0	1	324	173	213	101	0	1	487	1	0	1645	7187		
BREAK																																		
16:00:00	252	0	306	54	1	0	613	2	0	218	0	0	0	2	218	276	276	10	476	0	2	486	67	43	82	0	1	192	1	0	1785			
16:15:00	207	0	284	48	2	0	541	0	0	214	0	0	0	0	214	261	261	10	489	0	1	499	42	19	67	0	0	128	0	0	1643			
16:30:00	100	0	311	55	13	0	479	0	0	124	0	0	0	1	124	154	154	17	429	0	0	446	43	25	91	0	0	159	0	0	1362			
16:45:00	94	0	321	77	7	0	499	0	0	153	0	0	0	0	153	243	243	14	448	0	3	462	48	33	110	1	2	192	1	0	1549	6339		
17:00:00	196	0	352	65	15	0	628	2	0	220	0	0	0	2	220	362	362	27	511	0	4	538	40	26	95	0	4	161	2	0	1909	6463		
17:15:00	300	0	357	57	3	0	717	4	0	232	0	0	0	3	232	353	353	32	500	0	1	532	28	32	82	0	0	142	3	0	1976	6796		
17:30:00	250	0	346	67	8	0	671	2	0	221	0	0	0	1	221	345	345	27	534	0	2	561	28	30	87	0	1	145	1	0	1943	7377		
17:45:00	253	0	364	50	7	0	674	3	0	208	0	0	0	2	208	316	316	24	568	0	0	592	39	36	92	0	0	167	1	0	1957	7785		
Grand Total	2914	0	5385	1482	65	0	9846	34	0	2594	0	0	0	24	2594	3511	3511	319	6742	0	40	7061	1524	1759	1588	1	20	4872	22	0	27884	-		
Approach%	29.6%	0%	54.7%	15.1%	0.7%	-	-	-	-	100%	0%	0%	0%	-	-	100%	-	4.5%	95.5%	0%	-	31.3%	36.1%	32.6%	0%	-	-	-	-	-	-	-		
Totals %	10.5%	0%	19.3%	5.3%	0.2%	35.3%	0%	9.3%	0%	0%	0%	9.3%	12.6%	12.6%	1.1%	24.2%	0%	25.3%	5.5%	6.3%	5.7%	0%	17.5%	0%	-	-	-	-	-	-	-			
Heavy	106	0	88	11	0	-	-	-	-	39	0	0	0	-	79	-	-	12	196	0	-	-	79	27	59	0	-	-	-	-	-	-		
Heavy %	3.6%	0%	1.6%	0.7%	0%	-	-	-	-	1.5%	0%	0%	0%	-	2.3%	-	-	3.8%	2.9%	0%	-	5.2%	1.5%	3.7%	0%	-	-	-	-	-	-	-		
Bicycles	0	0	0	0	0	-	-	-	-	0	0	0	0	-	0	-	0	1	0	-	-	2	0	0	0	-	-	-	-	-	-	-		
Bicycle %	0%	0%	0%	0%	0%	-	-	-	-	0%	0%	0%	0%	-	0%	-	-	0%	0%	0%	-	0.1%	0%	0%	0%	-	-	-	-	-	-	-		

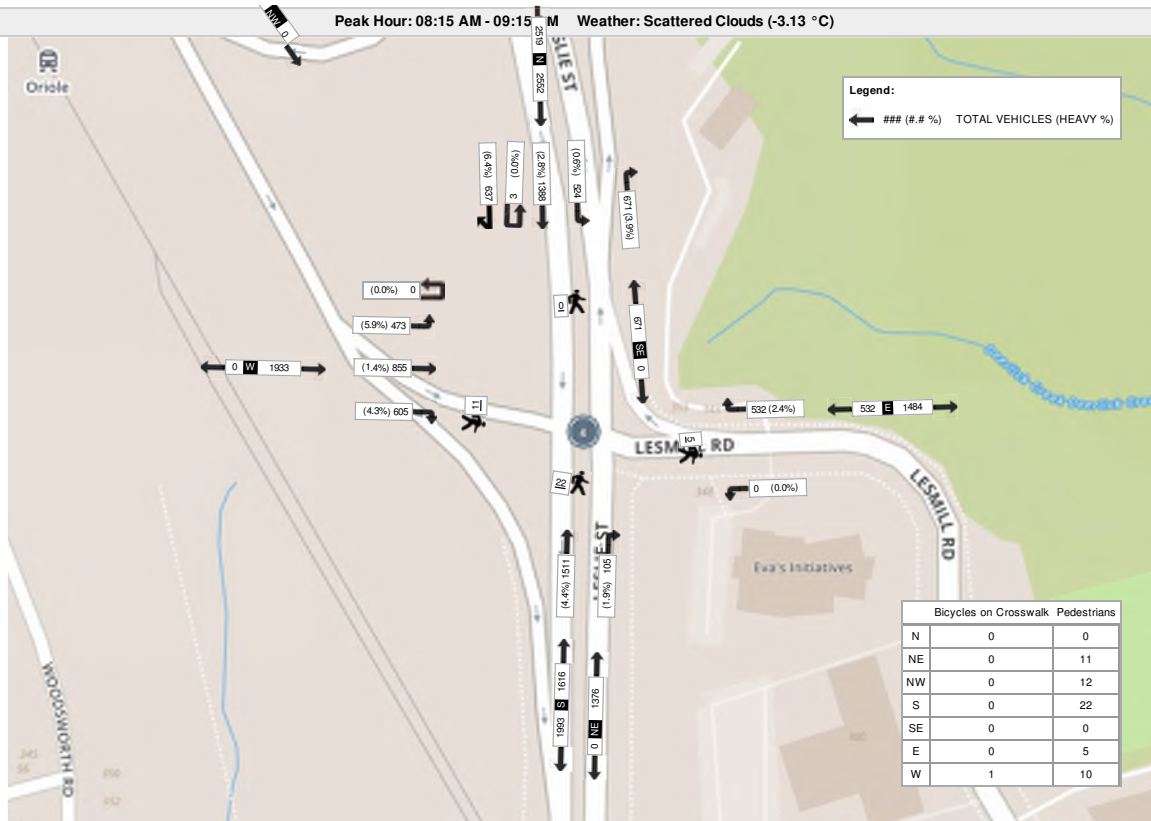
Peak Hour: 08:15 AM - 09:15 AM Weather: Scattered Clouds (-3.13 °C)

Start Time	N Approach LESLIE ST							NE Approach HWY 401 EB ON RAMP [FROM NB LESLIE ST]			E Approach LESMILL RD					SE Approach		S Approach LESLIE ST					W Approach HWY 401 EB OFF RAMP					NW Approach HWY 401 EB ON RAMP		Int. Total (15 min)		
	Hard Right	Right	Thru	Left	U- Turn	Peds	Approach Total	Peds	Approach Total		Right	Thru	Left	U- Turn	Peds	Approach Total	Right	Approach Total	Right	Thru	Left	Peds	Approach Total	Right	Thru	Left	U- Turn	Peds	Approach Total		Peds	Approach Total
08:15:00	148	0	336	123	1	0	608	2	0		139	0	0	0	0	139	171	171	24	366	0	5	390	114	230	110	0	4	454	4	0	1762
08:30:00	156	0	354	117	1	0	628	3	0		151	0	0	0	2	151	187	187	26	420	0	3	446	156	216	122	0	2	494	4	0	1906
08:45:00	168	0	349	142	0	0	659	4	0		123	0	0	0	2	123	164	164	32	387	0	8	419	150	197	122	0	5	469	5	0	1834
09:00:00	165	0	349	142	1	0	657	2	0		119	0	0	0	1	119	149	149	23	338	0	6	361	185	212	119	0	0	516	0	0	1802
Grand Total	637	0	1388	524	3	0	2552	11	0		532	0	0	0	5	532	671	671	105	1511	0	22	1616	605	855	473	0	11	1933	12	0	7304
Approach%	25%	0%	54.4%	20.5%	0.1%	-	-	-	-		100%	0%	0%	0%	-	-	100%	-	6.5%	93.5%	0%	-	31.3%	44.2%	24.5%	0%	-	-	-	-	-	-
Totals %	8.7%	0%	19%	7.2%	0%	34.9%	0%	7.3%	0%	0%	0%	7.3%	9.2%	9.2%	1.4%	20.7%	0%	22.1%	8.3%	11.7%	6.5%	0%	26.5%	0%	-	-	-	-	-	-	-	
PHF	0.95	0	0.98	0.92	0.75	0.97	0	0.88	0	0	0	0.88	0.9	0.9	0.82	0.9	0	0.91	0.82	0.93	0.97	0	0.94	0	-	-	-	-	-	-	-	
Heavy	41	0	39	3	0	83	0	13	0	0	0	13	26	26	2	67	0	69	26	12	28	0	66	0	-	-	-	-	-	-	-	
Heavy %	6.4%	0%	2.8%	0.6%	0%	3.3%	0%	2.4%	0%	0%	0%	2.4%	3.9%	3.9%	1.9%	4.4%	0%	4.3%	4.3%	1.4%	5.9%	0%	3.4%	0%	-	-	-	-	-	-	-	
Lights	596	0	1349	521	3	2469	0	519	0	0	0	519	645	645	103	1444	0	1547	579	843	445	0	1867	0	-	-	-	-	-	-	-	
Lights %	93.6%	0%	97.2%	99.4%	100%	96.7%	0%	97.6%	0%	0%	0%	97.6%	96.1%	96.1%	98.1%	95.6%	0%	95.7%	95.7%	98.6%	94.1%	0%	96.6%	0%	-	-	-	-	-	-	-	
Single-Unit Trucks	32	0	27	3	0	62	0	9	0	0	0	9	11	11	2	30	0	32	17	9	20	0	46	0	-	-	-	-	-	-	-	
Single-Unit Trucks %	5%	0%	1.9%	0.6%	0%	2.4%	0%	1.7%	0%	0%	0%	1.7%	1.6%	1.6%	1.9%	2%	0%	2%	2.8%	1.1%	4.2%	0%	2.4%	0%	-	-	-	-	-	-	-	
Buses	7	0	10	0	0	17	0	2	0	0	0	2	12	12	0	24	0	24	1	2	6	0	9	0	-	-	-	-	-	-	-	
Buses %	1.1%	0%	0.7%	0%	0%	0.7%	0%	0.4%	0%	0%	0%	0.4%	1.8%	1.8%	0%	1.6%	0%	1.5%	0.2%	0.2%	1.3%	0%	0.5%	0%	-	-	-	-	-	-	-	
Articulated Trucks	2	0	2	0	0	4	0	2	0	0	0	2	3	3	0	13	0	13	8	1	2	0	11	0	-	-	-	-	-	-	-	
Articulated Trucks %	0.3%	0%	0.1%	0%	0%	0.2%	0%	0.4%	0%	0%	0%	0.4%	0.4%	0.4%	0%	0.9%	0%	0.8%	1.3%	0.1%	0.4%	0%	0.6%	0%	-	-	-	-	-	-	-	
Pedestrians	-	-	-	-	-	0	11	-	-	-	-	-	-	-	5	-	-	-	-	-	-	22	-	-	-	-	-	-	10	12	-	-
Pedestrians%	-	-	-	-	-	0%	18%	-	-	-	-	8.2%	-	-	-	-	-	-	-	-	-	36.1%	-	-	-	-	-	16.4%	19.7%	-	-	
Bicycles on Crosswalk	-	-	-	-	-	0	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	1	-	0	-	-
Bicycles on Crosswalk%	-	-	-	-	-	0%	0%	-	-	-	-	0%	-	-	-	-	-	-	-	-	-	0%	-	-	-	-	-	1.6%	0%	-	-	
Bicycles on Road	0	0	0	0	0	0	-	0	-	0	0	0	0	0	0	-	0	-	0	0	0	0	-	0	0	0	0	0	0	-	0	-
Bicycles on Road%	-	-	-	-	-	0%	0%	-	-	-	-	-	0%	-	-	-	-	-	-	-	-	0%	-	-	-	-	-	0%	0%	-	-	

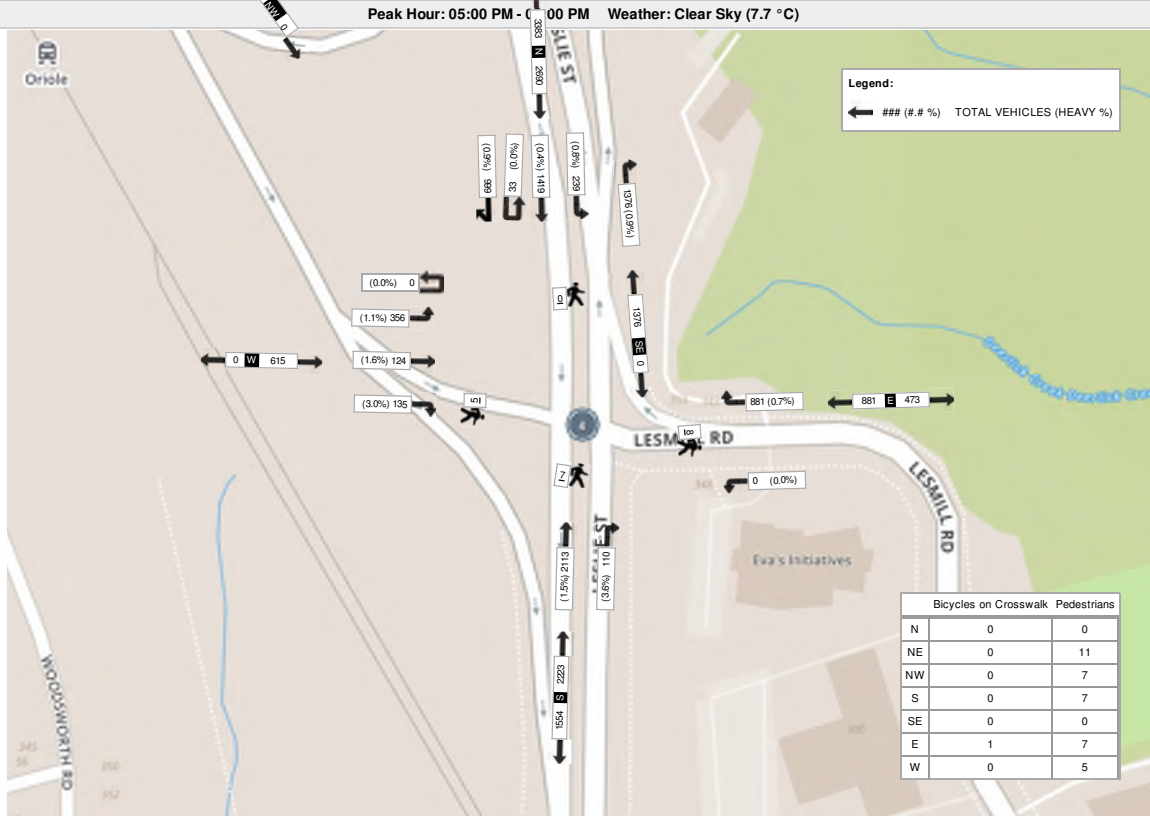
Peak Hour: 05:00 PM - 06:00 PM Weather: Clear Sky (7.7 °C)

Start Time	N Approach LESLIE ST							NE Approach HWY 401 EB ON RAMP (FROM NB LESLIE ST)			E Approach LESMILL RD					SE Approach			S Approach LESLIE ST					W Approach HWY 401 EB OFF RAMP					NW Approach HWY 401 EB ON RAMP		Int. Total (15 min)
	Hard Right	Right	Thru	Left	U-Turn	Peds	Approach Total	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Approach Total	Right	Thru	Left	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Peds	Approach Total	
17:00:00	196	0	352	65	15	0	628	2	0	220	0	0	0	2	220	362	362	27	511	0	4	538	40	26	95	0	4	161	2	0	1909
17:15:00	300	0	357	57	3	0	717	4	0	232	0	0	0	3	232	353	353	32	500	0	1	532	28	32	82	0	0	142	3	0	1976
17:30:00	250	0	346	67	8	0	671	2	0	221	0	0	0	1	221	345	345	27	534	0	2	561	28	30	87	0	1	145	1	0	1943
17:45:00	253	0	364	50	7	0	674	3	0	208	0	0	0	2	208	316	316	24	568	0	0	592	39	36	92	0	0	167	1	0	1957
Grand Total	999	0	1419	239	33	0	2690	11	0	881	0	0	0	8	881	1376	1376	110	2113	0	7	2223	135	124	356	0	5	615	7	0	7785
Approach%	37.1%	0%	52.8%	8.9%	1.2%	-	-	-	-	100%	0%	0%	0%	-	-	100%	-	4.9%	95.1%	0%	-	22%	20.2%	57.9%	0%	-	-	-	-	-	-
Totals %	12.8%	0%	18.2%	3.1%	0.4%	-	34.6%	0%	0%	11.3%	0%	0%	0%	-	11.3%	17.7%	17.7%	1.4%	27.1%	0%	-	28.6%	1.7%	1.6%	4.6%	0%	-	7.9%	0%	-	-
PHF	0.83	0	0.97	0.89	0.55	-	0.94	0	0	0.95	0	0	0	-	0.95	0.95	0.95	0.86	0.93	0	-	0.94	0.84	0.86	0.94	0	-	0.92	0	-	-
Heavy	9	0	5	2	0	-	16	0	0	6	0	0	0	-	6	12	12	4	32	0	-	36	4	2	4	0	-	10	0	-	-
Heavy %	0.9%	0%	0.4%	0.8%	0%	-	0.6%	0%	0%	0.7%	0%	0%	0%	-	0.7%	0.9%	0.9%	3.6%	1.5%	0%	-	1.6%	3%	1.6%	1.1%	0%	-	1.6%	0%	-	-
Lights	990	0	1414	237	33	-	2674	0	0	875	0	0	0	-	875	1364	1364	106	2081	0	-	2187	131	122	352	0	-	605	0	-	-
Lights %	99.1%	0%	99.6%	99.2%	100%	-	99.4%	0%	0%	99.3%	0%	0%	0%	-	99.3%	99.1%	99.1%	96.4%	98.5%	0%	-	98.4%	97%	98.4%	98.9%	0%	-	98.4%	0%	-	-
Single-Unit Trucks	4	0	3	2	0	-	9	0	0	5	0	0	0	-	5	9	9	3	20	0	-	23	3	1	2	0	-	6	0	-	-
Single-Unit Trucks %	0.4%	0%	0.2%	0.8%	0%	-	0.3%	0%	0%	0.6%	0%	0%	0%	-	0.6%	0.7%	0.7%	2.7%	0.9%	0%	-	1%	2.2%	0.8%	0.6%	0%	-	1%	0%	-	-
Buses	4	0	2	0	0	-	6	0	0	1	0	0	0	-	1	1	1	1	4	0	-	5	0	1	1	0	-	2	0	-	-
Buses %	0.4%	0%	0.1%	0%	0%	-	0.2%	0%	0%	0.1%	0%	0%	0%	-	0.1%	0.1%	0.1%	0.9%	0.2%	0%	-	0.2%	0%	0.8%	0.3%	0%	-	0.3%	0%	-	-
Articulated Trucks	1	0	0	0	0	-	1	0	0	0	0	0	0	-	0	2	2	0	8	0	-	8	1	0	1	0	-	2	0	-	-
Articulated Trucks %	0.1%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	0%	0%	-	0%	0.1%	0.1%	0%	0.4%	0%	-	0.4%	0.7%	0%	0.3%	0%	-	0.3%	0%	-	-
Pedestrians	-	-	-	-	-	0	-	11	-	-	-	-	7	-	-	-	-	-	-	7	-	-	-	-	-	5	-	7	-	-	-
Pedestrians%	-	-	-	-	-	0%	28.9%	-	-	-	-	-	18.4%	-	-	-	-	-	-	18.4%	-	-	-	-	-	13.2%	-	18.4%	-	-	-
Bicycles on Crosswalk	-	-	-	-	-	0	-	0	-	-	-	-	1	-	-	-	-	-	-	0	-	-	-	-	-	0	-	0	-	-	-
Bicycles on Crosswalk%	-	-	-	-	-	0%	0%	-	-	-	-	-	2.6%	-	-	-	-	-	-	0%	-	-	-	-	-	0%	-	0%	-	-	-
Bicycles on Road	0	0	0	0	0	0	-	0	-	0	0	0	0	0	0	0	-	0	0	0	0	-	0	0	0	0	0	-	0	-	-
Bicycles on Road%	-	-	-	-	-	0%	0%	-	-	-	-	-	0%	-	-	-	-	-	-	0%	-	-	-	-	-	0%	-	0%	-	-	-

Peak Hour: 08:15 AM - 09:15 AM Weather: Scattered Clouds (-3.13 °C)



Peak Hour: 05:00 PM - 06:00 PM Weather: Clear Sky (7.7 °C)



Turning Movement Count (3 . LESLIE ST & HWY 401 WB RAMPS)

Start Time	N Approach LESLIE ST							E Approach HWY 401 WB OFF RAMP							SE Approach HWY 401 WB ON RAMP(FROM NB LESLIE ST)				S Approach LESLIE ST							W Approach GO STATION PARKING LOT ACCESS							NW Approach HWY 401 WB ON RAMP [FROM SB LESLIE ST]		Int. Total (15 min)	Int. Total (1 hr)
	Hard Right N:W	Right N:W	Thru N:S	Left N:E	U- Turn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	U- Turn E:E	Peds E:	Approach Total	Peds SE:	Approach Total	Hard Right S:SE	Right S:E	Thru S:N	Left S:W	U- Turn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	U- Turn W:W	Peds W:	Approach Total	Peds NW:	Approach Total						
07:30:00	258	36	379	0	0	3	673	159	29	228	0	1	416	1	0	141	0	203	26	1	0	371	18	0	5	0	3	23	2	0	1483					
07:45:00	251	13	354	0	0	6	618	208	14	251	0	1	473	1	0	190	0	214	12	0	0	416	4	0	4	0	2	8	3	0	1515					
08:00:00	223	17	420	0	0	4	660	186	18	249	0	6	453	7	0	187	0	233	18	1	0	439	13	0	9	0	2	22	2	0	1574					
08:15:00	205	2	417	0	0	3	624	149	14	179	0	6	342	3	0	199	0	258	7	1	0	465	14	0	5	0	3	19	2	0	1450	6022				
08:30:00	201	12	474	0	0	2	687	117	21	172	0	5	310	1	0	187	0	312	5	1	0	505	20	0	8	0	2	28	3	0	1530	6069				
08:45:00	185	0	390	0	0	0	575	199	13	218	0	5	430	5	0	177	0	299	1	1	0	478	14	0	4	0	3	18	2	0	1501	6055				
09:00:00	176	0	408	0	0	1	584	182	8	208	0	1	398	1	0	161	0	288	0	1	0	450	8	0	2	0	0	10	0	0	1442	5923				
09:15:00	174	0	389	0	0	0	563	165	2	210	0	0	377	0	0	150	0	245	0	1	0	396	2	0	0	0	2	2	1	0	1338	5811				
BREAK																																				
16:00:00	142	1	427	0	0	1	570	216	0	156	0	2	372	2	0	183	0	306	2	0	0	491	6	0	2	0	2	8	1	0	1441					
16:15:00	157	2	396	0	0	4	555	216	2	150	0	2	368	1	0	202	0	305	2	0	0	509	6	0	2	0	5	8	2	0	1440					
16:30:00	137	4	376	0	0	0	517	215	1	125	0	2	341	2	0	136	0	357	1	1	0	495	3	0	5	0	0	8	0	0	1361					
16:45:00	139	7	348	0	0	2	494	198	1	142	0	1	341	1	0	138	0	328	1	0	0	467	11	0	5	0	3	16	2	0	1318	5560				
17:00:00	123	3	378	0	1	9	505	169	3	170	1	0	343	1	0	168	0	328	4	0	0	500	49	0	45	0	4	94	4	0	1442	5561				
17:15:00	151	7	506	0	0	4	664	208	5	175	0	4	388	3	0	173	0	285	3	0	0	461	23	0	6	0	1	29	3	0	1542	5663				
17:30:00	136	3	435	0	0	1	574	209	1	187	0	4	397	4	0	173	0	340	2	0	0	515	42	0	29	0	0	71	3	0	1557	5859				
17:45:00	127	7	456	0	0	0	590	204	7	183	0	4	394	3	0	199	0	355	4	1	0	559	32	0	23	0	0	55	0	0	1598	6139				
Grand Total	2785	114	6553	0	1	40	9453	3000	139	3003	1	44	6143	36	0	2764	0	4656	88	9	0	7517	265	0	154	0	32	419	30	0	23532	-				
Approach%	29.5%	1.2%	69.3%	0%	0%	-	-	48.8%	2.3%	48.9%	0%	-	-	-	-	36.8%	0%	61.9%	1.2%	0.1%	-	63.2%	0%	36.8%	0%	-	-	-	-	-	-	-				
Totals %	11.8%	0.5%	27.8%	0%	0%	-	40.2%	12.7%	0.6%	12.8%	0%	26.1%	-	0%	-	11.7%	0%	19.8%	0.4%	0%	-	31.9%	1.1%	0%	0.7%	0%	1.8%	-	0%	-	-	-				
Heavy	49	0	132	0	0	-	-	74	0	61	0	-	-	-	-	111	0	108	0	0	-	0	0	3	0	-	-	-	-	-	-	-				
Heavy %	1.8%	0%	2%	0%	0%	-	-	2.5%	0%	2%	0%	-	-	-	-	4%	0%	2.3%	0%	0%	-	0%	0%	1.9%	0%	-	-	-	-	-	-	-				
Bicycles	0	0	0	0	0	-	-	0	0	0	0	-	-	-	-	0	0	1	0	0	-	0	0	0	0	-	-	-	-	-	-	-				
Bicycle %	0%	0%	0%	0%	0%	-	-	0%	0%	0%	0%	-	-	-	-	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	-	-	-	-	-	-	-				

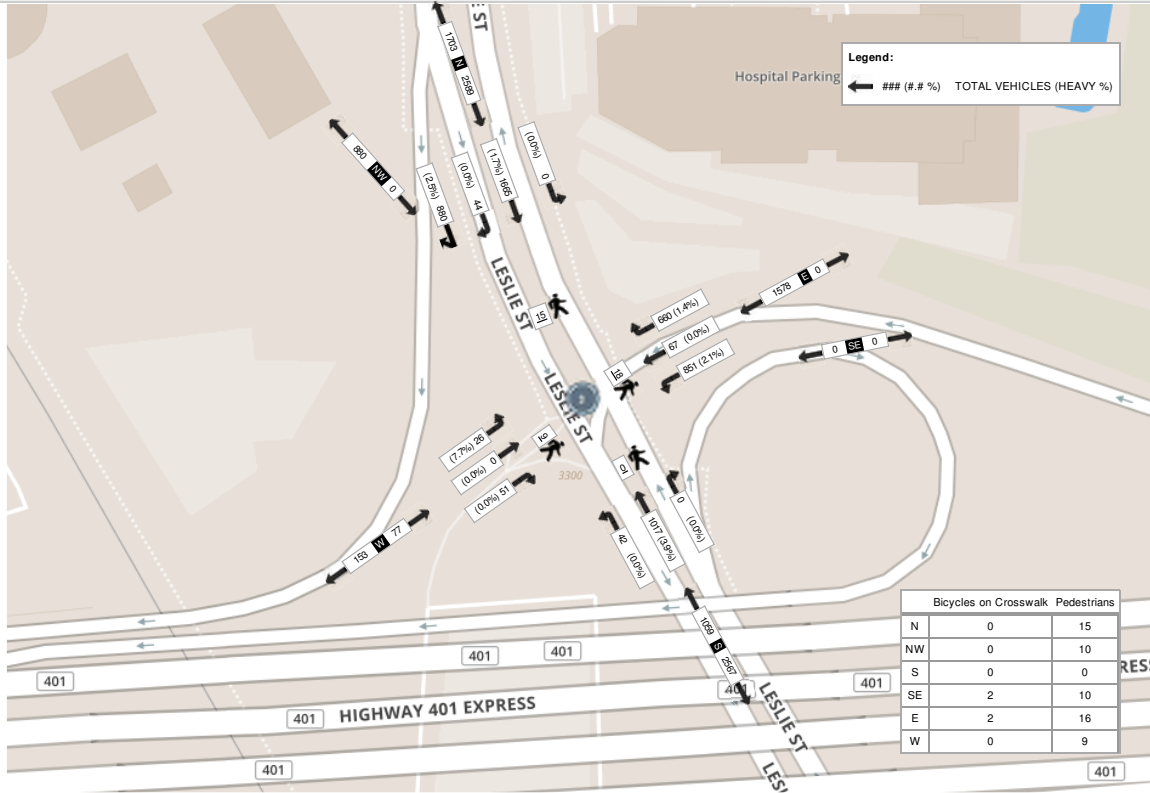
Peak Hour: 07:45 AM - 08:45 AM Weather: Scattered Clouds (-3.13 °C)

Start Time	N Approach LESLIE ST							E Approach HWY 401 WB OFF RAMP						SE Approach HWY 401 WB ON RAMP[FROM NB LESLIE ST]				S Approach LESLIE ST							W Approach GO STATION PARKING LOT ACCESS						NW Approach HWY 401 WB ON RAMP [FROM SB LESLIE ST]			Int. Total (15 min)
	Hard Right	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Peds	Approach Total	Hard Right	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Peds	Approach Total				
07:45:00	251	13	354	0	0	6	618	208	14	251	0	1	473	1	0	190	0	214	12	0	0	416	4	0	4	0	2	8	3	0	1515			
08:00:00	223	17	420	0	0	4	660	186	18	249	0	6	453	7	0	187	0	233	18	1	0	439	13	0	9	0	2	22	2	0	1574			
08:15:00	205	2	417	0	0	3	624	149	14	179	0	6	342	3	0	199	0	258	7	1	0	465	14	0	5	0	3	19	2	0	1450			
08:30:00	201	12	474	0	0	2	687	117	21	172	0	5	310	1	0	187	0	312	5	1	0	505	20	0	8	0	2	28	3	0	1530			
Grand Total	880	44	1665	0	0	15	2589	660	67	851	0	18	1578	12	0	763	0	1017	42	3	0	1825	51	0	26	0	9	77	10	0	6069			
Approach%	34%	1.7%	64.3%	0%	0%	-	-	41.8%	4.2%	53.9%	0%	-	-	-	-	41.8%	0%	55.7%	2.3%	0.2%	-	66.2%	0%	33.8%	0%	-	-	-	-	-	-			
Totals %	14.5%	0.7%	27.4%	0%	0%	-	42.7%	10.9%	1.1%	14%	0%	-	26%	0%	0%	12.6%	0%	16.8%	0.7%	0%	-	30.1%	0.8%	0%	0.4%	0%	-	1.3%	0%	0%	-			
PHF	0.88	0.65	0.88	0	0	-	0.94	0.79	0.8	0.85	0	-	0.83	0	0	0.96	0	0.81	0.58	0.75	-	0.9	0.64	0	0.72	0	-	0.69	0	0	-			
Heavy	22	0	29	0	0	-	51	9	0	18	0	-	27	0	0	38	0	40	0	0	-	78	0	0	2	0	-	2	0	0	-			
Heavy %	2.5%	0%	1.7%	0%	0%	-	2%	1.4%	0%	2.1%	0%	-	1.7%	0%	0%	5%	0%	3.9%	0%	0%	-	4.3%	0%	0%	7.7%	0%	-	2.6%	0%	0%	-			
Lights	858	44	1636	0	0	-	2538	651	67	833	0	-	1551	0	0	725	0	977	42	3	-	1747	51	0	24	0	-	75	0	0	-			
Lights %	97.5%	100%	98.3%	0%	0%	-	98%	98.6%	100%	97.9%	0%	-	98.3%	0%	0%	95%	0%	96.1%	100%	100%	-	95.7%	100%	0%	92.3%	0%	-	97.4%	0%	0%	-			
Single-Unit Trucks	15	0	16	0	0	-	31	7	0	13	0	-	20	0	0	24	0	18	0	0	-	42	0	0	0	0	-	0	0	0	-			
Single-Unit Trucks %	1.7%	0%	1%	0%	0%	-	1.2%	1.1%	0%	1.5%	0%	-	1.3%	0%	0%	3.1%	0%	1.8%	0%	0%	-	2.3%	0%	0%	0%	0%	-	0%	0%	0%	-			
Buses	6	0	10	0	0	-	16	2	0	4	0	-	6	0	0	4	0	19	0	0	-	23	0	0	2	0	-	2	0	0	-			
Buses %	0.7%	0%	0.6%	0%	0%	-	0.6%	0.3%	0%	0.5%	0%	-	0.4%	0%	0%	0.5%	0%	1.9%	0%	0%	-	1.3%	0%	0%	7.7%	0%	-	2.6%	0%	0%	-			
Articulated Trucks	1	0	3	0	0	-	4	0	0	1	0	-	1	0	0	10	0	3	0	0	-	13	0	0	0	0	-	0	0	0	-			
Articulated Trucks %	0.1%	0%	0.2%	0%	0%	-	0.2%	0%	0%	0.1%	0%	-	0.1%	0%	0%	1.3%	0%	0.3%	0%	0%	-	0.7%	0%	0%	0%	0%	-	0%	0%	0%	-			
Pedestrians	-	-	-	-	-	15	-	-	-	-	-	16	-	10	-	-	-	-	-	-	0	-	-	-	-	-	9	-	10	-	-			
Pedestrians %	-	-	-	-	-	23.4%	-	-	-	-	-	25%	-	15.6%	-	-	-	-	-	0%	-	-	-	-	-	14.1%	-	15.6%	-	-	-			
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	2	-	2	-	-	-	-	-	-	0	-	-	-	-	0	-	0	-	-	-			
Bicycles on Crosswalk%	-	-	-	-	-	0%	-	-	-	-	-	3.1%	-	3.1%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	0%	-	-	-			
Bicycles on Road	0	0	0	0	0	0	-	0	0	0	0	0	-	0	-	0	0	1	0	0	0	-	0	0	0	0	0	-	0	-	-			
Bicycles on Road%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	0%	-	-	-			

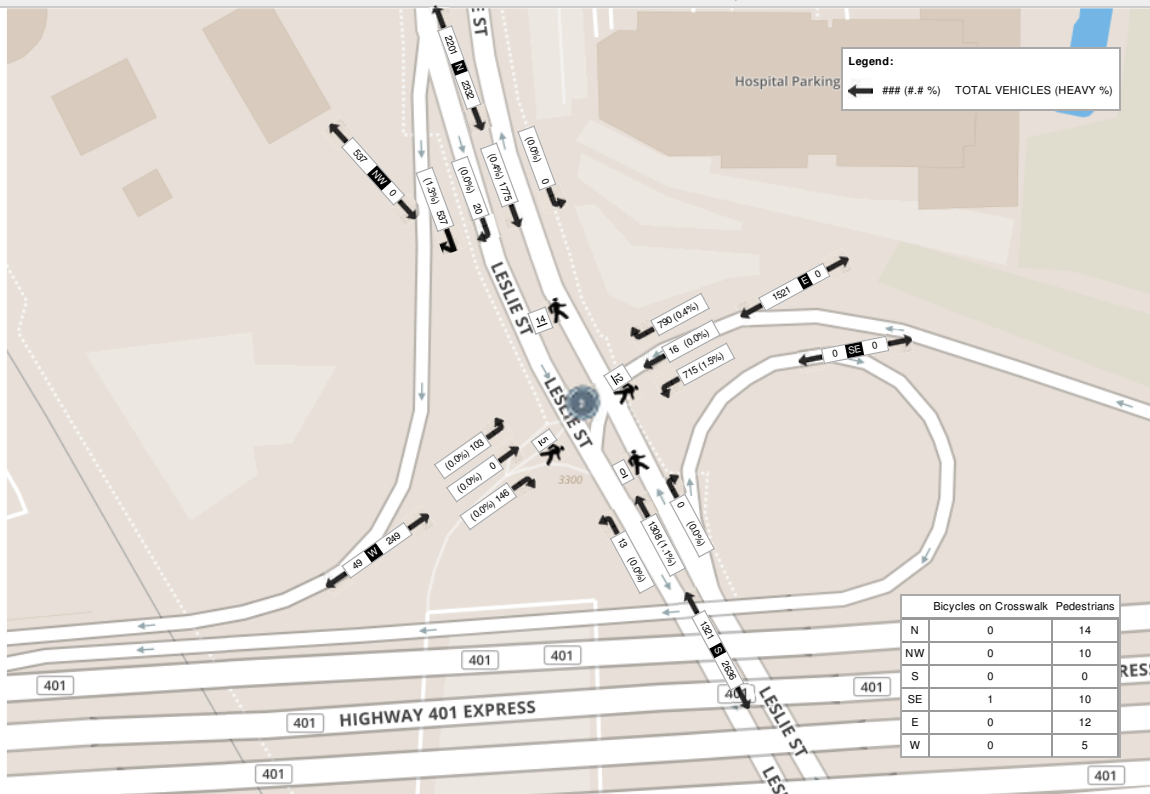
Peak Hour: 05:00 PM - 06:00 PM Weather: Clear Sky (7.7 °C)

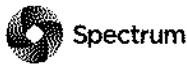
Start Time	N Approach LESLIE ST							E Approach HWY 401 WB OFF RAMP						SE Approach HWY 401 WB ON RAMP[FROM NB LESLIE ST]				S Approach LESLIE ST						W Approach GO STATION PARKING LOT ACCESS						NW Approach HWY 401 WB ON RAMP [FROM SB LESLIE ST]				Int. Total (15 min)
	Hard Right	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Peds	Approach Total	Hard Right	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Peds	Approach Total				
17:00:00	123	3	378	0	1	9	505	169	3	170	1	0	343	1	0	168	0	328	4	0	0	500	49	0	45	0	4	94	4	0	1442			
17:15:00	151	7	506	0	0	4	664	208	5	175	0	4	388	3	0	173	0	285	3	0	0	461	23	0	6	0	1	29	3	0	1542			
17:30:00	136	3	435	0	0	1	574	209	1	187	0	4	397	4	0	173	0	340	2	0	0	515	42	0	29	0	0	71	3	0	1557			
17:45:00	127	7	456	0	0	0	590	204	7	183	0	4	394	3	0	199	0	355	4	1	0	559	32	0	23	0	0	55	0	0	1598			
Grand Total	537	20	1775	0	1	14	2333	790	16	715	1	12	1522	11	0	713	0	1308	13	1	0	2035	146	0	103	0	5	249	10	0	6139			
Approach%	23%	0.9%	76.1%	0%	0%		-	51.9%	1.1%	47%	0.1%		-		35%	0%	64.3%	0.6%	0%		-	58.6%	0%	41.4%	0%		-			-	-			
Totals %	8.7%	0.3%	28.9%	0%	0%		38%	12.9%	0.3%	11.6%	0%		24.8%	0%	0%	11.6%	0%	21.3%	0.2%	0%		33.1%	2.4%	0%	1.7%	0%		4.1%	0%	0%	-			
PHF	0.89	0.71	0.88	0	0.25		0.88	0.94	0.57	0.96	0.25		0.96	0	0	0.9	0	0.92	0.81	0.25		0.91	0.74	0	0.57	0		0.66	0	0	-			
Heavy	7	0	7	0	0		14	3	0	11	0		14	0	0	17	0	15	0	0		32	0	0	0	0		0	0	0	-			
Heavy %	1.3%	0%	0.4%	0%	0%		0.6%	0.4%	0%	1.5%	0%		0.9%	0%	0%	2.4%	0%	1.1%	0%	0%		1.6%	0%	0%	0%	0%		0%	0%	0%	-			
Lights	530	20	1768	0	1		2319	787	16	704	1		1508	0	0	696	0	1293	13	1		2003	146	0	103	0		249	0	0	-			
Lights %	98.7%	100%	99.6%	0%	100%		99.4%	99.6%	100%	98.5%	100%		99.1%	0%	0%	97.6%	0%	98.9%	100%	100%		98.4%	100%	0%	100%	0%		100%	0%	0%	-			
Single-Unit Trucks	6	0	2	0	0		8	2	0	7	0		9	0	0	10	0	9	0	0		19	0	0	0	0		0	0	0	-			
Single-Unit Trucks %	1.1%	0%	0.1%	0%	0%		0.3%	0.3%	0%	1%	0%		0.6%	0%	0%	1.4%	0%	0.7%	0%	0%		0.9%	0%	0%	0%	0%		0%	0%	0%	-			
Buses	0	0	4	0	0		4	0	0	4	0		4	0	0	0	0	5	0	0		5	0	0	0	0		0	0	0	-			
Buses %	0%	0%	0.2%	0%	0%		0.2%	0%	0%	0.6%	0%		0.3%	0%	0%	0%	0%	0.4%	0%	0%		0.2%	0%	0%	0%	0%		0%	0%	0%	-			
Articulated Trucks	1	0	1	0	0		2	1	0	0	0		1	0	0	7	0	1	0	0		8	0	0	0	0		0	0	0	-			
Articulated Trucks %	0.2%	0%	0.1%	0%	0%		0.1%	0.1%	0%	0%	0%		0.1%	0%	0%	1%	0%	0.1%	0%	0%		0.4%	0%	0%	0%	0%		0%	0%	0%	-			
Pedestrians	-	-	-	-	-	14	-	-	-	-	-	12	-	10	-	-	-	-	-	-	0	-	-	-	-	-	5	-	10	-	-			
Pedestrians %	-	-	-	-	-	26.9%	-	-	-	-	-	23.1%	-	19.2%	-	-	-	-	-	0%	-	-	-	-	-	9.6%	-	19.2%	-	-	-			
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	0	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	0	-	-	-			
Bicycles on Crosswalk %	-	-	-	-	-	0%	-	-	-	-	-	0%	-	1.9%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	0%	-	-	-			
Bicycles on Road	0	0	0	0	0	0	-	0	0	0	0	0	-	0	-	0	0	0	0	0	0	-	0	0	0	0	-	0	-	-	-			
Bicycles on Road %	-	-	-	-	-	0%	-	-	-	-	-	0%	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	0%	-	-	-			

Peak Hour: 07:45 AM - 08:45 AM Weather: Scattered Clouds (-3.13 °C)

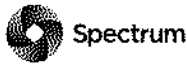


Peak Hour: 05:00 PM - 06:00 PM Weather: Clear Sky (7.7 °C)

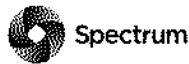




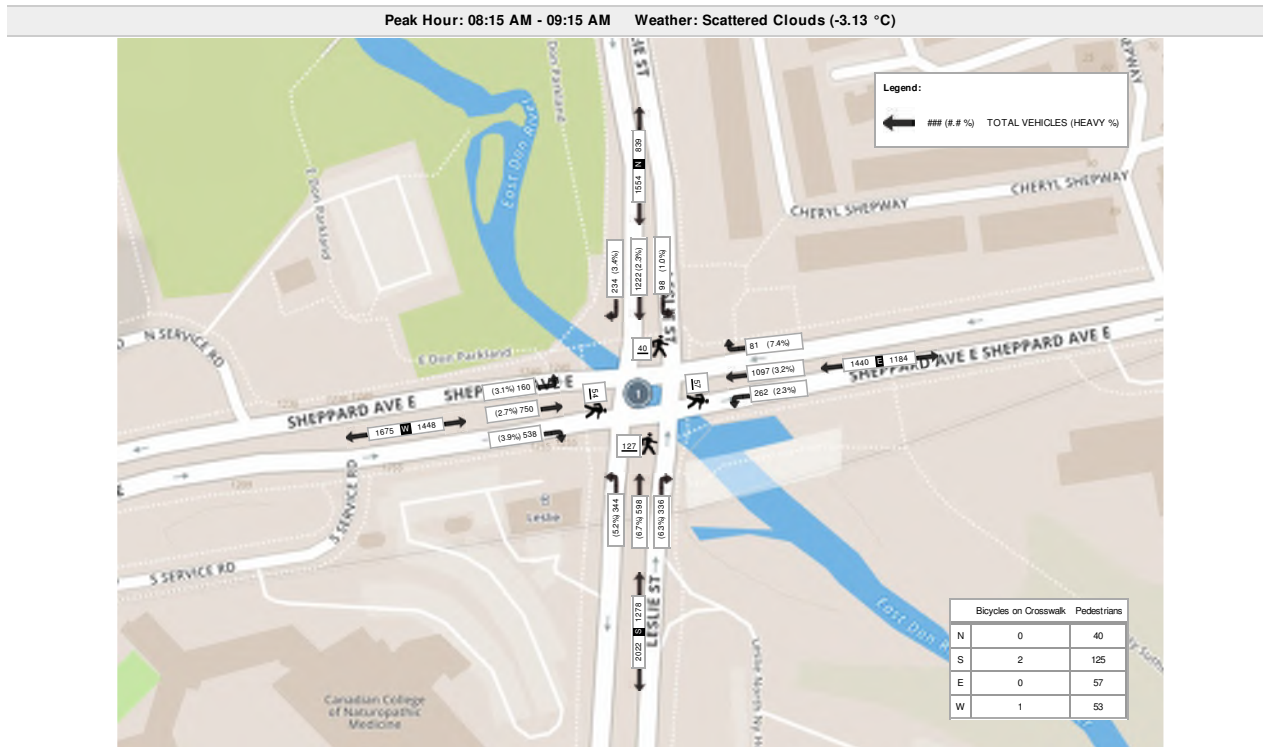
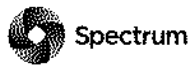
Turning Movement Count (1 . LESLIE ST & SHEPPARD AVE E)																										
Start Time	N Approach LESLIE ST						E Approach SHEPPARD AVE E						S Approach LESLIE ST						W Approach SHEPPARD AVE E						Int. Total (15 min)	Int. Total (1 hr)
	Right N-W	Thru N-S	Left N-E	U-Turn N-N	Peds N-	Approach Total	Right E-N	Thru E-W	Left E-S	U-Turn E-E	Peds E-	Approach Total	Right S-E	Thru S-N	Left S-W	U-Turn S-S	Peds S-	Approach Total	Right W-S	Thru W-E	Left W-N	U-Turn W-W	Peds W-	Approach Total		
07:30:00	26	373	7	0	7	406	17	235	85	0	14	337	58	121	50	0	30	229	95	119	28	0	10	242	1214	
07:45:00	37	359	17	0	13	413	28	243	74	0	9	345	56	126	92	0	17	274	96	149	32	0	14	277	1309	
08:00:00	31	318	22	0	9	371	13	224	81	0	17	318	61	160	97	0	28	318	125	187	39	1	11	352	1359	
08:15:00	50	330	24	0	13	404	24	284	74	0	16	382	78	132	72	0	37	282	135	182	42	0	17	359	1427	5309
08:30:00	43	312	22	0	9	377	16	303	53	0	13	372	73	142	78	0	27	293	146	183	55	0	16	384	1426	5521
08:45:00	82	273	25	0	11	380	17	245	65	0	14	327	101	166	114	0	27	381	140	210	40	2	10	392	1480	5692
09:00:00	59	307	27	0	7	393	24	265	70	1	14	360	84	158	80	0	36	322	117	175	23	4	11	319	1394	5727
09:15:00	64	296	26	0	9	386	24	249	61	2	16	336	86	130	80	0	15	296	116	165	45	2	8	328	1346	5646
BREAK																										
16:00:00	67	236	37	0	9	340	29	232	52	2	10	315	94	271	112	0	21	477	113	211	63	0	6	387	1519	
16:15:00	56	217	25	0	13	298	29	246	71	1	14	347	80	322	110	0	30	512	101	261	61	1	10	424	1581	
16:30:00	48	262	26	0	11	336	37	234	58	1	8	330	136	317	99	0	14	552	126	253	66	0	10	445	1663	
16:45:00	56	200	25	0	16	281	38	238	52	0	5	328	137	309	54	0	19	500	95	268	64	2	10	429	1538	6301
17:00:00	64	197	28	0	13	289	38	320	45	2	13	405	141	333	64	1	31	539	101	293	60	0	19	454	1687	6469
17:15:00	54	230	23	0	28	307	40	318	64	0	17	422	90	271	82	0	26	443	144	298	70	1	12	513	1685	6573
17:30:00	56	190	29	0	22	275	34	268	48	0	11	350	110	312	117	0	23	539	142	342	60	1	13	545	1709	6619
17:45:00	73	266	31	0	17	370	38	301	55	0	20	394	116	289	89	0	26	494	95	309	64	1	19	469	1727	6808
Grand Total	866	4366	394	0	207	5626	446	4205	1008	9	211	5668	1501	3559	1390	1	407	6451	1887	3605	812	15	196	6319	24064	-
Approach%	15.4%	77.6%	7%	0%	-	-	7.9%	74.2%	17.8%	0.2%	-	-	23.3%	55.2%	21.5%	0%	-	-	29.9%	57.1%	12.9%	0.2%	-	-	-	-
Totals %	3.6%	18.1%	1.6%	0%	23.4%	-	1.9%	17.5%	4.2%	0%	23.6%	6.2%	14.8%	5.8%	0%	26.8%	-	-	7.8%	15%	3.4%	0.1%	26.3%	-	-	
Heavy	21	84	4	0	-	-	12	86	14	0	-	-	34	91	27	0	-	-	45	71	9	0	-	-	-	
Heavy %	2.4%	1.9%	1%	0%	-	-	2.7%	2%	1.4%	0%	-	-	2.3%	2.6%	1.9%	0%	-	-	2.4%	2%	1.1%	0%	-	-	-	
Bicycles	2	1	0	0	-	-	0	1	0	0	-	-	0	1	0	0	-	-	0	1	0	0	-	-	-	
Bicycle %	0.2%	0%	0%	0%	-	-	0%	0%	0%	0%	-	-	0%	0%	0%	0%	-	-	0%	0%	0%	0%	-	-	-	



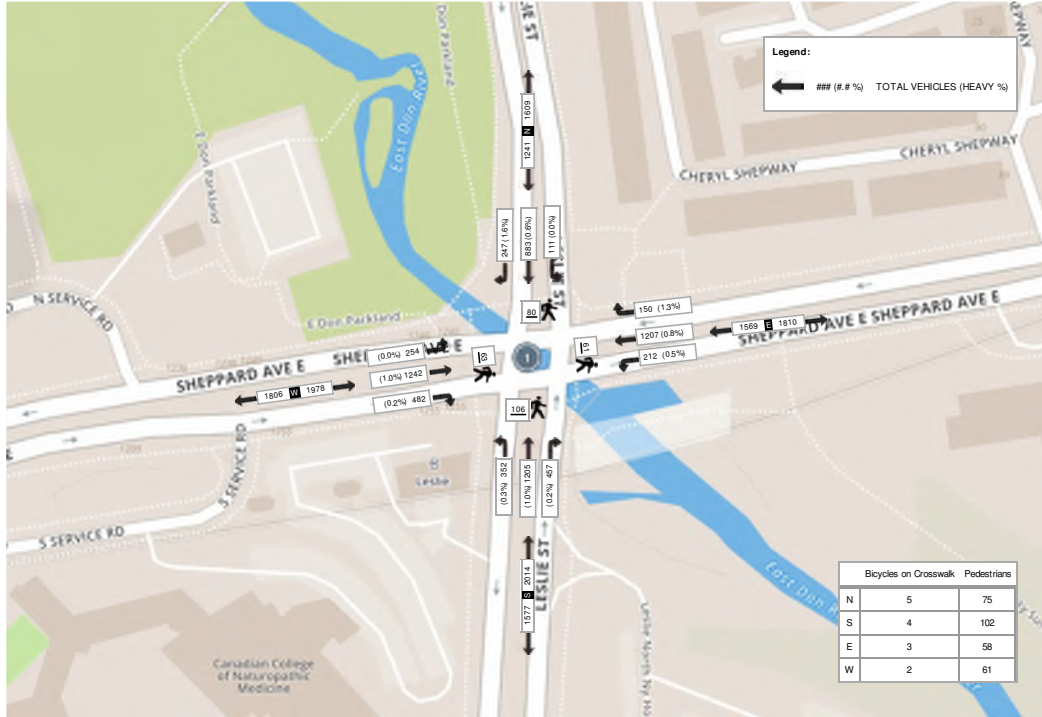
Peak Hour: 08:15 AM - 09:15 AM Weather: Scattered Clouds (-3.13 °C)																										
Start Time	N Approach LESLIE ST						E Approach SHEPPARD AVE E						S Approach LESLIE ST						W Approach SHEPPARD AVE E						Int. Total (15 min)	
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total		
08:15:00	50	330	24	0	13	404	24	284	74	0	16	382	78	132	72	0	37	282	135	182	42	0	17	359	1427	
08:30:00	43	312	22	0	9	377	16	303	53	0	13	372	73	142	78	0	27	293	146	183	55	0	16	384	1426	
08:45:00	82	273	25	0	11	380	17	245	65	0	14	327	101	166	114	0	27	381	140	210	40	2	10	392	1480	
09:00:00	59	307	27	0	7	393	24	265	70	1	14	360	84	158	80	0	36	322	117	175	23	4	11	319	1394	
Grand Total	234	1222	98	0	40	1554	81	1097	262	1	57	1441	336	598	344	0	127	1278	538	750	160	6	54	1454	5727	
Approach%	15.1%	78.6%	6.3%	0%	-	-	5.6%	76.1%	18.2%	0.1%	-	-	26.3%	46.8%	26.9%	0%	-	-	37%	51.6%	11%	0.4%	-	-	-	
Totals %	4.1%	21.3%	1.7%	0%	-	27.1%	1.4%	19.2%	4.6%	0%	-	25.2%	5.9%	10.4%	6%	0%	-	22.3%	9.4%	13.1%	2.8%	0.1%	-	25.4%	-	
PHF	0.71	0.93	0.91	0	-	0.96	0.84	0.91	0.89	0.25	-	0.94	0.83	0.9	0.75	0	-	0.84	0.92	0.89	0.73	0.38	-	0.93	-	
Heavy	8	28	1	0	-	37	6	35	6	0	-	47	21	40	18	0	-	79	21	20	5	0	-	46	-	
Heavy %	3.4%	2.3%	1%	0%	-	2.4%	7.4%	3.2%	2.3%	0%	-	3.3%	6.3%	6.7%	5.2%	0%	-	6.2%	3.9%	2.7%	3.1%	0%	-	3.2%	-	
Lights	226	1194	97	0	-	1517	75	1062	256	1	-	1394	315	558	326	0	-	1199	517	730	155	6	-	1408	-	
Lights %	96.6%	97.7%	99%	0%	-	97.6%	92.6%	96.8%	97.7%	100%	-	96.7%	93.8%	93.3%	94.8%	0%	-	93.8%	96.1%	97.3%	96.9%	100%	-	96.8%	-	
Single-Unit Trucks	4	22	0	0	-	26	3	21	2	0	-	26	13	31	16	0	-	60	19	7	2	0	-	28	-	
Single-Unit Trucks %	1.7%	1.8%	0%	0%	-	1.7%	3.7%	1.9%	0.8%	0%	-	1.8%	3.9%	5.2%	4.7%	0%	-	4.7%	3.5%	0.9%	1.3%	0%	-	1.9%	-	
Buses	4	5	1	0	-	10	3	13	3	0	-	19	7	9	2	0	-	18	0	12	3	0	-	15	-	
Buses %	1.7%	0.4%	1%	0%	-	0.6%	3.7%	1.2%	1.1%	0%	-	1.3%	2.1%	1.5%	0.6%	0%	-	1.4%	0%	1.6%	1.9%	0%	-	1%	-	
Articulated Trucks	0	1	0	0	-	1	0	1	1	0	-	2	1	0	0	0	-	1	2	1	0	0	-	3	-	
Articulated Trucks %	0%	0.1%	0%	0%	-	0.1%	0%	0.1%	0.4%	0%	-	0.1%	0.3%	0%	0%	0%	-	0.1%	0.4%	0.1%	0%	0%	-	0.2%	-	
Pedestrians	-	-	-	-	40	-	-	-	-	-	57	-	-	-	-	-	125	-	-	-	-	-	53	-		
Pedestrians%	-	-	-	-	14.4%	-	-	-	-	-	20.5%	-	-	-	-	-	45%	-	-	-	-	-	19.1%	-		
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	1	-		
Bicycles on Crosswalk%	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0.7%	-	-	-	-	-	0.4%	-		
Bicycles on Road	0	1	0	0	0	-	0	1	0	0	0	-	0	0	0	0	0	-	0	1	0	0	0	-	-	
Bicycles on Road%	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-	



Peak Hour: 05:00 PM - 06:00 PM Weather: Clear Sky (7.7 °C)																									
Start Time	N Approach LESLIE ST						E Approach SHEPPARD AVE E						S Approach LESLIE ST						W Approach SHEPPARD AVE E						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
17:00:00	64	197	28	0	13	289	38	320	45	2	13	405	141	333	64	1	31	539	101	293	60	0	19	454	1687
17:15:00	54	230	23	0	28	307	40	318	64	0	17	422	90	271	82	0	26	443	144	298	70	1	12	513	1685
17:30:00	56	190	29	0	22	275	34	268	48	0	11	350	110	312	117	0	23	539	142	342	60	1	13	545	1709
17:45:00	73	266	31	0	17	370	38	301	55	0	20	394	116	289	89	0	26	494	95	309	64	1	19	469	1727
Grand Total	247	883	111	0	80	1241	150	1207	212	2	61	1571	457	1205	352	1	106	2015	482	1242	254	3	63	1981	6808
Approach%	19.9%	71.2%	8.9%	0%	-	-	9.5%	76.8%	13.5%	0.1%	-	-	22.7%	59.8%	17.5%	0%	-	-	24.3%	62.7%	12.8%	0.2%	-	-	-
Totals %	3.6%	13%	1.6%	0%	18.2%	2.2%	17.7%	3.1%	0%	23.1%	6.7%	17.7%	5.2%	0%	29.6%	7.1%	18.2%	3.7%	0%	29.1%	-	-	-	-	-
PHF	0.85	0.83	0.9	0	0.84	0.94	0.94	0.83	0.25	0.93	0.81	0.9	0.75	0.25	0.93	0.84	0.91	0.91	0.75	0.91	-	-	-	-	-
Heavy	4	5	0	0	9	2	10	1	0	13	1	12	1	0	14	1	12	0	0	13	-	-	-	-	-
Heavy %	1.6%	0.6%	0%	0%	0.7%	1.3%	0.8%	0.5%	0%	0.8%	0.2%	1%	0.3%	0%	0.7%	0.2%	1%	0%	0%	0.7%	-	-	-	-	-
Lights	243	878	111	0	1232	148	1197	211	2	1558	456	1193	351	1	2001	481	1230	254	3	1968	-	-	-	-	-
Lights %	98.4%	99.4%	100%	0%	99.3%	98.7%	99.2%	99.5%	100%	99.2%	99.8%	99%	99.7%	100%	99.3%	99.8%	99%	100%	100%	99.3%	-	-	-	-	-
Single-Unit Trucks	0	4	0	0	4	1	5	1	0	7	1	6	0	0	7	1	5	0	0	6	-	-	-	-	-
Single-Unit Trucks %	0%	0.5%	0%	0%	0.3%	0.7%	0.4%	0.5%	0%	0.4%	0.2%	0.5%	0%	0%	0.3%	0.2%	0.4%	0%	0%	0.3%	-	-	-	-	-
Buses	3	0	0	0	3	1	5	0	0	6	0	4	0	0	4	0	6	0	0	6	-	-	-	-	-
Buses %	1.2%	0%	0%	0%	0.2%	0.7%	0.4%	0%	0%	0.4%	0%	0.3%	0%	0%	0.2%	0%	0.5%	0%	0%	0.3%	-	-	-	-	-
Articulated Trucks	1	1	0	0	2	0	0	0	0	0	0	2	1	0	3	0	1	0	0	1	-	-	-	-	-
Articulated Trucks %	0.4%	0.1%	0%	0%	0.2%	0%	0%	0%	0%	0%	0%	0.2%	0.3%	0%	0.1%	0%	0.1%	0%	0%	0.1%	-	-	-	-	-
Pedestrians	-	-	-	-	75	-	-	-	-	58	-	-	-	-	102	-	-	-	-	61	-	-	-	-	-
Pedestrians%	-	-	-	-	24.2%	-	-	-	-	18.7%	-	-	-	-	32.9%	-	-	-	-	19.7%	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	5	-	-	-	-	3	-	-	-	-	4	-	-	-	-	2	-	-	-	-	-
Bicycles on Crosswalk%	-	-	-	-	1.6%	-	-	-	-	1%	-	-	-	-	1.3%	-	-	-	-	0.6%	-	-	-	-	-
Bicycles on Road	1	0	0	0	0	-	0	0	0	0	0	1	0	0	0	-	0	0	0	0	0	-	-	-	-
Bicycles on Road%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	-

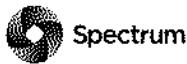


Peak Hour: 05:00 PM - 06:00 PM Weather: Clear Sky (7.7 °C)

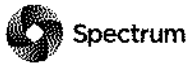


Turning Movement Count (8 . MCMAHON DR & ESTHER SHINER BLVD)

Start Time	N Approach MCMAHON DR						E Approach ESTHER SHINER BLVD						S Approach MCMAHON DR						W Approach ESTHER SHINER BLVD						Int. Total (15 min)	Int. Total (1 hr)	
	Right N-W	Thru N-S	Left N-E	U-Turn N-N	Peds: N	Approach Total	Right E-N	Thru E-W	Left E-S	U-Turn E-E	Peds: E	Approach Total	Right S-E	Thru S-N	Left S-W	U-Turn S-S	Peds: S	Approach Total	Right W-S	Thru W-E	Left W-N	U-Turn W-W	Peds: W	Approach Total			
07:30:00	0	0	23	0	0	23	14	2	8	0	10	24	15	5	0	0	0	20	0	0	0	0	5	0	67		
07:45:00	0	1	24	0	1	25	28	0	9	0	3	37	17	2	0	0	1	19	0	0	1	0	4	1	82		
08:00:00	1	1	39	0	1	41	25	3	4	2	6	34	16	6	1	0	8	23	0	0	2	0	12	2	100		
08:15:00	2	5	52	0	0	59	27	4	7	0	6	38	17	2	1	0	6	20	0	0	1	0	15	1	118	367	
08:30:00	0	0	57	0	0	57	22	1	3	0	3	26	18	4	0	0	5	22	0	1	0	0	6	1	106	406	
08:45:00	2	2	38	0	0	42	28	1	4	2	1	35	22	5	0	0	2	27	0	0	0	0	7	0	104	428	
09:00:00	0	2	37	0	1	39	16	0	6	0	1	22	13	0	0	0	5	13	0	0	2	0	10	2	76	404	
09:15:00	0	4	36	0	0	40	23	0	4	3	4	30	18	1	0	0	1	19	0	0	1	0	12	1	90	376	
BREAK																											
16:00:00	1	2	50	0	2	53	31	0	6	2	1	39	15	4	0	0	5	19	0	5	3	0	4	8	119		
16:15:00	0	5	52	0	0	57	36	1	3	2	5	42	6	1	0	0	2	7	0	11	3	0	9	14	120		
16:30:00	1	5	57	0	0	63	58	0	9	0	4	67	8	3	0	0	2	11	0	1	0	0	2	1	142		
16:45:00	0	2	58	0	0	60	36	0	6	0	4	42	7	5	0	0	1	12	0	2	1	0	1	3	117	498	
17:00:00	1	5	61	0	0	67	29	1	16	1	3	47	8	1	0	0	1	9	0	5	2	0	1	7	130	509	
17:15:00	1	4	60	0	1	65	50	0	14	2	3	66	15	1	0	0	0	16	0	0	2	1	1	3	150	539	
17:30:00	0	6	63	0	0	69	41	0	14	0	13	55	8	3	0	0	2	11	1	1	0	0	3	2	137	534	
17:45:00	0	8	65	0	0	73	47	1	17	0	6	65	11	0	0	1	0	12	0	1	0	0	4	1	151	568	
Grand Total	9	52	772	0	6	833	511	14	130	14	73	669	214	43	2	1	41	260	1	27	18	1	96	47	1809	-	
Approach%	1.1%	6.2%	92.7%	0%	-	-	76.4%	2.1%	19.4%	2.1%	-	-	82.3%	16.5%	0.8%	0.4%	-	-	2.1%	57.4%	38.3%	2.1%	-	-	-	-	
Totals %	0.5%	2.9%	42.7%	0%	-	46%	28.2%	0.8%	7.2%	0.8%	-	37%	11.8%	2.4%	0.1%	0.1%	-	14.4%	0.1%	1.5%	1%	0.1%	-	2.6%	-	-	
Heavy	0	1	8	0	-	-	8	0	7	0	-	-	12	1	0	0	1	-	0	0	0	0	-	-	-	-	
Heavy %	0%	1.9%	1%	0%	-	-	1.6%	0%	5.4%	0%	-	-	5.6%	2.3%	0%	0%	-	-	0%	0%	0%	0%	-	-	-	-	
Bicycles	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Bicycle %	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	



Peak Hour: 08:00 AM - 09:00 AM Weather: Overcast (-4.1 °C)																									
Start Time	N Approach MCMAHON DR						E Approach ESTHER SHINER BLVD						S Approach MCMAHON DR						W Approach ESTHER SHINER BLVD						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
08:00:00	1	1	39	0	1	41	25	3	4	2	6	34	16	6	1	0	8	23	0	0	2	0	12	2	100
08:15:00	2	5	52	0	0	59	27	4	7	0	6	38	17	2	1	0	6	20	0	0	1	0	15	1	118
08:30:00	0	0	57	0	0	57	22	1	3	0	3	26	18	4	0	0	5	22	0	1	0	0	6	1	106
08:45:00	2	2	38	0	0	42	28	1	4	2	1	35	22	5	0	0	2	27	0	0	0	0	7	0	104
Grand Total	5	8	186	0	1	199	102	9	18	4	16	133	73	17	2	0	21	92	0	1	3	0	40	4	428
Approach%	2.5%	4%	93.5%	0%	-	-	76.7%	6.8%	13.5%	3%	-	-	79.3%	18.5%	2.2%	0%	-	0%	25%	75%	0%	-	-	-	-
Totals %	1.2%	1.9%	43.5%	0%	46.5%	23.8%	2.1%	4.2%	0.9%	31.1%	17.1%	4%	0.5%	0%	21.5%	0%	0.2%	0.7%	0%	0.9%	-	-	-	-	-
PHF	0.63	0.4	0.82	0	0.84	0.91	0.56	0.64	0.5	0.88	0.83	0.71	0.5	0	0.85	0	0.25	0.38	0	0.5	-	-	-	-	-
Heavy	0	1	4	0	5	6	0	4	0	10	6	1	0	0	7	0	0	0	0	0	-	-	-	-	-
Heavy %	0%	12.5%	2.2%	0%	2.5%	5.9%	0%	22.2%	0%	7.5%	8.2%	5.9%	0%	0%	7.6%	0%	0%	0%	0%	0%	-	-	-	-	-
Lights	5	7	182	0	194	96	9	14	4	123	67	16	2	0	85	0	1	3	0	4	-	-	-	-	-
Lights %	100%	87.5%	97.8%	0%	97.5%	94.1%	100%	77.8%	100%	92.5%	91.8%	94.1%	100%	0%	92.4%	0%	100%	100%	0%	100%	-	-	-	-	-
Single-Unit Trucks	0	1	2	0	3	5	0	3	0	8	3	1	0	0	4	0	0	0	0	0	-	-	-	-	-
Single-Unit Trucks %	0%	12.5%	1.1%	0%	1.5%	4.9%	0%	16.7%	0%	6%	4.1%	5.9%	0%	0%	4.3%	0%	0%	0%	0%	0%	-	-	-	-	-
Buses	0	0	2	0	2	0	0	1	0	1	3	0	0	0	3	0	0	0	0	0	-	-	-	-	-
Buses %	0%	0%	1.1%	0%	1%	0%	0%	5.6%	0%	0.8%	4.1%	0%	0%	0%	3.3%	0%	0%	0%	0%	0%	-	-	-	-	-
Articulated Trucks	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-
Articulated Trucks %	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0.8%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-	-	-	-	-
Pedestrians	-	-	-	-	1	-	-	-	-	16	-	-	-	-	21	-	-	-	-	40	-	-	-	-	-
Pedestrians%	-	-	-	-	1.3%	-	-	-	-	20.5%	-	-	-	-	26.9%	-	-	-	-	51.3%	-	-	-	-	-



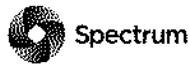
Peak Hour: 05:00 PM - 06:00 PM Weather: Partly Cloudy (0.1 °C)																									
Start Time	N Approach MCMAHON DR						E Approach ESTHER SHINER BLVD						S Approach MCMAHON DR						W Approach ESTHER SHINER BLVD						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
17:00:00	1	5	61	0	0	67	29	1	16	1	3	47	8	1	0	0	1	9	0	5	2	0	1	7	130
17:15:00	1	4	60	0	1	65	50	0	14	2	3	66	15	1	0	0	0	16	0	0	2	1	1	3	150
17:30:00	0	6	63	0	0	69	41	0	14	0	13	55	8	3	0	0	2	11	1	1	0	0	3	2	137
17:45:00	0	8	65	0	0	73	47	1	17	0	6	65	11	0	0	1	0	12	0	1	0	0	4	1	151
Grand Total	2	23	249	0	1	274	167	2	61	3	25	233	42	5	0	1	3	48	1	7	4	1	9	13	568
Approach%	0.7%	8.4%	90.9%	0%	-	-	71.7%	0.9%	26.2%	1.3%	-	-	87.5%	10.4%	0%	2.1%	-	7.7%	53.8%	30.8%	7.7%	-	-	-	-
Totals %	0.4%	4%	43.8%	0%	48.2%	29.4%	0.4%	10.7%	0.5%	41%	7.4%	0.9%	0%	0.2%	8.5%	0.2%	1.2%	0.7%	0.2%	2.3%	-	-	-	-	-
PHF	0.5	0.72	0.96	0	0.94	0.84	0.5	0.9	0.38	0.88	0.7	0.42	0	0.25	0.75	0.25	0.35	0.5	0.25	0.46	-	-	-	-	-
Heavy	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
Heavy %	0%	0%	0.8%	0%	0.7%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-	-	-	-	-
Lights	2	23	247	0	272	167	2	61	3	233	42	5	0	1	48	1	7	4	1	13	-	-	-	-	-
Lights %	100%	100%	99.2%	0%	99.3%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	-	-	-	-	-
Single-Unit Trucks	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
Single-Unit Trucks %	0%	0%	0.8%	0%	0.7%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-	-	-	-	-
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
Buses %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-	-	-	-	-
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
Articulated Trucks %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-	-	-	-	-
Pedestrians	-	-	-	-	1	-	-	-	-	25	-	-	-	-	3	-	-	-	-	9	-	-	-	-	-
Pedestrians%	-	-	-	-	2.6%	-	-	-	-	65.8%	-	-	-	-	7.9%	-	-	-	-	23.7%	-	-	-	-	-

Peak Hour: 08:00 AM - 09:00 AM Weather: Overcast (-4.1 °C)



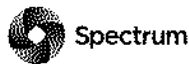
Peak Hour: 05:00 PM - 06:00 PM Weather: Partly Cloudy (0.1 °C)





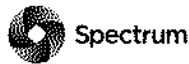
Turning Movement Count (6 - OLD LESLIE & ESTHER SHINER BLVD)

Start Time	N Approach OLD LESLIE ST						E Approach ESTHER SHINER BLVD						S Approach OLD LESLIE ST						W Approach ESTHER SHINER BLVD						Int. Total (15 min)	Int. Total (1 hr)	
	Right N-W	Thru N-S	Left N-E	U-Turn N-N	Peds N:	Approach Total	Right E-N	Thru E-W	Left E-S	U-Turn E-E	Peds E:	Approach Total	Right S-E	Thru S-N	Left S-W	U-Turn S-S	Peds S:	Approach Total	Right W-S	Thru W-E	Left W-N	U-Turn W-W	Peds W:	Approach Total			
07:30:00	5	0	57	0	5	62	41	39	1	0	0	81	3	0	3	0	3	6	0	83	9	0	14	92	241		
07:45:00	5	0	62	0	10	67	60	75	2	0	1	137	4	1	0	0	1	5	1	93	12	0	5	106	315		
08:00:00	5	1	62	0	7	68	49	52	0	0	0	101	1	1	2	0	0	4	0	112	5	0	20	117	290		
08:15:00	12	1	50	0	5	63	47	52	4	0	0	103	3	0	2	0	0	5	1	136	14	1	3	152	323	1169	
08:30:00	9	1	63	0	9	73	49	52	0	0	2	101	2	0	1	0	3	3	1	128	6	2	19	137	314	1242	
08:45:00	5	0	41	0	4	46	50	55	0	0	1	105	1	0	1	0	3	2	0	120	16	0	3	136	289	1216	
09:00:00	5	1	24	0	5	30	39	65	5	0	0	109	4	0	0	0	0	4	4	86	4	3	4	97	240	1166	
09:15:00	9	0	21	0	3	30	23	66	4	0	1	93	6	1	0	0	1	7	1	87	8	0	8	96	226	1069	
BREAK																											
16:00:00	13	0	59	0	16	72	16	118	1	0	5	135	2	0	0	0	4	2	0	152	8	2	8	162	371		
16:15:00	9	0	45	0	9	54	18	95	1	0	3	114	2	0	0	0	1	2	1	138	3	2	14	144	314		
16:30:00	18	0	79	0	8	97	10	100	0	0	4	110	1	0	0	0	7	1	0	125	6	4	11	135	343		
16:45:00	16	1	81	0	5	98	19	119	0	0	3	138	0	0	1	0	8	1	0	142	18	4	15	164	401	1429	
17:00:00	21	0	108	0	3	129	23	123	0	1	6	147	1	0	1	0	2	2	1	124	8	3	10	136	414	1472	
17:15:00	19	1	69	0	5	89	16	131	1	0	2	148	1	0	1	0	5	2	3	152	10	2	22	167	406	1564	
17:30:00	19	0	84	0	7	103	19	109	0	3	1	131	3	0	1	0	6	4	0	132	6	1	28	139	377	1598	
17:45:00	19	1	56	0	5	76	18	96	0	0	1	114	0	2	3	0	4	5	2	111	9	1	27	123	318	1515	
Grand Total	189	7	961	0	106	1157	497	1347	19	4	30	1867	34	5	16	0	48	55	15	1921	142	25	211	2103	5182	-	
Approach %	16.3%	0.6%	83.1%	0%	-	-	26.6%	72.1%	1%	0.2%	-	-	61.8%	9.1%	29.1%	0%	-	-	0.7%	91.3%	6.8%	1.2%	-	-	-	-	
Totals %	3.6%	0.1%	18.5%	0%	-	-	9.6%	26%	0.4%	0.1%	-	36%	0.7%	0.1%	0.3%	0%	-	1.1%	0.3%	37.1%	2.7%	0.5%	-	40.6%	-	-	
Heavy	14	2	31	0	-	-	20	16	3	0	-	-	3	0	2	0	-	-	0	26	5	0	-	-	-	-	
Heavy %	7.4%	28.6%	3.2%	0%	-	-	4%	1.2%	15.8%	0%	-	-	8.8%	0%	12.5%	0%	-	-	0%	1.4%	3.5%	0%	-	-	-	-	
Bicycles	1	0	0	0	-	-	0	5	0	0	-	-	0	0	0	0	-	-	0	0	0	0	-	-	-	-	
Bicycle %	0.5%	0%	0%	0%	-	-	0%	0.4%	0%	0%	-	-	0%	0%	0%	0%	-	-	0%	0%	0%	0%	-	-	-	-	

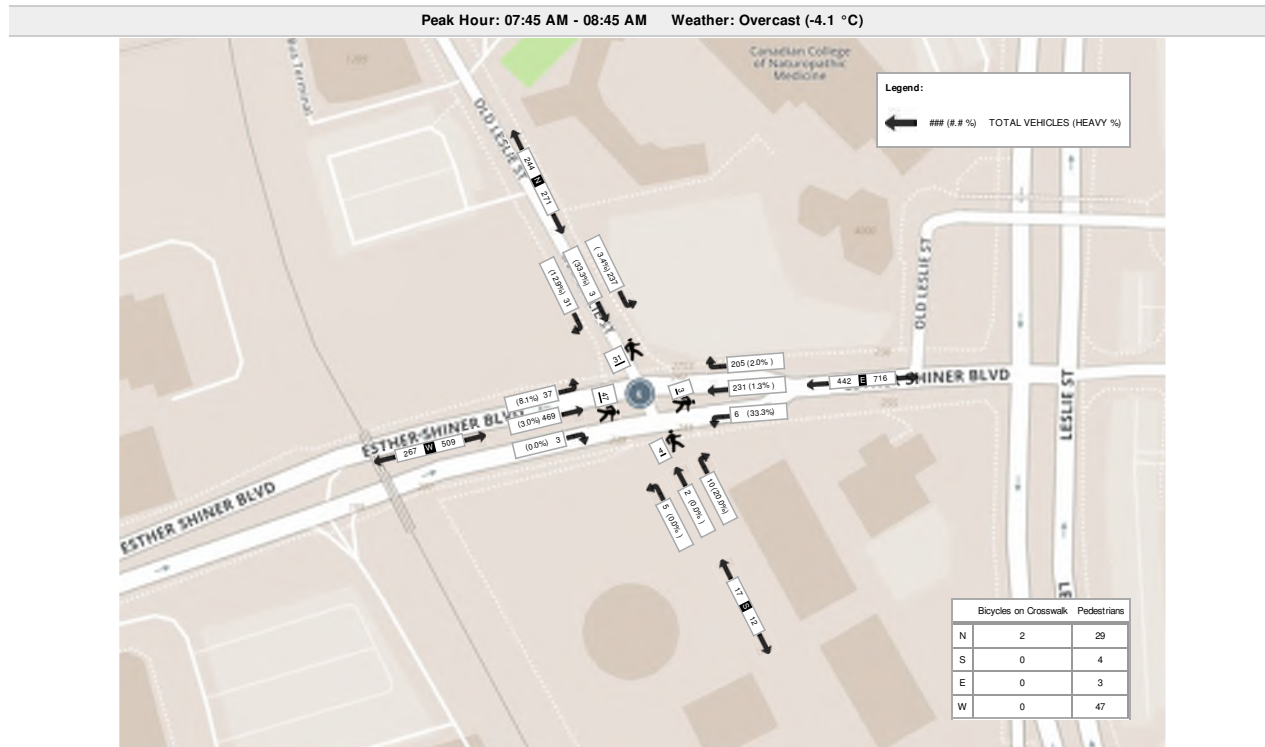
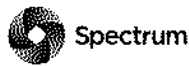


Peak Hour: 07:45 AM - 08:45 AM Weather: Overcast (-4.1 °C)

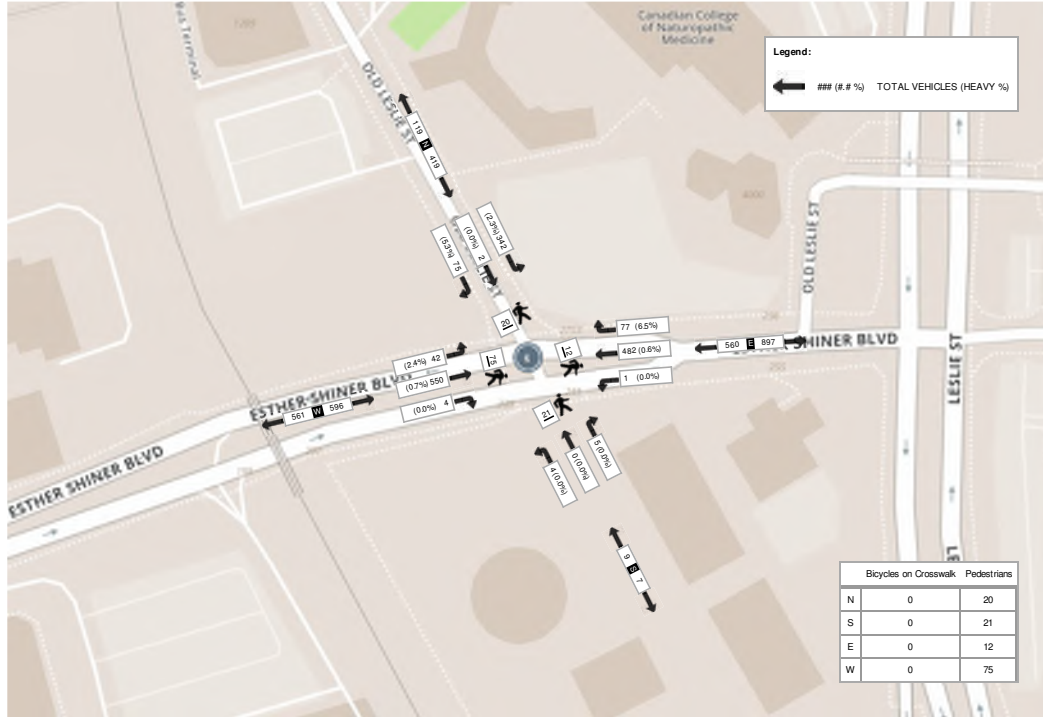
Start Time	N Approach OLD LESLIE ST						E Approach ESTHER SHINER BLVD						S Approach OLD LESLIE ST						W Approach ESTHER SHINER BLVD						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
07:45:00	5	0	62	0	10	67	60	75	2	0	1	137	4	1	0	0	1	5	1	93	12	0	5	106	315
08:00:00	5	1	62	0	7	68	49	52	0	0	0	101	1	1	2	0	0	4	0	112	5	0	20	117	290
08:15:00	12	1	50	0	5	63	47	52	4	0	0	103	3	0	2	0	0	5	1	136	14	1	3	152	323
08:30:00	9	1	63	0	9	73	49	52	0	0	2	101	2	0	1	0	3	3	1	128	6	2	19	137	314
Grand Total	31	3	237	0	31	271	205	231	6	0	3	442	10	2	5	0	4	17	3	469	37	3	47	512	1242
Approach %	11.4%	1.1%	87.5%	0%	-	-	46.4%	52.3%	1.4%	0%	-	-	58.8%	11.8%	29.4%	0%	-	-	0.6%	91.6%	7.2%	0.6%	-	-	-
Totals %	2.5%	0.2%	19.1%	0%	-	21.8%	16.5%	18.6%	0.5%	0%	-	35.6%	0.8%	0.2%	0.4%	0%	-	1.4%	0.2%	37.8%	3%	0.2%	-	41.2%	-
PHF	0.65	0.75	0.94	0	-	0.93	0.85	0.77	0.38	0	-	0.81	0.63	0.5	0.63	0	-	0.85	0.75	0.86	0.66	0.38	-	0.84	-
Heavy	4	1	8	0	-	13	4	3	2	0	-	9	2	0	0	0	-	2	0	14	3	0	-	17	-
Heavy %	12.9%	33.3%	3.4%	0%	-	4.8%	2%	1.3%	33.3%	0%	-	2%	20%	0%	0%	0%	-	11.8%	0%	3%	8.1%	0%	-	3.3%	-
Lights	27	2	229	0	-	258	201	228	4	0	-	433	8	2	5	0	-	15	3	455	34	3	-	495	-
Lights %	87.1%	66.7%	96.6%	0%	-	95.2%	98%	98.7%	66.7%	0%	-	98%	80%	100%	100%	0%	-	88.2%	100%	97%	91.9%	100%	-	96.7%	-
Single-Unit Trucks	3	1	0	0	-	4	0	3	2	0	-	5	2	0	0	0	-	2	0	8	3	0	-	11	-
Single-Unit Trucks %	9.7%	33.3%	0%	0%	-	1.5%	0%	1.3%	33.3%	0%	-	1.1%	20%	0%	0%	0%	-	11.8%	0%	1.7%	8.1%	0%	-	2.1%	-
Buses	0	0	8	0	-	8	4	0	0	0	-	4	0	0	0	0	-	0	0	5	0	0	-	5	-
Buses %	0%	0%	3.4%	0%	-	3%	2%	0%	0%	0%	-	0.9%	0%	0%	0%	0%	-	0%	0%	1.1%	0%	0%	-	1%	-
Articulated Trucks	1	0	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	-
Articulated Trucks %	3.2%	0%	0%	0%	-	0.4%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%	0%	0.2%	0%	0%	-	0.2%	-
Pedestrians	-	-	-	-	29	-	-	-	-	-	3	-	-	-	-	-	4	-	-	-	-	-	47	-	-
Pedestrians %	-	-	-	-	34.1%	-	-	-	-	-	3.5%	-	-	-	-	-	4.7%	-	-	-	-	-	55.3%	-	-
Bicycles on Crosswalk	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
Bicycles on Crosswalk %	-	-	-	-	2.4%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-
Bicycles on Road	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	-
Bicycles on Road %	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-



Peak Hour: 04:45 PM - 05:45 PM Weather: Partly Cloudy (0.1 °C)																			
Start Time	N Approach OLD LESLIE ST						E Approach ESTHER SHINER BLVD						S Approach OLD LESLIE ST						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
16:45:00	16	1	81	0	5	98	19	119	0	0	3	138	0	0	1	0	8	1	401
17:00:00	21	0	108	0	3	129	23	123	0	1	6	147	1	0	1	0	2	2	414
17:15:00	19	1	89	0	5	89	16	131	1	0	2	148	1	0	1	0	5	2	406
17:30:00	19	0	84	0	7	103	19	109	0	3	1	131	3	0	1	0	6	4	377
Grand Total	75	2	342	0	20	419	77	482	1	4	12	564	5	0	4	0	21	9	1998
Approach%	17.9%	0.5%	81.6%	0%	-	-	13.7%	85.5%	0.2%	0.7%	-	-	55.6%	0%	44.4%	0%	-	0.7%	-
Totals %	4.7%	0.1%	21.4%	0%	26.2%	4.8%	30.2%	0.1%	0.3%	35.3%	0.3%	0%	0.3%	0%	0.6%	0.3%	34.4%	2.6%	37.9%
PHF	0.89	0.5	0.79	0	0.81	0.84	0.92	0.25	0.33	0.96	0.42	0	1	0	0.56	0.33	0.9	0.58	0.63
Heavy	4	0	8	0	12	5	3	0	0	8	0	0	0	0	0	0	4	1	5
Heavy %	5.3%	0%	2.3%	0%	2.9%	6.5%	0.6%	0%	0%	1.4%	0%	0%	0%	0%	0%	0%	0.7%	2.4%	0%
Lights	71	2	334	0	407	72	479	1	4	556	5	0	4	0	9	4	546	41	601
Lights %	94.7%	100%	97.7%	0%	97.1%	93.5%	99.4%	100%	100%	98.6%	100%	0%	100%	0%	100%	100%	99.3%	97.6%	100%
Single-Unit Trucks	0	0	1	0	1	0	3	0	0	3	0	0	0	0	0	0	2	1	0
Single-Unit Trucks %	0%	0%	0.3%	0%	0.2%	0%	0.6%	0%	0%	0.5%	0%	0%	0%	0%	0%	0%	0.4%	2.4%	0%
Buses	4	0	7	0	11	5	0	0	0	5	0	0	0	0	0	0	2	0	0
Buses %	5.3%	0%	2%	0%	2.6%	6.5%	0%	0%	0%	0.9%	0%	0%	0%	0%	0%	0%	0.4%	0%	0%
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Articulated Trucks %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Pedestrians	-	-	-	-	20	-	-	-	-	12	-	-	-	-	-	-	-	-	75
Pedestrians%	-	-	-	-	15.6%	-	-	-	-	9.4%	-	-	-	-	-	-	-	-	58.6%
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	-	-	-	-	0
Bicycles on Crosswalk%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	-	-	-	-	0%
Bicycles on Road	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Road%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	-	-	-	-	0%

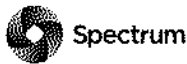


Peak Hour: 04:45 PM - 05:45 PM Weather: Partly Cloudy (0.1 °C)

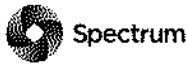


Turning Movement Count (7 . PROVOST DR & ESTHER SHINER BLVD)

Start Time	N Approach PROVOST DR						E Approach ESTHER SHINER BLVD						S Approach PROVOST DR						W Approach ESTHER SHINER BLVD						Int. Total (15 min)	Int. Total (1 hr)
	Right N-W	Thru N-S	Left N-E	U-Turn N-N	Peds N	Approach Total	Right E-N	Thru E-W	Left E-S	U-Turn E-E	Peds E	Approach Total	Right S-E	Thru S-N	Left S-W	U-Turn S-S	Peds S	Approach Total	Right W-S	Thru W-E	Left W-N	U-Turn W-W	Peds W	Approach Total		
07:30:00	6	2	38	0	6	46	34	18	6	19	1	77	1	0	1	0	4	2	0	39	5	0	3	44	169	
07:45:00	12	2	50	0	10	64	46	22	10	12	0	90	3	0	1	0	0	4	0	37	7	0	2	44	202	
08:00:00	10	1	52	0	2	63	45	22	7	10	3	84	3	1	0	0	4	4	2	55	9	0	6	66	217	
08:15:00	14	2	60	0	14	76	40	22	5	22	5	89	6	0	0	0	6	6	3	64	12	0	6	79	250	838
08:30:00	10	5	57	0	9	72	41	15	8	14	1	78	4	1	0	0	9	5	0	59	6	0	3	65	220	889
08:45:00	9	6	57	0	7	72	36	23	2	17	3	78	2	1	3	0	1	6	2	58	12	0	4	72	228	915
09:00:00	5	3	49	0	8	57	36	18	4	9	5	67	4	2	0	0	3	6	1	38	12	0	4	51	181	879
09:15:00	9	1	43	0	12	53	29	17	2	7	3	55	6	6	3	0	3	15	3	52	7	0	9	62	185	814
BREAK																										
16:00:00	11	5	60	0	13	76	50	25	2	4	11	81	12	15	2	0	3	29	6	52	11	0	3	69	255	
16:15:00	17	3	61	0	7	81	37	26	1	5	3	69	9	25	5	0	4	39	6	57	12	0	0	75	264	
16:30:00	15	9	50	0	8	74	47	38	3	5	2	93	7	17	8	0	6	32	1	50	17	0	1	68	267	
16:45:00	11	8	69	0	14	88	55	34	2	4	5	95	11	24	1	0	5	36	3	55	7	0	7	65	284	1070
17:00:00	11	9	53	0	9	73	50	33	3	2	3	88	14	25	4	0	3	43	4	56	11	0	6	71	275	1090
17:15:00	12	3	51	0	6	66	54	54	2	4	3	114	9	16	3	0	1	28	3	60	13	0	3	76	284	1110
17:30:00	14	5	48	0	5	67	48	41	0	5	3	94	9	14	7	0	1	30	8	49	15	0	2	72	263	1106
17:45:00	18	12	59	0	4	89	42	35	0	2	3	79	5	11	7	0	4	23	6	52	12	0	2	70	261	1083
Grand Total	184	76	857	0	134	1117	690	443	57	141	54	1331	105	158	45	0	57	308	48	833	168	0	61	1049	3805	-
Approach%	16.5%	6.8%	76.7%	0%	-	-	51.8%	33.3%	4.3%	10.6%	-	-	34.1%	51.3%	14.6%	0%	-	-	4.6%	79.4%	16%	0%	-	-	-	-
Totals %	4.8%	2%	22.5%	0%	-	29.4%	18.1%	11.6%	1.5%	3.7%	-	35%	2.8%	4.2%	1.2%	0%	-	8.1%	1.3%	21.9%	4.4%	0%	-	27.6%	-	-
Heavy	8	4	5	0	-	-	6	11	14	0	-	-	20	9	1	0	-	-	3	6	13	0	-	-	-	-
Heavy %	4.3%	5.3%	0.6%	0%	-	-	0.9%	2.5%	24.6%	0%	-	-	19%	5.7%	2.2%	0%	-	-	6.3%	0.7%	7.7%	0%	-	-	-	-
Bicycles	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycle %	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Peak Hour: 08:00 AM - 09:00 AM Weather: Overcast (-4.1 °C)																										
Start Time	N Approach PROVOST DR						E Approach ESTHER SHINER BLVD						S Approach PROVOST DR						W Approach ESTHER SHINER BLVD						Int. Total (15 min)	
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total		
08:00:00	10	1	52	0	2	63	45	22	7	10	3	84	3	1	0	0	4	4	2	55	9	0	6	66	217	
08:15:00	14	2	60	0	14	76	40	22	5	22	5	89	6	0	0	0	6	6	3	64	12	0	6	79	250	
08:30:00	10	5	57	0	9	72	41	15	8	14	1	78	4	1	0	0	9	5	0	59	6	0	3	65	220	
08:45:00	9	6	57	0	7	72	36	23	2	17	3	78	2	1	3	0	1	6	2	58	12	0	4	72	228	
Grand Total	43	14	226	0	32	283	162	82	22	63	12	329	15	3	3	0	20	21	7	236	39	0	19	282	915	
Approach%	15.2%	4.9%	79.9%	0%	-	-	49.2%	24.9%	6.7%	19.1%	-	-	71.4%	14.3%	14.3%	0%	-	-	2.5%	83.7%	13.8%	0%	-	-	-	
Totals %	4.7%	1.5%	24.7%	0%	30.9%	30.9%	17.7%	9%	2.4%	6.9%	36%	36%	1.6%	0.3%	0.3%	0%	2.3%	0.8%	25.8%	4.3%	0%	30.8%	-	-	-	
PHF	0.77	0.58	0.94	0	0.93	0.93	0.9	0.89	0.69	0.72	0.92	0.92	0.63	0.75	0.25	0	0.88	0.58	0.92	0.81	0	0.89	-	-	-	
Heavy	5	1	4	0	10	10	2	5	2	0	9	9	7	1	0	0	8	2	2	5	0	9	-	-	-	
Heavy %	11.6%	7.1%	1.8%	0%	3.5%	3.5%	1.2%	6.1%	9.1%	0%	2.7%	2.7%	46.7%	33.3%	0%	0%	38.1%	28.6%	0.8%	12.8%	0%	3.2%	-	-	-	
Lights	38	13	222	0	273	273	160	77	20	63	320	320	8	2	3	0	13	5	234	34	0	273	-	-	-	
Lights %	88.4%	92.9%	98.2%	0%	96.5%	96.5%	98.8%	93.9%	90.9%	100%	97.3%	97.3%	53.3%	66.7%	100%	0%	61.9%	71.4%	99.2%	87.2%	0%	96.8%	-	-	-	
Single-Unit Trucks	5	1	2	0	8	8	2	4	2	0	8	8	7	1	0	0	8	2	2	1	0	5	-	-	-	
Single-Unit Trucks %	11.6%	7.1%	0.9%	0%	2.8%	2.8%	1.2%	4.9%	9.1%	0%	2.4%	2.4%	46.7%	33.3%	0%	0%	38.1%	28.6%	0.8%	2.6%	0%	1.8%	-	-	-	
Buses	0	0	2	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4	-	-	-	
Buses %	0%	0%	0.9%	0%	0.7%	0.7%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	10.3%	0%	1.4%	-	-	-	
Articulated Trucks	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	-	-	-	
Articulated Trucks %	0%	0%	0%	0%	0%	0%	0%	1.2%	0%	0%	0.3%	0.3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-	-	-	
Pedestrians	-	-	-	-	32	-	-	-	-	12	-	-	-	-	-	-	20	-	-	-	-	19	-	-	-	
Pedestrians%	-	-	-	-	38.6%	-	-	-	-	14.5%	-	-	-	-	-	-	24.1%	-	-	-	-	22.9%	-	-	-	



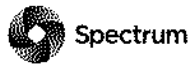
Peak Hour: 04:30 PM - 05:30 PM Weather: Partly Cloudy (0.1 °C)																										
Start Time	N Approach PROVOST DR						E Approach ESTHER SHINER BLVD						S Approach PROVOST DR						W Approach ESTHER SHINER BLVD						Int. Total (15 min)	
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total		
16:30:00	15	9	50	0	8	74	47	38	3	5	2	93	7	17	8	0	6	32	1	50	17	0	1	68	267	
16:45:00	11	8	69	0	14	88	55	34	2	4	5	95	11	24	1	0	5	36	3	55	7	0	7	65	284	
17:00:00	11	9	53	0	9	73	50	33	3	2	3	88	14	25	4	0	3	43	4	56	11	0	6	71	275	
17:15:00	12	3	51	0	6	66	54	54	2	4	3	114	9	16	3	0	1	28	3	60	13	0	3	76	284	
Grand Total	49	29	223	0	37	301	206	159	10	15	13	390	41	82	16	0	15	139	11	221	48	0	17	280	1110	
Approach%	16.3%	9.6%	74.1%	0%	-	-	52.8%	40.8%	2.6%	3.8%	-	-	29.5%	59%	11.5%	0%	-	-	3.9%	78.9%	17.1%	0%	-	-	-	
Totals %	4.4%	2.6%	20.1%	0%	27.1%	27.1%	18.6%	14.3%	0.9%	1.4%	35.1%	35.1%	3.7%	7.4%	1.4%	0%	12.5%	1%	19.9%	4.3%	0%	25.2%	-	-	-	
PHF	0.82	0.81	0.81	0	0.86	0.86	0.94	0.74	0.83	0.75	0.86	0.86	0.73	0.82	0.5	0	0.81	0.69	0.92	0.71	0	0.92	-	-	-	
Heavy	0	2	1	0	3	3	1	2	6	0	9	9	3	3	1	0	7	0	1	2	0	3	-	-	-	
Heavy %	0%	6.9%	0.4%	0%	1%	1%	0.5%	1.3%	60%	0%	2.3%	2.3%	7.3%	3.7%	6.3%	0%	5%	0%	0.5%	4.2%	0%	1.1%	-	-	-	
Lights	49	27	222	0	298	298	205	157	4	15	381	381	38	79	15	0	132	11	220	46	0	277	-	-	-	
Lights %	100%	93.1%	99.6%	0%	99%	99%	99.5%	98.7%	40%	100%	97.7%	97.7%	92.7%	96.3%	93.8%	0%	95%	100%	99.5%	95.8%	0%	98.9%	-	-	-	
Single-Unit Trucks	0	1	1	0	2	2	1	0	2	0	3	3	3	0	1	0	4	0	0	1	0	1	-	-	-	
Single-Unit Trucks %	0%	3.4%	0.4%	0%	0.7%	0.7%	0.5%	0%	20%	0%	0.8%	0.8%	7.3%	0%	6.3%	0%	2.9%	0%	0%	2.1%	0%	0.4%	-	-	-	
Buses	0	0	0	0	0	0	0	0	2	4	6	6	0	3	0	0	3	0	1	1	0	2	-	-	-	
Buses %	0%	0%	0%	0%	0%	0%	0%	0%	1.3%	40%	0%	1.5%	0%	3.7%	0%	0%	2.2%	0%	0.5%	2.1%	0%	0.7%	-	-	-	
Articulated Trucks	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	
Articulated Trucks %	0%	3.4%	0%	0%	0.3%	0.3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-	-	-	
Pedestrians	-	-	-	-	37	-	-	-	-	-	13	-	-	-	-	-	15	-	-	-	-	17	-	-	-	
Pedestrians%	-	-	-	-	45.1%	-	-	-	-	-	15.9%	-	-	-	-	-	18.3%	-	-	-	-	20.7%	-	-	-	

Peak Hour: 08:00 AM - 09:00 AM Weather: Overcast (-4.1 °C)



Peak Hour: 04:30 PM - 05:30 PM Weather: Partly Cloudy (0.1 °C)





Turning Movement Count (8 . PROVOST DR & INTERNAL IKEA WEST DR (ONE WAY EXIT ONLY))

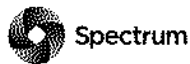
Start Time	N Approach PROVOST DR					E Approach INTERNAL IKEA WEST DR					S Approach PROVOST DR					Int. Total (15 min)	Int. Total (1 hr)
	Thru N:S	Left N:E	U-Turn N:N	Peds N:	Approach Total	Right E:N	Left E:S	U-Turn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	U-Turn S:S	Peds S:	Approach Total		
11:00:00	8	0	0	0	8	40	0	0	0	40	0	19	1	0	20	68	
11:15:00	15	0	0	0	15	27	0	0	0	27	0	25	0	0	25	67	
11:30:00	22	0	0	0	22	25	0	0	0	25	0	14	3	0	17	64	
11:45:00	17	0	1	0	18	27	0	0	0	27	0	20	1	0	21	66	265
12:00:00	24	0	0	0	24	20	0	0	0	20	0	23	0	0	23	67	264
12:15:00	21	0	2	0	23	32	0	0	1	32	0	30	0	0	30	85	282
12:30:00	23	0	2	0	25	37	0	0	0	37	0	23	0	0	23	85	303
12:45:00	26	0	2	0	28	38	0	0	0	38	0	15	0	0	15	81	318
13:00:00	26	0	2	0	28	36	0	0	0	36	0	20	0	0	20	84	335
13:15:00	22	0	0	0	22	22	0	0	0	22	0	19	0	0	19	63	313
13:30:00	19	0	0	0	19	30	0	0	0	30	0	24	0	0	24	73	301
13:45:00	20	0	1	0	21	25	0	0	0	25	0	28	0	0	28	74	294
14:00:00	21	0	0	0	21	35	1	0	0	36	0	30	0	0	30	87	297
14:15:00	27	0	1	0	28	31	0	0	0	31	0	28	0	0	28	87	321
14:30:00	22	0	2	0	24	35	0	0	0	35	0	33	0	0	33	92	340
14:45:00	24	0	2	0	26	44	0	0	0	44	0	34	0	0	34	104	370
15:00:00	21	0	2	0	23	30	0	0	0	30	0	23	0	0	23	76	359
15:15:00	28	0	0	0	28	49	1	0	0	50	0	24	0	0	24	102	374
15:30:00	22	0	1	0	23	35	0	0	0	35	0	32	0	0	32	90	372
15:45:00	21	0	0	0	21	30	0	0	0	30	0	27	0	0	27	78	346
Grand Total	429	0	18	0	447	648	2	0	1	650	0	491	5	0	496	1593	-

Approach%	96%	0%	4%	-	99.7%	0.3%	0%	-	0%	99%	1%	-	-	-
Totals %	26.9%	0%	1.1%	28.1%	40.7%	0.1%	0%	40.8%	0%	30.8%	0.3%	31.1%	-	-
Heavy	39	0	0	-	23	0	0	-	0	20	0	-	-	-

Turning Movement Count

Page 1 of 4

BAC17X4L



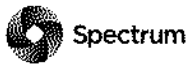
Heavy %	9.1%	0%	0%	-	3.5%	0%	0%	-	0%	4.1%	0%	-	-	-
Bicycles	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycle %	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Peak Hour: 02:30 PM - 03:30 PM Weather: Light Rain (9.4 °C)

Start Time	N Approach PROVOST DR					E Approach INTERNAL IKEA WEST DR					S Approach PROVOST DR					Int. Total (15 min)
	Thru	Left	U-Turn	Peds	Approach Total	Right	Left	U-Turn	Peds	Approach Total	Right	Thru	U-Turn	Peds	Approach Total	
14:30:00	22	0	2	0	24	35	0	0	0	35	0	33	0	0	33	92
14:45:00	24	0	2	0	26	44	0	0	0	44	0	34	0	0	34	104
15:00:00	21	0	2	0	23	30	0	0	0	30	0	23	0	0	23	76
15:15:00	28	0	0	0	28	49	1	0	0	50	0	24	0	0	24	102
Grand Total	95	0	6	0	101	158	1	0	0	159	0	114	0	0	114	374
Approach%	94.1%	0%	5.9%	-	-	99.4%	0.6%	0%	-	-	0%	100%	0%	-	-	-
Totals %	25.4%	0%	1.6%	-	27%	42.2%	0.3%	0%	-	42.5%	0%	30.5%	0%	-	30.5%	-
PHF	0.85	0	0.75	-	0.9	0.81	0.25	0	-	0.8	0	0.84	0	-	0.84	-
Heavy	5	0	0	-	5	4	0	0	-	4	0	1	0	-	1	-
Heavy %	5.3%	0%	0%	-	5%	2.5%	0%	0%	-	2.5%	0%	0.9%	0%	-	0.9%	-
Lights	90	0	6	-	96	154	1	0	-	155	0	113	0	-	113	-
Lights %	94.7%	0%	100%	-	95%	97.5%	100%	0%	-	97.5%	0%	99.1%	0%	-	99.1%	-
Single-Unit Trucks	1	0	0	-	1	1	0	0	-	1	0	0	0	-	0	-
Single-Unit Trucks %	1.1%	0%	0%	-	1%	0.6%	0%	0%	-	0.6%	0%	0%	0%	-	0%	-
Buses	3	0	0	-	3	3	0	0	-	3	0	0	0	-	0	-
Buses %	3.2%	0%	0%	-	3%	1.9%	0%	0%	-	1.9%	0%	0%	0%	-	0%	-
Articulated Trucks	1	0	0	-	1	0	0	0	-	0	0	1	0	-	1	-
Articulated Trucks %	1.1%	0%	0%	-	1%	0%	0%	0%	-	0%	0%	0.9%	0%	-	0.9%	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
Pedestrians%	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-

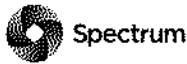
Peak Hour: 02:30 PM - 03:30 PM Weather: Light Rain (9.4 °C)





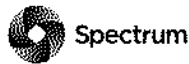
Turning Movement Count (3 . PROVOST DR & SHEPPARD AVE)

Start Time	N Approach AMBROSE RD						E Approach SHEPPARD AVE E						S Approach PROVOST DR						W Approach SHEPPARD AVE E						Int. Total (15 min)	Int. Total (1 hr)	
	Right N-W	Thru N-S	Left N-E	U-Turn N-N	Peds N	Approach Total	Right E-N	Thru E-W	Left E-S	U-Turn E-E	Peds E	Approach Total	Right S-E	Thru S-N	Left S-W	U-Turn S-S	Peds S	Approach Total	Right W-S	Thru W-E	Left W-N	U-Turn W-W	Peds W	Approach Total			
07:30:00	1	0	32	0	0	33	17	326	20	2	1	365	20	0	26	0	0	46	51	217	4	0	0	272	716		
07:45:00	9	0	34	0	1	43	22	330	27	1	8	380	19	0	51	0	4	70	47	221	4	1	1	273	766		
08:00:00	4	0	54	0	1	58	26	307	24	1	11	358	30	0	43	0	4	73	54	299	4	0	0	357	846		
08:15:00	2	1	44	0	2	47	24	241	35	1	8	301	33	0	37	0	10	70	73	307	13	0	3	393	811	3139	
08:30:00	4	0	62	0	5	66	28	292	34	0	7	354	34	0	45	0	5	79	60	281	12	0	6	353	852	3275	
08:45:00	13	0	42	0	6	55	47	309	40	0	10	396	38	0	59	0	6	97	65	345	13	0	2	423	971	3480	
09:00:00	14	0	26	0	14	40	37	263	41	2	6	363	28	0	48	0	4	76	64	266	16	0	3	346	825	3459	
09:15:00	10	0	35	0	7	45	32	247	40	2	7	321	36	0	32	0	8	68	53	272	9	0	2	334	768	3416	
BREAK																											
16:00:00	14	0	50	0	2	64	39	329	50	1	9	419	48	0	62	0	16	110	49	322	6	0	3	377	970		
16:15:00	13	0	52	0	2	65	51	351	48	1	4	451	39	0	61	0	5	100	63	350	7	0	1	420	1036		
16:30:00	18	0	49	0	13	67	25	335	55	4	8	419	36	0	49	0	4	85	52	339	5	0	4	396	967		
16:45:00	12	0	46	0	6	58	38	356	65	3	8	462	46	0	84	0	9	130	42	338	2	0	3	382	1032	4005	
17:00:00	7	0	50	0	6	57	35	348	54	2	5	439	45	0	61	0	8	106	46	337	3	0	4	386	988	4023	
17:15:00	4	0	51	0	5	55	40	396	42	1	6	479	35	0	60	0	5	95	41	345	8	0	5	394	1023	4010	
17:30:00	6	0	50	0	5	56	46	372	44	2	10	464	47	0	56	0	4	103	57	346	4	0	2	407	1030	4073	
17:45:00	10	0	47	0	6	57	24	366	54	1	6	445	38	0	43	0	4	81	66	357	7	0	0	430	1013	4054	
Grand Total	141	1	724	0	81	866	531	5188	673	24	114	6416	572	0	817	0	96	1389	883	4942	117	1	39	5943	14614	-	
Approach%	16.3%	0.1%	83.6%	0%	-	-	8.3%	80.9%	10.5%	0.4%	-	-	41.2%	0%	58.8%	0%	-	-	14.9%	83.2%	2%	0%	-	-	-	-	
Totals %	1%	0%	5%	0%	-	5.9%	3.6%	35.5%	4.6%	0.2%	-	43.9%	3.9%	0%	5.6%	0%	-	9.5%	6%	33.8%	0.8%	0%	-	40.7%	-	-	
Heavy	2	0	5	0	-	-	4	116	11	0	-	-	10	0	14	0	-	-	9	152	3	0	-	-	-	-	
Heavy %	1.4%	0%	0.7%	0%	-	-	0.8%	2.2%	1.6%	0%	-	-	1.7%	0%	1.7%	0%	-	-	1%	3.1%	2.6%	0%	-	-	-	-	
Bicycles	0	0	1	0	-	-	0	0	0	0	-	-	0	0	0	0	-	-	0	1	0	0	-	-	-	-	
Bicycle %	0%	0%	0.1%	0%	-	-	0%	0%	0%	0%	-	-	0%	0%	0%	0%	-	-	0%	0%	0%	0%	-	-	-	-	

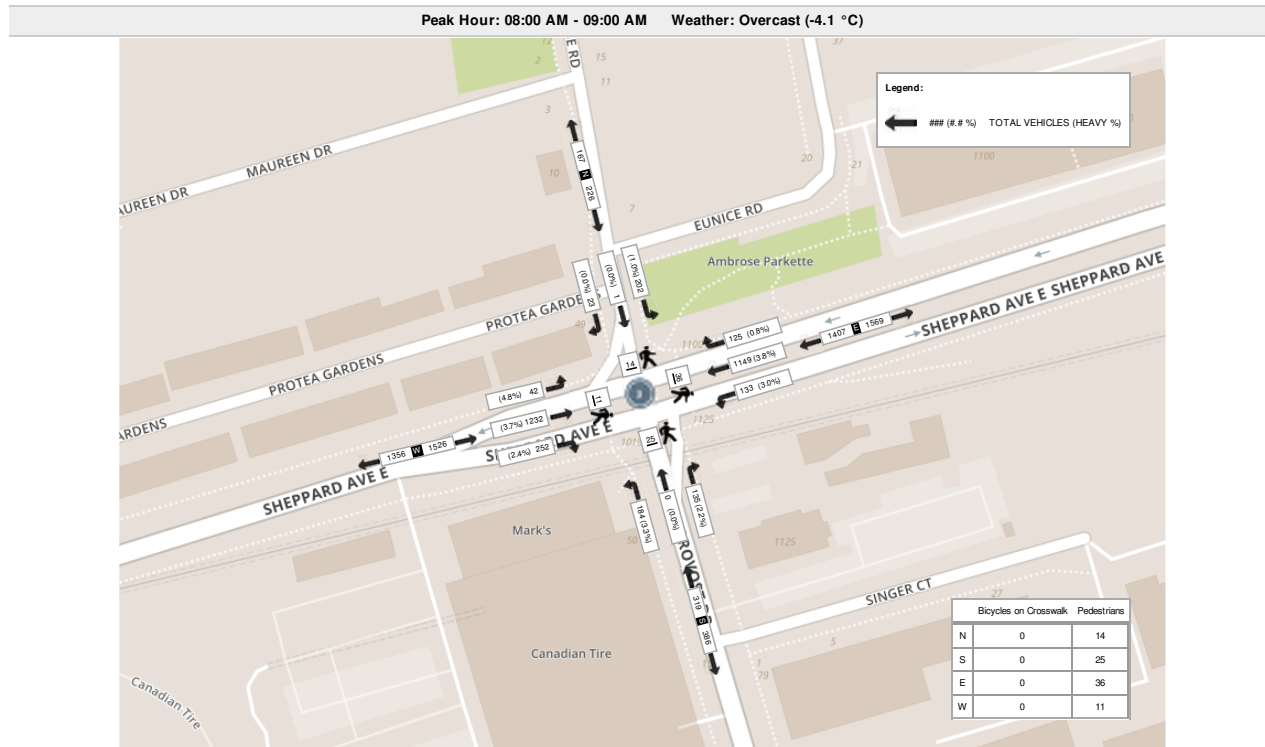
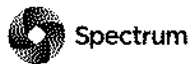


Peak Hour: 08:00 AM - 09:00 AM Weather: Overcast (-4.1 °C)

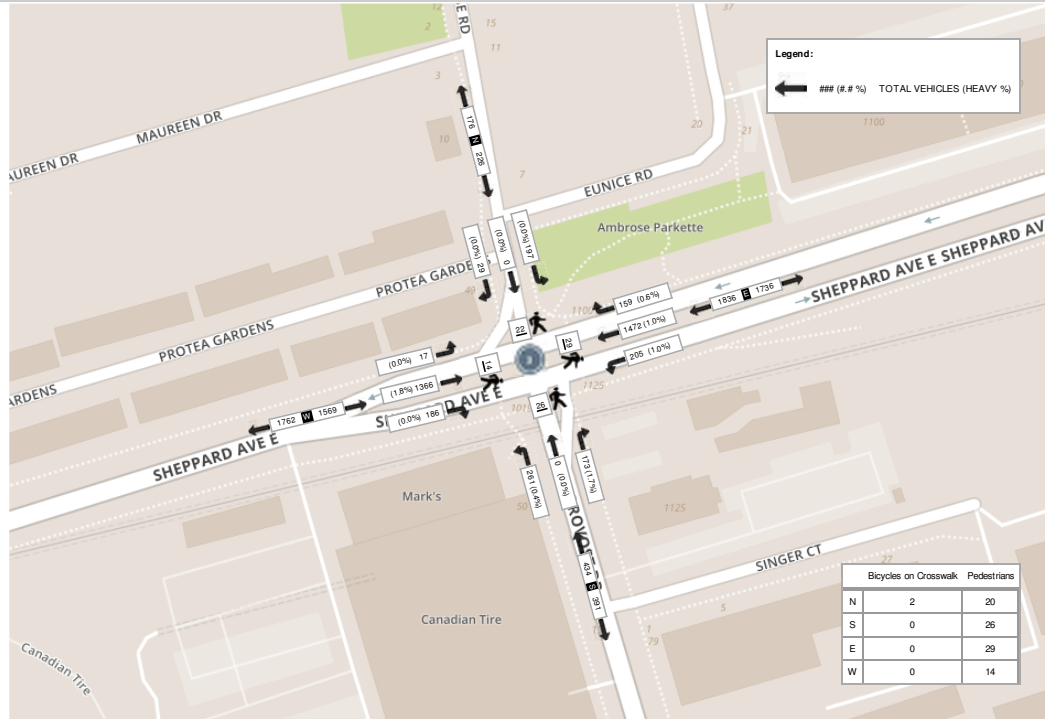
Start Time	N Approach AMBROSE RD						E Approach SHEPPARD AVE E						S Approach PROVOST DR						W Approach SHEPPARD AVE E						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
08:00:00	4	0	54	0	1	58	26	307	24	1	11	358	30	0	43	0	4	73	54	299	4	0	0	357	846
08:15:00	2	1	44	0	2	47	24	241	35	1	8	301	33	0	37	0	10	70	73	307	13	0	3	393	811
08:30:00	4	0	62	0	5	66	28	292	34	0	7	354	34	0	45	0	5	79	60	281	12	0	6	353	852
08:45:00	13	0	42	0	6	55	47	309	40	0	10	396	38	0	59	0	6	97	65	345	13	0	2	423	971
Grand Total	23	1	202	0	14	226	125	1149	133	2	36	1409	135	0	184	0	25	319	252	1232	42	0	11	1526	3480
Approach%	10.2%	0.4%	89.4%	0%	-	-	8.9%	81.5%	9.4%	0.1%	-	-	42.3%	0%	57.7%	0%	-	-	16.5%	80.7%	2.8%	0%	-	-	-
Totals %	0.7%	0%	5.8%	0%	-	6.5%	3.6%	33%	3.8%	0.1%	-	40.5%	3.9%	0%	5.3%	0%	-	9.2%	7.2%	35.4%	1.2%	0%	-	43.9%	-
PHF	0.44	0.25	0.81	0	-	0.86	0.66	0.93	0.83	0.5	-	0.89	0.89	0	0.78	0	-	0.82	0.86	0.89	0.81	0	-	0.9	-
Heavy	0	0	2	0	-	2	1	44	4	0	-	49	3	0	6	0	-	9	6	46	2	0	-	54	-
Heavy %	0%	0%	1%	0%	-	0.9%	0.8%	3.8%	3%	0%	-	3.5%	2.2%	0%	3.3%	0%	-	2.8%	2.4%	3.7%	4.8%	0%	-	3.5%	-
Lights	23	1	200	0	-	224	124	1105	129	2	-	1390	132	0	178	0	-	310	246	1186	40	0	-	1472	-
Lights %	100%	100%	99%	0%	-	99.1%	99.2%	96.2%	97%	100%	-	96.5%	97.8%	0%	96.7%	0%	-	97.2%	97.6%	96.3%	95.2%	0%	-	96.5%	-
Single-Unit Trucks	0	0	1	0	-	1	1	25	2	0	-	28	2	0	2	0	-	4	4	28	1	0	-	33	-
Single-Unit Trucks %	0%	0%	0.5%	0%	-	0.4%	0.8%	2.2%	1.5%	0%	-	2%	1.5%	0%	1.1%	0%	-	1.3%	1.6%	2.3%	2.4%	0%	-	2.2%	-
Buses	0	0	1	0	-	1	0	18	2	0	-	20	1	0	4	0	-	5	2	18	1	0	-	21	-
Buses %	0%	0%	0.5%	0%	-	0.4%	0%	1.6%	1.5%	0%	-	1.4%	0.7%	0%	2.2%	0%	-	1.6%	0.8%	1.5%	2.4%	0%	-	1.4%	-
Articulated Trucks	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	-
Articulated Trucks %	0%	0%	0%	0%	-	0%	0%	0.1%	0%	0%	-	0.1%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%	-
Pedestrians	-	-	-	-	14	-	-	-	-	-	36	-	-	-	-	-	25	-	-	-	-	-	11	-	-
Pedestrians%	-	-	-	-	16.3%	-	-	-	-	-	41.9%	-	-	-	-	-	29.1%	-	-	-	-	-	12.8%	-	-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
Bicycles on Crosswalk%	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-
Bicycles on Road	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	-
Bicycles on Road%	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-



Peak Hour: 04:45 PM - 05:45 PM Weather: Partly Cloudy (0.1 °C)																									
Start Time	N Approach AMBROSE RD						E Approach SHEPPARD AVE E						S Approach PROVOST DR						W Approach SHEPPARD AVE E						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
16:45:00	12	0	46	0	6	58	38	356	65	3	8	462	46	0	84	0	9	130	42	338	2	0	3	382	1032
17:00:00	7	0	50	0	6	57	35	348	54	2	5	439	45	0	61	0	8	106	46	337	3	0	4	386	988
17:15:00	4	0	51	0	5	55	40	396	42	1	6	479	35	0	60	0	5	95	41	345	8	0	5	394	1023
17:30:00	6	0	50	0	5	56	46	372	44	2	10	464	47	0	56	0	4	103	57	346	4	0	2	407	1030
Grand Total	29	0	197	0	22	226	159	1472	205	8	29	1844	173	0	261	0	26	434	186	1366	17	0	14	1569	4073
Approach%	12.8%	0%	87.2%	0%	-	-	8.6%	79.8%	11.1%	0.4%	-	-	39.9%	0%	60.1%	0%	-	-	11.9%	87.1%	1.1%	0%	-	-	-
Totals %	0.7%	0%	4.8%	0%	5.5%	-	3.9%	36.1%	5%	0.2%	45.3%	-	4.2%	0%	6.4%	0%	10.7%	-	4.6%	33.5%	0.4%	0%	38.5%	-	-
PHF	0.6	0	0.97	0	0.97	-	0.86	0.93	0.79	0.67	0.96	-	0.92	0	0.78	0	0.83	-	0.82	0.99	0.53	0	0.96	-	-
Heavy	0	0	0	0	0	-	1	15	2	0	18	-	3	0	1	0	4	-	0	24	0	0	24	-	-
Heavy %	0%	0%	0%	0%	0%	-	0.6%	1%	1%	0%	1%	-	1.7%	0%	0.4%	0%	0.9%	-	0%	1.8%	0%	0%	1.5%	-	-
Lights	29	0	197	0	22	226	158	1457	203	8	29	1826	170	0	260	0	26	430	186	1342	17	0	14	1545	-
Lights %	100%	0%	100%	0%	100%	-	99.4%	99%	99%	100%	99%	-	98.3%	0%	99.6%	0%	99.1%	-	100%	98.2%	100%	0%	98.5%	-	-
Single-Unit Trucks	0	0	0	0	0	-	1	6	1	0	8	-	0	0	1	0	1	-	0	14	0	0	14	-	-
Single-Unit Trucks %	0%	0%	0%	0%	0%	-	0.6%	0.4%	0.5%	0%	0.4%	-	0%	0%	0.4%	0%	0.2%	-	0%	1%	0%	0%	0.9%	-	-
Buses	0	0	0	0	0	-	0	7	0	0	7	-	3	0	0	0	3	-	0	10	0	0	10	-	-
Buses %	0%	0%	0%	0%	0%	-	0%	0.5%	0%	0%	0.4%	-	1.7%	0%	0%	0%	0.7%	-	0%	0.7%	0%	0%	0.6%	-	-
Articulated Trucks	0	0	0	0	0	-	0	2	1	0	3	-	0	0	0	0	0	-	0	0	0	0	0	-	-
Articulated Trucks %	0%	0%	0%	0%	0%	-	0%	0.1%	0.5%	0%	0.2%	-	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	-
Pedestrians	-	-	-	-	20	-	-	-	-	29	-	-	-	-	-	-	26	-	-	-	-	14	-	-	-
Pedestrians%	-	-	-	-	22%	-	-	-	-	31.9%	-	-	-	-	-	-	28.8%	-	-	-	-	15.4%	-	-	-
Bicycles on Crosswalk	-	-	-	-	2	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	0	-	-	-	-
Bicycles on Crosswalk%	-	-	-	-	2.2%	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-
Bicycles on Road	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	-
Bicycles on Road%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-

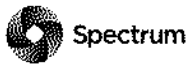


Peak Hour: 04:45 PM - 05:45 PM Weather: Partly Cloudy (0.1 °C)



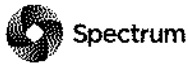
Turning Movement Count (5 - PROVOST DR & SINGER CT / CANADIAN TIRE GARAGE)

Start Time	N Approach PROVOST DR						E Approach SINGER CT						S Approach PROVOST DR						W Approach CANADIAN TIRE GARAGE						Int. Total (15 min)	Int. Total (1 hr)
	Right N-W	Thru N-S	Left N-E	U-Turn N-N	Peds N	Approach Total	Right E-N	Thru E-W	Left E-S	U-Turn E-E	Peds E	Approach Total	Right S-E	Thru S-N	Left S-W	U-Turn S-S	Peds S	Approach Total	Right W-S	Thru W-E	Left W-N	U-Turn W-W	Peds W	Approach Total		
11:00:00	16	69	12	1	2	98	15	1	8	0	14	24	8	49	10	0	4	67	11	1	6	0	1	18	207	
11:15:00	21	81	13	0	7	115	19	2	8	0	22	29	11	41	6	0	10	58	12	0	13	0	5	25	227	
11:30:00	15	68	16	0	5	99	15	0	15	0	12	30	4	43	11	0	5	58	6	1	16	0	4	23	210	
11:45:00	23	75	14	0	7	112	19	2	6	0	13	27	10	66	10	0	8	86	6	1	12	0	1	19	244	888
12:00:00	25	86	11	0	3	122	10	0	12	0	26	22	4	52	13	0	10	69	16	1	15	0	3	32	245	926
12:15:00	19	71	12	0	1	102	14	0	5	0	18	19	6	49	12	0	2	67	6	0	17	0	0	23	211	910
12:30:00	17	106	11	0	6	134	14	1	7	0	11	22	6	66	8	0	2	80	13	1	9	0	6	23	259	959
12:45:00	22	89	10	0	4	121	13	0	5	0	17	18	7	61	15	0	4	83	9	1	21	0	1	31	253	968
13:00:00	25	86	12	0	3	123	15	0	5	0	16	20	9	64	8	0	7	81	6	1	14	0	1	21	245	968
13:15:00	22	102	16	0	1	140	13	0	5	0	16	18	7	76	7	0	1	90	12	0	9	0	2	21	269	1026
13:30:00	19	84	12	0	0	115	21	0	19	0	9	40	10	67	8	0	10	85	10	2	11	0	3	23	263	1030
13:45:00	24	90	6	0	0	120	14	0	9	0	7	23	7	65	13	0	6	85	5	2	21	0	5	28	256	1033
14:00:00	27	86	16	1	1	130	16	1	4	0	10	21	9	58	12	0	8	79	9	2	18	0	2	29	259	1047
14:15:00	18	81	15	0	3	114	14	0	11	0	10	25	8	55	6	0	3	69	11	1	23	0	2	35	243	1021
14:30:00	36	102	16	0	3	154	24	0	11	0	12	35	14	67	7	0	9	88	7	0	18	0	3	25	302	1060
14:45:00	26	96	14	1	0	137	20	1	6	1	9	28	12	79	6	0	4	97	8	1	25	0	3	34	296	1100
15:00:00	22	90	16	0	0	128	15	0	10	0	7	25	6	73	11	0	3	90	12	1	18	0	0	31	274	1115
15:15:00	14	105	13	0	0	132	13	0	6	0	10	19	9	88	12	0	2	109	7	0	23	0	8	30	290	1162
15:30:00	16	104	16	0	1	136	15	0	2	0	4	17	8	59	9	0	1	76	7	0	23	0	4	30	259	1119
15:45:00	24	94	16	0	3	134	10	0	7	0	13	17	14	74	6	0	1	94	5	0	16	0	4	21	256	1089
Grand Total	431	1765	267	3	50	2465	309	8	161	1	256	479	169	1252	190	0	100	1611	178	16	328	0	58	522	5078	-
Approach %	17.5%	71.6%	10.8%	0.1%	-	64.5%	1.7%	33.6%	0.2%	-	10.5%	77.7%	11.8%	0%	-	34.1%	3.1%	62.8%	0%	-	-	-	-	-	-	-
Totals %	8.5%	34.8%	5.3%	0.1%	-	48.6%	6.1%	0.2%	3.2%	0%	9.4%	3.3%	24.7%	3.7%	0%	31.7%	3.5%	0.3%	6.5%	0%	-	-	-	10.3%	-	-
Heavy	0	42	0	0	-	-	0	0	0	0	-	1	44	0	0	-	0	0	0	0	-	-	-	-	-	-
Heavy %	0%	2.4%	0%	0%	-	-	0%	0%	0%	0%	-	0.6%	3.5%	0%	0%	-	0%	0%	0%	0%	-	-	-	-	-	-
Bicycles	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycle %	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

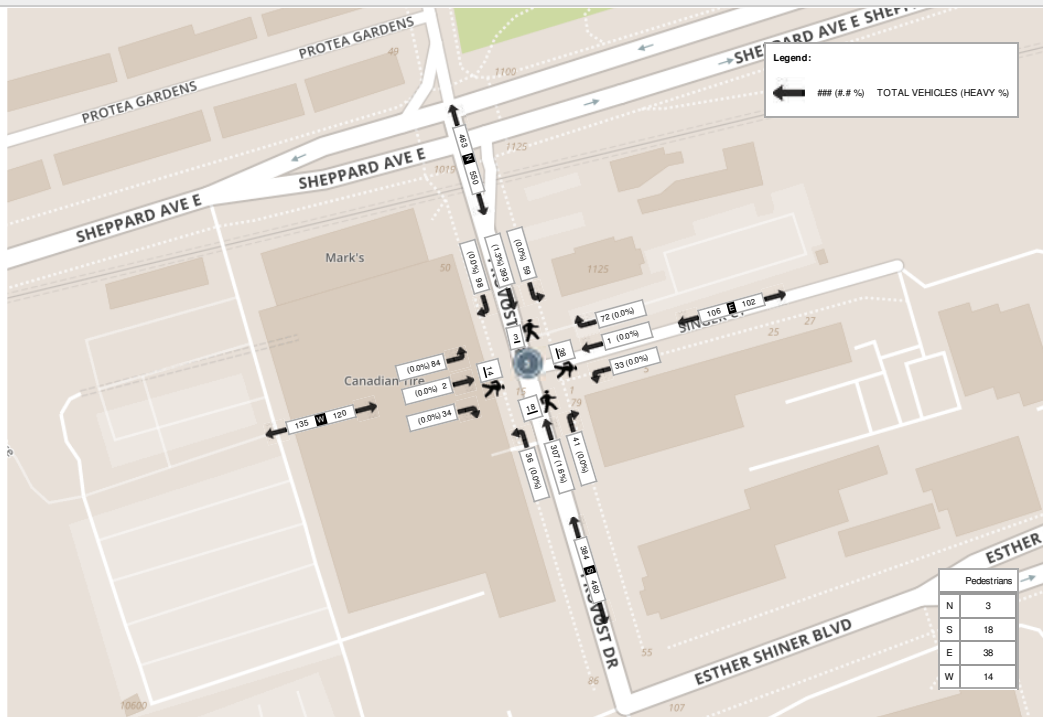


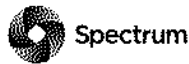
Peak Hour: 02:30 PM - 03:30 PM Weather: Light Rain (9.4 °C)

Start Time	N Approach PROVOST DR						E Approach SINGER CT						S Approach PROVOST DR						W Approach CANADIAN TIRE GARAGE						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
14:30:00	36	102	16	0	3	154	24	0	11	0	12	35	14	67	7	0	9	88	7	0	18	0	3	25	302
14:45:00	26	96	14	1	0	137	20	1	6	1	9	28	12	79	6	0	4	97	8	1	25	0	3	34	296
15:00:00	22	90	16	0	0	128	15	0	10	0	7	25	6	73	11	0	3	90	12	1	18	0	0	31	274
15:15:00	14	105	13	0	0	132	13	0	6	0	10	19	9	88	12	0	2	109	7	0	23	0	8	30	290
Grand Total	98	393	59	1	3	551	72	1	33	1	38	107	41	307	36	0	18	384	34	2	84	0	14	120	1162
Approach%	17.8%	71.3%	10.7%	0.2%	-	-	67.3%	0.9%	30.8%	0.9%	-	-	10.7%	79.9%	9.4%	0%	-	-	28.3%	1.7%	70%	0%	-	-	-
Totals %	8.4%	33.8%	5.1%	0.1%	47.4%	6.2%	0.1%	2.8%	0.1%	9.2%	3.5%	26.4%	3.1%	0%	33%	2.9%	0.2%	7.2%	0%	10.3%	-	-	-	-	-
PHF	0.68	0.94	0.92	0.25	0.89	0.75	0.25	0.75	0.25	0.76	0.73	0.87	0.75	0	0.88	0.71	0.5	0.84	0	0.88	-	-	-	-	-
Heavy	0	5	0	0	5	0	0	0	0	0	0	5	0	0	0	5	0	0	0	0	0	0	0	0	-
Heavy %	0%	1.3%	0%	0%	0.9%	0%	0%	0%	0%	0%	0%	1.6%	0%	0%	1.3%	0%	0%	0%	0%	0%	-	-	-	-	-
Lights	98	388	59	1	546	72	1	33	1	107	41	302	36	0	379	34	2	84	0	120	-	-	-	-	-
Lights %	100%	98.7%	100%	100%	99.1%	100%	100%	100%	100%	100%	100%	98.4%	100%	0%	98.7%	100%	100%	100%	0%	100%	-	-	-	-	-
Single-Unit Trucks	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	-
Single-Unit Trucks %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0.3%	0%	0%	0.3%	0%	0%	0%	0%	0%	-	-	-	-	-
Buses	0	5	0	0	5	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	0	0	0	-
Buses %	0%	1.3%	0%	0%	0.9%	0%	0%	0%	0%	0%	0%	1.3%	0%	0%	1%	0%	0%	0%	0%	0%	-	-	-	-	-
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
Articulated Trucks %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-	-	-	-	-
Pedestrians	-	-	-	-	3	-	-	-	-	38	-	-	-	-	18	-	-	-	-	14	-	-	-	-	-
Pedestrians%	-	-	-	-	4.1%	-	-	-	-	52.1%	-	-	-	-	24.7%	-	-	-	-	19.2%	-	-	-	-	-



Peak Hour: 02:30 PM - 03:30 PM Weather: Light Rain (9.4 °C)





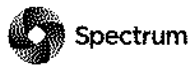
Turning Movement Count (3 . SHEPPARD AVE E & CANADIAN TIRE DRIVEWAY) CustID: SPC_INSTRUC MioID: 464329

Start Time	E Approach SHEPPARD AVE E					S Approach CANADIAN TIRE DRIVEWAY					W Approach SHEPPARD AVE E					Int. Total (15 min)	Int. Total (1 hr)
	Thru E:W	Left E:S	U-Turn E:E	Peds E:	Approach Total	Right S:E	Left S:W	U-Turn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	U-Turn W:W	Peds W:	Approach Total		
11:00:00	285	15	1	0	301	24	4	0	15	28	12	311	0	0	323	652	
11:15:00	289	15	0	0	304	26	4	0	10	30	5	297	0	0	302	636	
11:30:00	290	22	2	0	314	39	3	0	11	42	7	333	0	0	340	696	
11:45:00	323	14	1	0	338	17	2	0	7	19	8	298	0	0	306	663	2647
12:00:00	322	15	0	0	337	14	5	0	4	19	4	327	0	0	331	687	2682
12:15:00	310	15	1	0	326	26	4	0	8	30	13	304	0	0	317	673	2719
12:30:00	308	15	1	0	324	23	4	0	9	27	8	308	0	0	316	667	2690
12:45:00	371	17	2	0	390	24	2	0	9	26	13	311	0	0	324	740	2767
13:00:00	336	21	0	0	357	28	5	0	13	33	8	290	0	0	298	688	2768
13:15:00	407	18	0	0	425	24	3	0	6	27	11	322	0	0	333	785	2880
13:30:00	364	9	0	0	373	27	8	0	7	35	13	297	0	0	310	718	2931
13:45:00	387	13	1	0	401	23	7	0	11	30	7	308	0	0	315	746	2937
14:00:00	373	11	0	0	384	19	3	0	6	22	10	290	0	0	300	706	2955
14:15:00	391	11	1	0	403	27	2	0	14	29	11	320	0	0	331	763	2933
14:30:00	371	18	0	0	389	12	7	0	11	19	6	316	0	0	322	730	2945
14:45:00	413	14	0	0	427	22	5	0	9	27	8	306	0	0	314	768	2967
15:00:00	414	10	0	0	424	21	3	0	7	24	11	292	0	0	303	751	3012
15:15:00	365	13	0	0	378	34	2	0	13	36	10	270	0	0	280	694	2943
15:30:00	394	15	0	0	409	16	3	0	6	19	10	291	0	0	301	729	2942
15:45:00	390	8	0	0	398	23	5	0	11	28	4	274	0	0	278	704	2878
Grand Total	7103	289	10	0	7402	469	81	0	187	550	179	6065	0	0	6244	14196	-
Approach%	96%	3.9%	0.1%		-	85.3%	14.7%	0%		-	2.9%	97.1%	0%		-	-	-
Totals %	50%	2%	0.1%		52.1%	3.3%	0.6%	0%		3.9%	1.3%	42.7%	0%		44%	-	-
Heavy	69	0	0		-	3	1	0		-	1	53	0		-	-	-

Turning Movement Count

Page 1 of 4

BAC17X4L



Heavy %	1%	0%	0%	-	0.6%	1.2%	0%	-	0.6%	0.9%	0%	-	-	-
Bicycles	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycle %	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Peak Hour: 02:15 PM - 03:15 PM Weather: Light Rain (9.4 °C)

Start Time	E Approach SHEPPARD AVE E					S Approach CANADIAN TIRE DRIVEWAY					W Approach SHEPPARD AVE E					Int. Total (15 min)
	Thru	Left	U-Turn	Peds	Approach Total	Right	Left	U-Turn	Peds	Approach Total	Right	Thru	U-Turn	Peds	Approach Total	
14:15:00	391	11	1	0	403	27	2	0	14	29	11	320	0	0	331	763
14:30:00	371	18	0	0	389	12	7	0	11	19	6	316	0	0	322	730
14:45:00	413	14	0	0	427	22	5	0	9	27	8	306	0	0	314	768
15:00:00	414	10	0	0	424	21	3	0	7	24	11	292	0	0	303	751
Grand Total	1589	53	1	0	1643	82	17	0	41	99	36	1234	0	0	1270	3012
Approach%	96.7%	3.2%	0.1%		-	82.8%	17.2%	0%		-	2.8%	97.2%	0%		-	-
Totals %	52.8%	1.8%	0%		54.5%	2.7%	0.6%	0%		3.3%	1.2%	41%	0%		42.2%	-
PHF	0.96	0.74	0.25		0.96	0.76	0.61	0		0.85	0.82	0.96	0		0.96	-
Heavy	6	0	0		6	0	0	0		0	0	5	0		5	-
Heavy %	0.4%	0%	0%		0.4%	0%	0%	0%		0%	0%	0.4%	0%		0.4%	-
Lights	1583	53	1		1637	82	17	0		99	36	1229	0		1265	-
Lights %	99.6%	100%	100%		99.6%	100%	100%	0%		100%	100%	99.6%	0%		99.6%	-
Single-Unit Trucks	3	0	0		3	0	0	0		0	0	2	0		2	-
Single-Unit Trucks %	0.2%	0%	0%		0.2%	0%	0%	0%		0%	0%	0.2%	0%		0.2%	-
Buses	3	0	0		3	0	0	0		0	0	3	0		3	-
Buses %	0.2%	0%	0%		0.2%	0%	0%	0%		0%	0%	0.2%	0%		0.2%	-
Articulated Trucks	0	0	0		0	0	0	0		0	0	0	0		0	-
Articulated Trucks %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0%	0%		0%	-
Pedestrians	-	-	-	0	-	-	-	-	41	-	-	-	-	0	-	-
Pedestrians%	-	-	-	0%	-	-	-	-	100%	-	-	-	-	0%	-	-

Peak Hour: 02:15 PM - 03:15 PM Weather: Light Rain (9.4 °C)

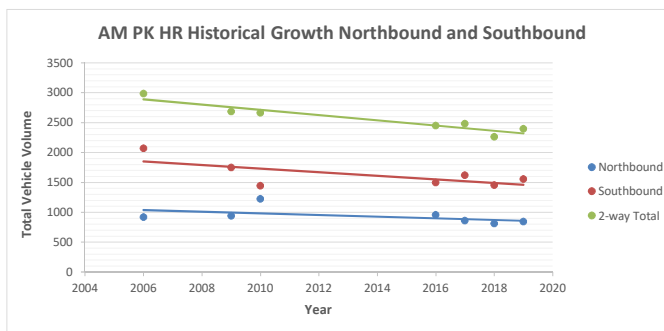


ATTACHMENT D: Corridor Growth Analysis Sheets

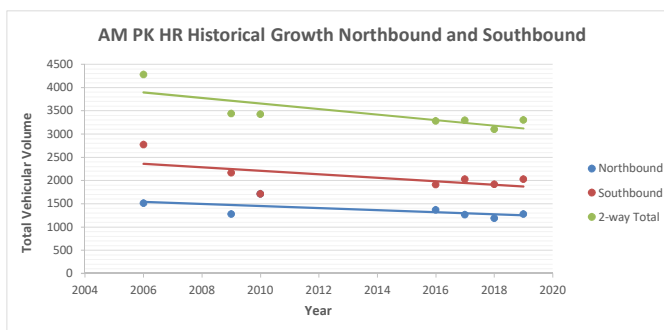


Project: Block 7
Project ID: 7238-19
Intersection: Sheppard Ave E / Leslie Rd
Peak Hour: AM

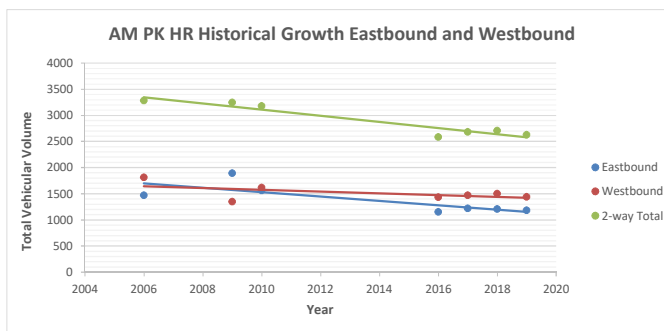
Count Information		North of Sheppard Ave E / Leslie Rd		
Date	Year	Northbound	Southbound	2-way
2019-03-27	2019	839	1554	2393
2018-12-04	2018	807	1452	2259
2016-11-02	2016	954	1493	2447
2017-04-18	2017	859	1619	2478
2010-05-27	2010	1221	1440	2661
2009-02-17	2009	938	1744	2682
2006-03-08	2006	914	2068	2982
Trend Point		858.16	1461.47	2319.63
Slope		-13.81	-29.99	-43.81
Growth		-1.61%	-2.05%	-1.89%



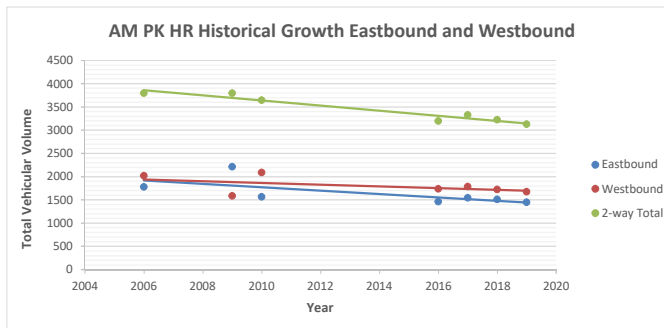
Count Information		South of Sheppard Ave E / Leslie Rd		
Date	Year	Northbound	Southbound	2-way
2019-03-27	2019	1278	2022	3300
2018-12-04	2018	1187	1914	3101
2016-11-02	2016	1366	1911	3277
2017-04-18	2017	1261	2027	3288
2010-05-27	2010	1711	1711	3422
2009-02-17	2009	1272	2163	3435
2006-03-08	2006	1510	2766	4276
Trend Point		1248.02	1870.43	3118.45
Slope		-22.34	-37.39	-59.73
Growth		-1.79%	-2.00%	-1.92%



Count Information		East of Sheppard Ave E / Leslie Rd		
Date	Year	Eastbound	Westbound	2-way
2019-03-27	2019	1184	1440	2624
2018-12-04	2018	1206	1500	2706
2016-11-02	2016	1151	1431	2582
2017-04-18	2017	1217	1467	2684
2010-05-27	2010	1561	1614	3175
2009-02-17	2009	1892	1350	3242
2006-03-08	2006	1467	1812	3279
Trend Point		1155.56	1423.69	2579.25
Slope		-41.82	-17.06	-58.88
Growth		-3.62%	-1.20%	-2.28%

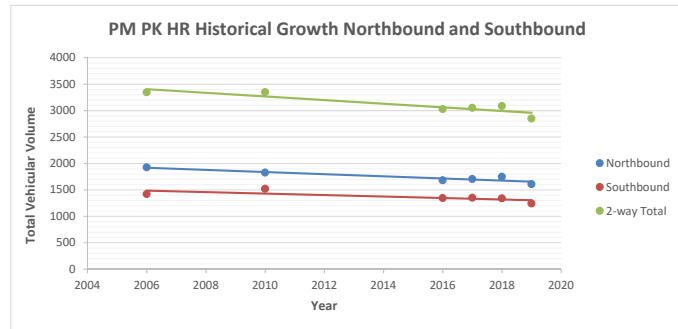


Count Information		West of Sheppard Ave E / Leslie Rd		
Date	Year	Eastbound	Westbound	2-way
2019-03-27	2019	1448	1675	3123
2018-12-04	2018	1507	1719	3226
2016-11-02	2016	1462	1736	3198
2017-04-18	2017	1541	1785	3326
2010-05-27	2010	1561	2084	3645
2009-02-17	2009	2209	1582	3791
2006-03-08	2006	1774	2017	3791
Trend Point		1445.69	1699.73	3145.42
Slope		-36.37	-18.42	-54.79
Growth		-2.52%	-1.08%	-1.74%

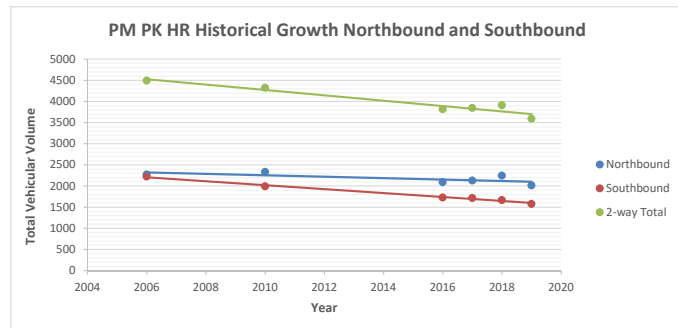


Project: Block 7
Project ID: 7238-19
Intersection: Sheppard Ave E / Leslie Rd
Peak Hour: PM

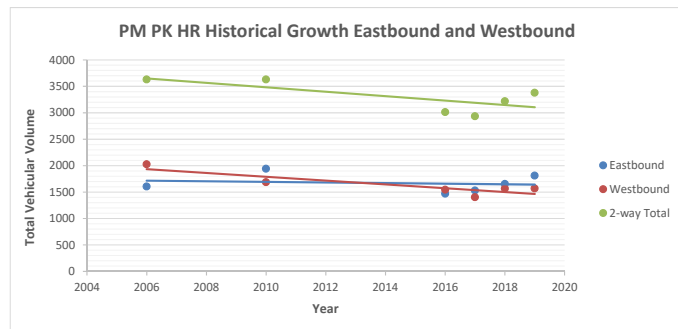
Count Information		North of Sheppard Ave E / Leslie Rd		
Date	Year	Northbound	Southbound	2-way
2019-03-27	2019	1609	1241	2850
2018-12-04	2018	1748	1339	3087
2016-11-02	2016	1682	1346	3028
2017-04-18	2017	1704	1350	3054
2010-05-27	2010	1827	1521	3348
2006-03-08	2006	1926	1420	3346
Trend Point		1654.78	1303.70	2958.47
Slope		-20.26	-14.10	-34.36
Growth		-1.22%	-1.08%	-1.16%



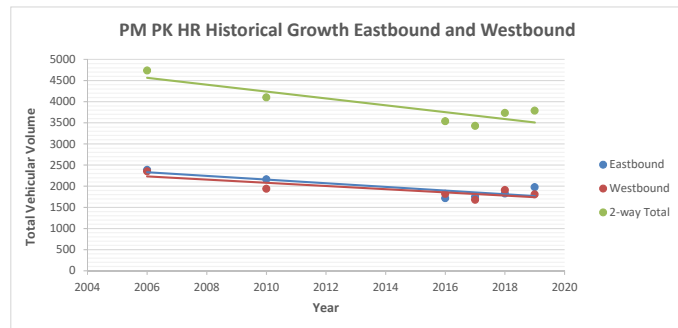
Count Information		South of Sheppard Ave E / Leslie Rd		
Date	Year	Northbound	Southbound	2-way
2019-03-27	2019	2014	1577	3591
2018-12-04	2018	2244	1668	3912
2016-11-02	2016	2091	1726	3817
2017-04-18	2017	2128	1717	3845
2010-05-27	2010	2331	1993	4324
2006-03-08	2006	2273	2221	4494
Trend Point		2101.20	1599.51	3700.70
Slope		-16.92	-46.61	-63.53
Growth		-0.81%	-2.91%	-1.72%



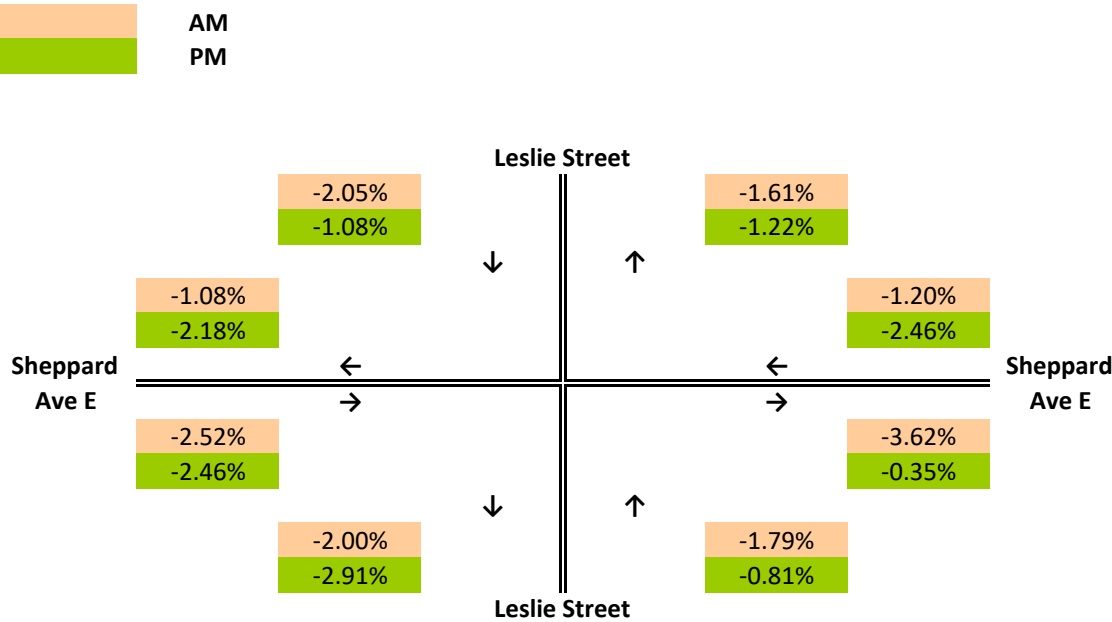
Count Information		East of Sheppard Ave E / Leslie Rd		
Date	Year	Eastbound	Westbound	2-way
2019-03-27	2019	1810	1569	3379
2018-12-04	2018	1653	1566	3219
2016-11-02	2016	1469	1544	3013
2017-04-18	2017	1531	1404	2935
2010-05-27	2010	1943	1687	3630
2006-03-08	2006	1606	2026	3632
Trend Point		1641.92	1464.24	3106.15
Slope		-5.73	-36.09	-41.83
Growth		-0.35%	-2.46%	-1.35%



Count Information		West of Sheppard Ave E / Leslie Rd		
Date	Year	Eastbound	Westbound	2-way
2019-03-27	2019	1978	1806	3784
2018-12-04	2018	1827	1907	3734
2016-11-02	2016	1715	1819	3534
2017-04-18	2017	1749	1679	3428
2010-05-27	2010	2163	1938	4101
2006-03-08	2006	2385	2351	4736
Trend Point		1766.64	1739.55	3506.19
Slope		-43.47	-37.95	-81.42
Growth		-2.46%	-2.18%	-2.32%



Background Traffic Growth Rates



Background Traffic Growth Rates (2-way)



ATTACHMENT E: Signal Timing Plans



Notes:

22/02/2019

NOTES: EW PED crossing on the south side is prohibited.

EB and WB vehicle through movement are prohibited - Bus excepted

No Southbound Left Turn movement allowed

Firehall Preemption is not activated yet on Sep 17, 2014 - firehall signal is not connected yet. Firehall Preemption was later activated on December 15, 2014.

EB and WB loops replaced by Wavetronix sensor as of October 16, 2018

LOCATION: Leslie St & HWY 401 WB Off Ramp / Go Station Access Rd (MTO Signal)		DISTRICT: North York									
TCS: 753		COMPUTER SYSTEM: TransSuite									
MODE / COMMENT: SA2-VMG with PR, UPS and SB Firehall PE		CONTROLLER / CABINET: PEEK ATC 1000 / TS2 T1									
PREPARED / CHECKED BY: JG/IHL		CONFLICT FLASH: Red & Red									
PREPARATION DATE: November 25, 2016		DESIGN WALK SPEED: 1.0 m/s (FDW based on full crossing @ 1.2 m/s)									
IMPLEMENTATION DATE: January 20, 2017		CHANNEL / DROP: 4029/9						CONTROLLER FIRMWARE: 3.018.1.2976			
NEMA Phase		OFF	AM	PM	NIGHT	WEEKEND	DVP	Phase Mode (Fixed/Demanded/ Callable)	Remarks		
	All Other Times	06:30-09:30 M-F	15:00-19:00 M-F	22:00-06:30 Daily	09:00-18:00 Sat & Sun						
	Local Plan Split Table	Pattern 1 Split 1	Pattern 2 Split 2	Pattern 3 Split 3	Pattern 4 Split 4	Pattern 5 Split 5	Pattern 6 Split 6				
1		WLK FDW MIN MAX1 AMB ALR SPLIT	7 20 27 43 4 3						Pedestrian Minimums: NSWK = 7 sec, NSFD = 20 sec EWWK = 7 sec, EWFD = 25 sec		
2		WLK FDW MIN MAX1 AMB ALR SPLIT	7 20 27 43 4 3					Fixed	EB phase is callable by vehicle or pedestrian actuation. If a vehicle call is received, the minimum EBG is 7 seconds. If ongoing vehicle demand exists on the stopbar loop, the EBG is capable of providing vehicle extensions up to the maximum. If a pedestrian call is received, the maximum would be served. The EWWK & EWFD are only displayed on the pedestrian signal heads if a pedestrian call is received. Extension time is based on vehicle/pedestrian demand and is taken from the NSG.		
3		WLK FDW MIN MAX1 AMB ALR SPLIT	7 20 27 43 4 3	49	53	48	39	49	42	Callable and Extendable by Stopbar Loop	WB phase is callable by vehicle actuation. If a vehicle call is received, the minimum WBG is 7 seconds. If ongoing vehicle demand exists on the stopbar loop, the WBG is capable of providing vehicle extensions up to the maximum. Extension time is based on vehicle demand and is taken from the NSG.
4		WLK FDW MIN MAX1 AMB ALR SPLIT	7 25 7 32 4 3	26	42	37	21	26	38	Callable by Stopbar Loop and/or Push Button; Extendable by Stopbar Loop	NS pedestrian signal (east side only) display on during EB vehicle phase (4). Side Street Passage Time = 3 sec EB and WB phases are callable and skippable but not switchable. If EB and WB detectors are both active at the end of the NS phase, the WB phase is served first followed by the EB phase. If only the EB detector is active at the end of the NS phase, only the EB phase is served (and any late WB demand will only be served the following cycle). EB and WB phases are only permitted once per cycle.
5		WLK FDW MIN MAX1 AMB ALR SPLIT	7 20 27 43 4 3	40	40	40	40	40	40		Firehall Preemption: If preemption is received in phases 2/6, time to Preemption Sequence A = 0 - 34 sec If preemption is received in phase 3, time to Preemption Sequence A = 0 - 14 sec If preemption is received in phase 4, time to Preemption Sequence A = 0 - 39 sec Preemption Sequence A Serve 40.0 seconds SBG/NSDW Serve 4.0 seconds SBY/NSDW Serve 3.0 second ALLR
6		WLK FDW MIN MAX1 AMB ALR SPLIT	7 20 27 43 4 3	49	53	48	39	49	42	Fixed	Return to normal operation in NS phase Signal goes to ALLR display before serving preemption sequence.
7		WLK FDW MIN MAX1 AMB ALR SPLIT	7 20 27 43 4 3	26	42	37	21	26	38		
8		WLK FDW MIN MAX1 AMB ALR SPLIT	7 25 7 32 4 3	40	40	40	40	40	40		
	CL OF	115 37	135 20	125 25	100 12	115 46	120 56				

Note: No pedestrian crossing on South side.
Prohibited movements: NBRT & SBLT
Picked up under TransSuite on March 13, 2014 at approximately 10:02

LOCATION: Leslie St & Hwy 401 EB Off-Ramp (S. TCS)/Lesmill Rd (MTO Signal)		DISTRICT: North York						COMPUTER SYSTEM: TransSuite		North York	
MODE/COMMENT: SA2-VMG with PR		COMPUTER SYSTEM: PEEK ATC 1000 / TS2T1						CONFLICT FLASH: Red & Red		↑	
TCS: 754		DESIGN WALK SPEED: 1.0 m/s (FDW based on full crossing at 1.2 m/s)						CHANNEL/DROP: 4029/12			
PREPARED/CHECKED BY: JG		CONTROLLER FIRMWARE: 3.018.1.2976									
PREPARATION DATE: November 25, 2016											
IMPLEMENTATION DATE: January 20, 2017											
NEMA Phase		OFF All Other Times	AM 06:30-09:30 M-F	PM 15:00-19:00 M-F	NIGHT 22:00-06:30 Daily	WEEKEND 09:00-18:00 Sat & Sun	DVP	Phase Mode (Fixed/Demanded or Callable)	Remarks		
Local Plan Split Table		Pattern 1 Split 1	Pattern 2 Split 2	Pattern 3 Split 3	Pattern 4 Split 4	Pattern 5 Split 5	Pattern 16 Split 16				
1		WLK FDW MIN 6 MAX 1 6 AMB 3 ALR 1 SPLIT	28	35	19	22	28	29	SBLA Callable/Extendable by setback loop	Pedestrian Minimums: NSWK = 7 sec, NSFD = 13 sec EWWK = 7 sec, EWFD = 30 sec EB phase is callable by vehicle or pedestrian actuation. If a vehicle call is received, the minimum EBG is 7 seconds. If ongoing vehicle demand exists on the stopbar loop, the EBG is capable of providing vehicle extensions up to the maximum green split. If a pedestrian call is received, the pedestrian minimums will be served. The EWWK & EWFD are only displayed on the pedestrian signal heads if a pedestrian call is received. Extension time is based on vehicle demand. Unused extension time is given to the NSG.	
2		WLK FDW MIN 13 MAX 1 38 AMB 4 ALR 2 SPLIT	43	54	62	32	43	45	Fixed		
3		WLK FDW MIN MAX 1 AMB ALR SPLIT								EW pedestrian crossing on south side only. Side Street Passage Time = 3 sec Left-Turn Passage Time = 2 sec If SBLA is not called or any unused SBLA time goes to NSG/NSWK. Minimum call is placed on EBG if SBLA is called with no side street demand.	
4		WLK FDW MIN MAX 1 AMB ALR SPLIT	44	46	44	46	44	46	Callable by stopbar loop and/or pushbutton. Extendable by stopbar loop.		
5		WLK FDW MIN MAX 1 AMB ALR SPLIT									
6		WLK FDW MIN MAX 1 AMB ALR SPLIT	71	89	81	54	71	74	Fixed		
7		WLK FDW MIN MAX 1 AMB ALR SPLIT									
8		WLK FDW MIN MAX 1 AMB ALR SPLIT	44	46	44	46	44	46			
		CL OF	115 81	135 57	125 101	100 44	115 86	120 88			

NOTES: Prohibited Vehicle Movements: Northbound Left-Turn and Southbound Right Turn
Pedestrian crossing is prohibited on the north side (crossing Leslie St).
Pick up on TransSuite on May 23, 2014

CITY OF TORONTO – TRANSPORTATION SERVICES
ITS OPERATIONS – TRAFFIC SIGNALS
703 Don Mills Rd, Fifth Floor, Toronto ON M3C 3N3
Phone: 416-397-5770 Fax: 416-397-5777

CURRENT SIGNAL TIMING INFORMATION

ISSUED TO: BA Consulting Group Ltd. (Karen L. MacDougall)
DATE: July 11, 2016

OUR REF: 2016_0063
STAFF: SM/RI

LOCATION: MODE/COMMENT: PK: PREPARED/CHECKED BY: PREPARATION DATE: IMPLEMENTATION DATE:		Sheppard Ave & Burbank Dr / Bessarion Rd SA2-VMG with WRM 743 PV September 25, 2014 October 16, 2014						DISTRICT: COMPUTER SYSTEM: CONTROLLER/CABINET TYPE: CONFLICT FLASH: DESIGN WALK SPEED: CHANNEL/DROP:		North York TransSuite Econolite ASC/3-2100/TS2T1 Red & Red 1.0 m/s (FDW based on full crossing @ 1.2 m/s) 4084/52		N ↑
NEMA Phase		Local Plan System Plan	OFF All Other Times Pattern 1	AM 06:30-09:30 M-F Pattern 2	PM 15:00-19:00 M-F Pattern 3	NGT 22:00-06:30 Daily Pattern 4	WKED 10:00-18:15 Sat/Sun/Hol Pattern 5	Phase Mode (Fixed/Demanded or Callable)		Remarks		
1 		WLK FDW MIN MAX1 AMB ALR SPLIT								Pedestrian Minimums: EWWK = 7 sec, EWFD = 17 sec NSWK = 7 sec, NSFD = 21 sec NS phase is callable by vehicle or pedestrian actuation. If a vehicle call is received, the minimum NSG is 7 seconds. If ongoing vehicle demand exists on the stopbar loop, the NSG is capable of providing vehicle extension up to the maximum. If a pedestrian call is received, the pedestrian minimums will be served. The NSWK & NSFD are only displayed on the pedestrian signal heads if a pedestrian call is received. Extension time is based on vehicle/pedestrian demand. Unused extension time is given to the EWG.		
2 Sheppard Ave 		WLK 7 FDW 17 MIN 24 MAX1 59 AMB 4 ALR 2 SPLIT						Fixed		EWFD reverts to EWWK if there is no side street demand at the end of the EWFD. Side Street Passage Time = 3 sec		
3 		WLK FDW MIN MAX1 AMB ALR SPLIT										
4 Bessarion Rd 		WLK 7 FDW 21 MIN 7 MAX1 28 AMB 3 ALR 4 SPLIT						Callable by stopbar loop and/or pushbutton; Extendable by stopbar loop.				
5 		WLK FDW MIN MAX1 AMB ALR SPLIT										
6 Sheppard Ave 		WLK 7 FDW 17 MIN 24 MAX1 59 AMB 4 ALR 2 SPLIT						Fixed				
7 		WLK FDW MIN MAX1 AMB ALR SPLIT										
8 Burbank Dr 		WLK 7 FDW 21 MIN 7 MAX1 28 AMB 3 ALR 4 SPLIT						Callable by stopbar loop and/or pushbutton; Extendable by stopbar loop.				
		CL OF VP	100 88 17	105 55 17	110 57 17	90 15 17	105 14 17					

NOTES: Picked up under TransSuite on March 9, 2015 at 10:37 AM.

PX0743_20160711.xls

02/08/2016

LOCATION:		Sheppard Ave & Blue Ridge Rd / Private Access						DISTRICT:		North York	
MODE/COMMENT:		SA2-VMG with PR						COMPUTER SYSTEM:		TransSuite	
TCS:		1956						CONTROLLER/CABINET TYPE:		Econolite ASC/3-2100/TS2T1	
PREPARED BY / DATE:		Sandy Wu / October 22, 2018						CONFLICT FLASH:		Red & Red	
CHECKED BY / DATE:		Carmen Lam / October 30, 2018						DESIGN WALK SPEED:		1.0 m/s (FDW based on full crossing @ 1.2 m/s)	
IMPLEMENTATION DATE:		December 21, 2018						CHANNEL/DROP:		4039/56	
								CONTROLLER FIRMWARE:		2.47.10	
NEMA Phase			OFF All Other Times	AM 06:30-09:30 M-F	PM 15:00-19:00 M-F	NGT 22:00-06:30 Daily	WKED 10:00-18:15 Sat/Sun/Hol	Phase Mode (Fixed/Demanded or Callable)	Remarks		
		Local Plan System Plan	Pattern 1	Pattern 2	Pattern 3	Pattern 4	Pattern 5				
1			WLK FDW MIN MAX1 AMB ALR SPLIT						Pedestrian Minimums: EWWK = 7 sec, EWFD = 20 sec NSWK = 7 sec, NSFD = 23 sec		
2		Sheppard Ave 	WLK 7 FDW 20 MIN 27 MAX1 58 AMB 4 ALR 2 SPLIT					Fixed	NS phase is callable by vehicle or pedestrian actuation. If a vehicle call is received, the minimum NSG is 7 seconds. If ongoing vehicle demand exists on the stopbar loop, the NSG is capable of providing vehicle extensions up to the maximum. If a pedestrian call is received, the pedestrian minimums will be served. The NSWK & NSFD are only displayed on the pedestrian signal heads if a pedestrian call is received. Extension time is based on vehicle/pedestrian demand. Unused extension time is given to the EWG.		
3			WLK FDW MIN MAX1 AMB ALR SPLIT						Side Street Passage Time = 3 sec		
4		Private Access 	WLK 7 FDW 23 MIN 7 MAX1 30 AMB 3 ALR 3 SPLIT					Callable by Trafficam and/or pushbutton; Extendable by Trafficam.			
5			WLK FDW MIN MAX1 AMB ALR SPLIT								
6		Sheppard Ave 	WLK 7 FDW 20 MIN 27 MAX1 58 AMB 4 ALR 2 SPLIT					Fixed			
7			WLK FDW MIN MAX1 AMB ALR SPLIT								
8		Blue Ridge Rd 	WLK 7 FDW 23 MIN 7 MAX1 30 AMB 3 ALR 3 SPLIT					Callable by stopbar loop and/or pushbutton; Extendable by stopbar loop.			
		CL OF VP	100 82 20	110 56 20	110 56 20	90 5 20	105 8 20				

NOTES: NBRT / NBT loop replaced with Trafficam as of December 21, 2018.

2019-02-22-TCS1956_Current_Timing.xlsx

22/02/2019

CURRENT SIGNAL TIMING INFORMATION

ISSUED TO: BA Consulting Group Ltd. (Karen L. MacDougall)
DATE: July 11, 2016

OUR REF: 2016_0063
STAFF: SM/R

LOCATION: MODE/COMMENT: PE: PREPARED/CHECKED BY: PREPARATION DATE: IMPLEMENTATION DATE:		Sheppard Ave & Provost Dr/Ambrose Rd SAP with WRM and 2-Wire Polara APS 1014 HZ / DS November 3, 2014 February 26, 2015						DISTRICT: COMPUTER SYSTEM: CONTROLLER/CABINET TYPE: CONFLICT FLASH: DESIGN WALK SPEED: CHANNEL/DROP:		North York TransSuite Econolite ASC/3-2100/TS2T1 Red & Red 1.0 m/s (FDW based on full crossing @ 1.2 m/s) 4029/15	
NEMA Phase		OFF All Other Times	AM 06:30-09:30 M-F	PM 15:00-19:00 M-F	NGT 22:00-06:30 Daily	WKED 10:00-18:15 Sat/Sun/Hol	Phase Mode (Fixed/Demanded or Callable)	Remarks			
	System Plan Local Plan	Plan 1 Pattern 1	Plan 2 Pattern 2	Plan 3 Pattern 3	Plan 4 Pattern 4	Plan 5 Pattern 5					
1		WLK FDW MIN MAX1 AMB ALR SPLIT	6 12 3 1				Callable/Extendable by setback loop 24 hrs daily NBRA concurrent with WBLA	Pedestrian Minimums: EWWK = 7 sec, EWFD = 23 sec NSWK = 7 sec, NSFD = 23 sec EW phase is callable by vehicle and/or pedestrian actuation. If a vehicle call and/or a pedestrian call is received, the maximum EWG will be served. Unused time allocated to NSG/NSWK. The EWWK & EWFD are displayed on the pedestrian signal heads if a vehicle and/or pedestrian call is received.			
2		WLK FDW MIN MAX1 AMB ALR SPLIT	7 23 30 38 4 3				Fixed	The signal constantly cycles through main street FDW to improve response to main street APS & side street vehicle and pedestrian demand. EWFD reverts to EWWK if there is no side street demand at the end of the EWFD. Side Street Passage Time = 3 sec Left-Turn Passage Time = 2 sec Extended Push Activation = 3 seconds.			
3		WLK FDW MIN MAX1 AMB ALR SPLIT						APS not on during arrow phase 1. APS on for 7 secs of EWWK (when WBLA not called) and 7 secs for NSWK when activated by pushbutton. Signals serves 8 seconds of NSWK (WLK MAX value for phase 4 and 8).			
4		WLK WLK MAX FDW MIN MAX1 AMB ALR SPLIT	7 8 23 30 30 4 4				Callable by stopbar loop and/or pushbutton				
5		WLK FDW MIN MAX1 AMB ALR SPLIT									
6		WLK FDW MIN MAX1 AMB ALR SPLIT	7 23 30 55 4 3				Fixed				
7		WLK FDW MIN MAX1 AMB ALR SPLIT									
8		WLK WLK MAX FDW MIN MAX1 AMB ALR SPLIT	7 8 23 30 30 4 4				Callable by stopbar loop and/or pushbutton				
	CL OF VP	100 8 23	110 69 23	110 72 23	90 21 23	105 44 23					

NOTES:

PX1014_20160711.xls

02/08/2016

LOCATION:		Esther Shiner Blvd & Provost Dr				DISTRICT: North York	
TCS:		2039				COMPUTER SYSTEM: TransSuite	
MODE/COMMENT:		SA2-VMG with WRM & 2-Wire Polara APS				CONTROLLER/CABINET TYPE: Peak ATC-1000 / TS2T1	
PREPARED/CHECKED BY:		SQ/HL				CONFLICT FLASH: Red & Red	
PREPARATION DATE:		March 13, 2017				DESIGN WALK SPEED: 1.0 m/s (FDW based on full crossing at 1.2m/s)	
IMPLEMENTATION DATE:		April 21, 2017				CHANNEL/DROP: 5013/9	
						CONTROLLER FIRMWARE: 3.018.1.2976	
NEMA Phase		OFF All Other Times	AM 06:30-09:15 M-F	PM 15:45-18:30 M-F	Phase Mode (Fixed/Demanded/Callable)	Remarks	
	Local Plan Split Table	Pattern 1 Split 1	Pattern 2 Split 2	Pattern 3 Split 3			
1		WLK FDW MIN MAX 1 AMB ALR SPLIT				Pedestrian Minimums: EWWK = 7 sec., EWFD = 19 sec. NSWK = 7 sec., NSFD = 20 sec. NS phase is callable by vehicle or pedestrian actuation. If a vehicle call is received, the minimum NSG is 7 seconds. If ongoing vehicle demand exists on the stopbar loop, the NSG is capable of providing vehicle extensions up to the maximum. If a pedestrian call is received, the pedestrian minimums will be served. The NSWK & NSFD are only displayed on the pedestrian signal heads if a pedestrian call is received. Extension time is based on vehicle demand. Unused extension time is given to the EWG.	
2		WLK 7 FDW 19 MIN 26 MAX 1 28 AMB 4 ALR 3 SPLIT	28	28	28	Fixed	
3		WLK FDW MIN 6 MAX 1 7 AMB 3 ALR 1 SPLIT	7		16	Callable/Extendable by setback loop	
4		WLK 7 FDW 20 MIN 7 MAX 1 27 AMB 4 ALR 3 SPLIT	27	27	27	Callable by Stopbar Loop and/or Push Button; Extendable by Stopbar Loop	
5		WLK FDW MIN MAX 1 AMB ALR SPLIT					
6		WLK 7 FDW 19 MIN 26 MAX 1 28 AMB 4 ALR 3 SPLIT	28	28	28	Fixed	
7		WLK FDW MIN MAX 1 AMB ALR SPLIT					
8		WLK 7 FDW 20 MIN 7 MAX 1 38 AMB 4 ALR 3 SPLIT	38	27	47	Callable by Stopbar Loop and/or Push Button; Extendable by Stopbar Loop	
	CL OF	0 Free	0 Free	0 Free			

NOTES:

2019-02-22-TCS2039_Current_Timing.xlsx

22/02/2019

LOCATION: Esther Shiner Blvd & Old Leslie St / Private Access		DISTRICT: North York			
TCS: 2041		COMPUTER SYSTEM: TransSuite			
MODE/COMMENT: SA2-VMG with WRM & 2-wire Polara APS		CONTROLLER/CABINET TYPE: Peek ATC-1000 / TS2T1			
PREPARED/CHECKED BY: SQ/HL		CONFLICT FLASH: Red & Red			
PREPARATION DATE: March 10, 2017		DESIGN WALK SPEED: 1.0 m/s (FDW based on full crossing at 1.2 m/s)			
IMPLEMENTATION DATE: April 21, 2017		CHANNEL/DROP: 5013/8			
		CONTROLLER FIRMWARE: 3.018.1.2976			

NEMA Phase		OFF All Other Times	AM 06:30-09:15 M-F	PM 15:45-18:30 M-F	Phase Mode (Fixed/Demanded/Callable)	Remarks
	Local Plan Split Table	Pattern 1 Split 1	Pattern 2 Split 2	Pattern 3 Split 3		
1		WLK FDW MIN MAX 1 AMB ALR SPLIT				Pedestrian Minimums: EWWK = 7 sec., EWFD = 21 sec. NSWK = 7 sec., NSFD = 23 sec. NS phase is callable by vehicle or pedestrian actuation. If a vehicle call is received, the minimum NSG is 7 seconds. If ongoing vehicle demand exists on the stopbar loop, the NSG is capable of providing vehicle extensions up to the maximum. If a pedestrian call is received, the pedestrian minimums will be served. The NSWK & NSFD are only displayed on the pedestrian signal heads if a pedestrian call is received. Extension time is based on vehicle demand. Unused extension time is given to EWG.
2	Esther Shiner Blvd 	WLK 7 FDW 21 MIN 28 MAX 1 30 AMB 4 ALR 3 SPLIT	30	30	42	Fixed Side Street Passage Time = 3 sec During free plans, signal rests in EWWK and does not cycle through EWFD unless there is side street vehicle and/or side street pedestrian demand.
3		WLK FDW MIN MAX 1 AMB ALR SPLIT				All plans operate free using split values as green times (WLK & FDW) for phases 2 & 6. The signal will serve the programmed WLK & FDW values following WRM. Phase 4 & 8 uses split values as green time. APS on during 7 sec of EWWK & NSWK when activated by push buttons. Extended Push Activation = 3 secs.
4	Private Acc 	WLK 7 FDW 23 MIN 7 MAX 1 30 AMB 4 ALR 3 SPLIT	30	30	30	Callable by Stopbar Loop and/or Push Button; Extendable by Stopbar Loop
5		WLK FDW MIN MAX 1 AMB ALR SPLIT				
6	Esther Shiner Blvd 	WLK 7 FDW 21 MIN 28 MAX 1 30 AMB 4 ALR 3 SPLIT	30	30	42	Fixed
7		WLK FDW MIN MAX 1 AMB ALR SPLIT				
8	Old Leslie St 	WLK 7 FDW 23 MIN 7 MAX 1 30 AMB 4 ALR 3 SPLIT	30	30	30	Callable by Stopbar Loop and/or Push Button; Extendable by Stopbar Loop
		CL OF	0 Free	0 Free	0 Free	

NOTES:

ATTACHMENT F: Calibration & Field Studies



Project: Block 7
Project No: 7238-19
Location: Leslie & Esther Shiner
Date: Wednesday March 27, 2019

AM Intergreen Study

Time	South Approach Left					West Approach Left			
	Advance	Green	Amber	Red	Total	Green	Amber	Red	Total
8:00	-	4	0	2	6	1	0	0	1
8:03	11	0	0	0	11	1	0	0	1
8:05	-	6	0	2	8	0	0	0	0
8:07	13	0	0	1	14	2	0	0	2
8:09	12	0	0	1	13	0	0	0	0
8:12	4	0	0	1	5	3	0	0	3
8:14	3	2	0	2	7	3	0	0	3
8:16	9	0	0	2	11	2	0	0	2
8:19	8	0	2	0	10	1	1	0	2
8:21	3	0	0	1	4	2	0	0	2
8:23	-	6	1	1	8	1	1	0	2
8:25	7	0	0	2	9	1	0	0	1
8:27	9	0	1	0	10	1	0	0	1
8:30	9	0	0	2	11	6	0	0	6
8:32	14	0	0	2	16	4	0	0	4
8:34	11	0	0	2	13	2	1	0	3
8:37	7	0	0	2	9	2	0	0	2
8:39	10	0	0	1	11	6	0	0	6
8:41	-	0	0	2	2	2	0	0	2
8:43	14	0	0	1	15	1	0	0	1
8:45	9	0	1	2	12	2	0	0	2
8:48	15	0	0	3	18	2	0	0	2
8:50	15	0	0	1	16	1	0	0	1
8:52	15	0	0	2	17	1	1	0	2
8:54	6	0	0	2	8	1	0	0	1
8:57	10	0	0	1	11	2	0	0	2
8:59	11	0	0	3	14	1	0	0	1
Total	225	18	5	41	289	51	4	0	55
Average	8.3	0.7	0.2	1.5	10.7	1.9	0.1	0.0	2.0

Project: Block 7
Project No: 7238-19
Location: Leslie & Esther Shiner
Date: Wednesday March 27, 2019

PM Intergreen Study

Time	South Approach Left					West Approach Left			
	Advance	Green	Amber	Red	Total	Green	Amber	Red	Total
17:00	6	2	0	0	8	4	0	0	4
17:02	7	0	2	2	11	6	0	0	6
17:04	12	0	0	1	13	4	0	0	4
17:06	9	0	0	2	11	10	1	2	13
17:08	-	5	1	2	8	9	0	0	9
17:10	8	0	0	2	10	5	0	0	5
17:12	10	0	0	1	11	5	1	0	6
17:15	9	1	0	2	12	5	0	0	5
17:17	-	0	1	2	3	2	1	0	3
17:19	11	0	0	2	13	8	0	1	9
17:21	11	0	0	2	13	6	0	0	6
17:23	9	1	0	2	12	3	1	0	4
17:25	10	0	0	2	12	6	0	0	6
17:27	8	0	0	2	10	11	0	0	11
17:29	13	0	1	2	16	5	0	0	5
17:31	9	0	0	2	11	4	0	0	4
17:33	11	0	0	2	13	5	0	0	5
17:35	8	0	0	1	9	5	0	0	5
17:37	9	0	1	1	11	7	0	0	7
17:40	13	0	0	2	15	7	0	0	7
17:42	8	0	0	2	10	2	0	1	3
17:44	14	0	0	2	16	7	0	0	7
17:46	7	0	0	3	10	1	0	0	1
17:48	9	1	0	2	12	8	1	1	10
17:50	13	0	0	2	15	1	1	1	3
17:52	13	0	0	2	15	10	0	0	10
17:54	8	0	0	3	11	6	0	0	6
17:56	13	0	1	1	15	8	0	0	8
17:58	4	0	1	1	6	0	0	0	0
Total	262	10	8	52	332	160	6	6	172
Average	9.0	0.3	0.3	1.8	11.4	5.5	0.2	0.2	5.9

Project: Block 7
 Project No: 7238-19
 Location: Leslie & Sheppard
 Date: Wednesday March 27, 2019

AM Intergreen Study

Time	North Approach Left					South Approach Left					East Approach Left					West Approach Left				
	Advance	Green	Amber	Red	Total	Advance	Green	Amber	Red	Total	Advance	Green	Amber	Red	Total	Advance	Green	Amber	Red	Total
8:14	0	1	0	0	1	12	0	0	0	12	7	3	1	1	12	4	0	0	0	4
8:16	0	4	0	1	5	12	0	0	0	12	6	0	0	1	7	2	0	0	2	4
8:19	0	6	0	1	7	16	0	0	0	16	8	0	0	4	12	2	0	0	2	4
8:21	0	4	0	0	4	9	0	0	0	9	7	0	0	3	10	4	0	0	2	6
8:23	0	0	0	1	1	17	0	0	0	17	6	5	2	2	15	5	0	0	3	8
8:25	0	1	1	1	3	12	0	0	0	12	6	5	0	1	12	6	0	0	0	6
8:27	0	4	0	0	4	6	0	0	0	6	6	1	2	2	11	6	0	0	3	9
8:30	0	4	0	2	6	1	0	0	0	1	8	1	2	3	14	5	0	0	2	7
8:32	0	5	0	0	5	10	0	0	0	10	6	1	1	2	10	5	0	1	2	8
8:34	0	2	0	0	2	15	0	0	0	15	5	0	1	2	8	6	0	0	2	8
8:36	0	1	0	1	2	16	0	0	0	16	4	0	0	3	7	6	0	0	3	9
8:39	0	2	0	1	3	8	0	0	0	8	3	0	0	2	5	5	1	0	2	8
8:41	0	4	0	0	4	16	0	0	0	16	6	3	2	2	13	7	0	2	2	11
8:43	0	2	0	0	2	13	0	0	0	13	3	0	1	2	6	5	0	1	2	8
8:45	0	4	0	0	4	11	0	0	0	11	6	2	1	2	11	3	0	0	1	4
8:48	0	3	0	2	5	14	0	0	0	14	7	1	0	3	11	1	1	0	2	4
8:50	0	2	0	1	3	19	0	0	0	19	6	0	0	3	9	5	2	1	0	8
8:52	0	1	0	1	2	14	0	0	0	14	7	2	2	3	14	5	1	0	0	6
8:54	0	5	0	0	5	19	0	0	0	19	6	1	0	2	9	5	0	0	1	6
8:57	0	2	0	0	2	19	0	0	0	19	7	0	1	2	10	6	0	0	2	8
8:59	0	4	0	0	4	18	0	0	0	18	5	1	1	2	9	5	0	0	2	7
9:01	0	3	0	1	4	15	0	0	0	15	7	2	2	2	13	-	0	0	2	2
9:03	0	5	0	1	6	12	0	0	0	12	7	2	1	2	12	4	0	0	0	4
9:06	0	3	0	0	3	17	0	0	0	17	6	0	0	1	7	-	0	0	2	2
9:08	0	8	0	0	8	13	0	0	0	13	8	0	0	3	11	2	0	0	0	2
9:10	0	2	0	0	2	14	0	0	0	14	6	2	1	2	11	2	0	0	2	4
9:12	0	5	0	0	5	10	0	0	0	10	7	6	2	2	17	-	0	0	2	2
Total	0	87	1	14	102	358	0	0	0	358	166	38	23	59	286	106	5	5	43	159
Average	0.0	3.2	0.0	0.5	3.8	13.3	0.0	0.0	0.0	13.3	6.1	1.4	0.9	2.2	10.6	3.9	0.2	0.2	1.6	5.9

Project: Block 7
 Project No: 7238-19
 Location: Leslie & Sheppard
 Date: Wednesday March 27, 2019

PM Intergreen Study

Time	North Approach Left					South Approach Left					East Approach Left					West Approach Left				
	Advance	Green	Amber	Red	Total	Advance	Green	Amber	Red	Total	Advance	Green	Amber	Red	Total	Advance	Green	Amber	Red	Total
17:00	0	0	0	3	3	8	0	0	1	9	6	0	0	3	9	8	0	0	2	10
17:02	0	2	1	1	4	7	0	0	0	7	8	0	0	1	9	7	0	0	2	9
17:05	0	5	0	0	5	10	0	0	0	10	3	0	0	0	3	8	0	0	1	9
17:07	0	3	0	1	4	3	0	0	0	3	7	0	0	2	9	8	0	0	2	10
17:09	0	1	1	2	4	18	0	0	0	18	4	0	0	2	6	7	0	0	3	10
17:12	0	2	0	2	4	11	0	0	0	11	5	0	0	2	7	7	0	0	2	9
17:14	0	4	0	0	4	6	0	0	0	6	3	0	0	3	6	6	0	0	2	8
17:16	0	4	0	2	6	7	0	0	0	7	7	0	0	3	10	6	0	0	1	7
17:19	0	0	0	1	1	13	0	0	0	13	8	0	0	1	9	7	0	0	3	10
17:21	0	2	1	1	4	12	0	0	0	12	7	0	0	1	8	7	2	1	2	12
17:23	0	2	0	0	2	17	0	0	0	17	8	0	1	3	12	7	0	0	2	9
17:26	0	6	0	0	6	16	0	0	0	16	8	0	0	2	10	8	0	0	3	11
17:28	0	2	0	2	4	17	0	0	0	17	8	0	0	2	10	7	0	0	3	10
17:30	0	9	1	0	10	19	0	0	0	19	4	0	0	2	6	7	0	1	2	10
17:33	0	1	0	1	2	15	0	0	0	15	2	0	0	2	4	7	0	0	2	9
17:35	0	2	0	2	4	8	0	0	0	8	5	0	0	3	8	7	0	0	2	9
17:37	0	0	0	3	3	19	0	0	0	19	7	0	0	2	9	5	2	1	2	10
17:40	0	4	0	1	5	17	0	0	0	17	7	0	0	2	9	7	0	0	3	10
17:42	0	2	0	1	3	22	0	0	0	22	8	0	0	1	9	8	0	0	3	11
17:44	0	2	0	0	2	18	0	0	0	18	7	0	0	3	10	7	0	0	3	10
17:47	0	5	1	0	6	19	0	0	0	19	5	0	0	2	7	8	0	0	2	10
17:49	0	4	1	2	7	15	0	0	0	15	7	0	0	2	9	6	0	0	3	9
17:51	0	0	0	3	3	17	0	0	0	17	7	0	1	3	11	5	0	0	3	8
17:54	0	0	0	3	3	12	0	0	0	12	8	0	0	1	9	7	0	0	2	9
17:56	0	2	1	3	6	14	0	0	0	14	8	0	0	2	10	7	0	0	2	9
17:58	0	3	1	2	6	9	0	0	0	9	-	-	-	-	0	-	-	-	-	0
Total	0	67	8	36	111	349	0	0	1	350	157	0	2	50	209	174	4	3	57	238
Average	0.0	2.6	0.3	1.4	4.3	13.4	0.0	0.0	0.0	13.5	6.0	0.0	0.1	1.9	8.0	6.7	0.2	0.1	2.2	9.2

Project: 7238-19
Project No: Block 7
Location: Leslie St & 401 EB Ramps
Date: Wednesday March 27, 2019

AM Lane Utilization

Time	South Approach				North Approach		
	Curb	Middle	Left	Total	Curb	Left	Total
8:15	29	18	15	62	29	31	60
8:18	26	19	6	51	30	27	57
8:20	31	15	16	62	29	15	44
8:22	26	21	15	62	24	23	47
8:24	34	27	19	80	28	24	52
8:27	19	21	9	49	26	21	47
8:29	26	21	20	67	24	14	38
8:31	20	24	18	62	30	26	56
8:33	25	18	15	58	31	28	59
8:36	28	18	14	60	32	26	58
8:38	24	17	11	52	31	24	55
8:40	26	15	16	57	30	27	57
8:42	28	20	18	66	30	27	57
8:44	25	21	14	60	34	28	62
8:47	21	15	14	50	30	25	55
8:49	27	24	17	68	26	22	48
8:51	21	18	14	53	26	20	46
8:54	21	18	17	56	26	25	51
8:56	23	20	14	57	19	20	39
8:58	21	16	12	49	27	22	49
9:00	27	26	19	72	25	22	47
9:03	22	18	17	57	28	26	54
9:05	23	24	19	66	24	23	47
9:07	26	18	13	57	33	28	61
9:09	22	12	11	45	26	25	51
9:12	20	12	7	39	26	26	52
9:14	20	13	15	48	32	28	60
Total	661	509	395	1565	756	653	1409
Average	24.5	18.9	14.6	58.0	28.0	24.2	52.2

Project: 7238-19
Project No: Block 7
Location: Leslie St & 401 EB Ramps
Date: Wednesday March 27, 2019

PM Lane Utilization

Time	North Approach				South Approach		
	Curb	Middle	Left	Total	Curb	Left	Total
17:00	33	23	25	81	23	23	46
17:02	28	25	24	77	25	31	56
17:04	28	19	19	66	23	26	49
17:06	24	23	17	64	28	27	55
17:08	33	21	23	77	22	23	45
17:10	36	23	22	81	27	25	52
17:12	34	19	16	69	17	20	37
17:14	30	23	20	73	14	18	32
17:16	33	20	19	72	27	37	64
17:18	37	21	25	83	24	20	44
17:21	32	12	17	61	24	33	57
17:23	32	15	13	60	19	23	42
17:25	38	17	15	70	19	22	41
17:27	44	18	22	84	30	28	58
17:29	29	18	21	68	27	21	48
17:31	30	15	17	62	19	20	39
17:33	29	21	14	64	25	26	51
17:35	41	16	19	76	23	24	47
17:37	31	17	19	67	27	28	55
17:39	39	21	25	85	24	21	45
17:41	35	20	14	69	24	19	43
17:43	36	23	22	81	26	27	53
17:46	35	26	27	88	27	27	54
17:48	42	25	23	90	30	30	60
17:50	28	22	22	72	31	28	59
17:52	29	22	17	68	28	26	54
17:54	26	25	17	68	25	26	51
17:56	35	23	26	84	21	17	38
17:58	32	19	21	72	20	19	39
Total	959	592	581	2132	699	715	1414
Average	33.1	20.4	20.0	73.5	24.1	24.7	48.8

Project: 7238-19
Project No: Block 7
Location: Leslie St & 401 WB Ramps
Date: Wednesday March 27, 2019

AM Lane Utilization

Time	North Approach				South Approach		
	Left	Middle	Curb	Total	Curb	Left	Total
7:45	27	12	20	59	11	18	29
7:48	21	6	14	41	16	16	32
7:50	27	7	19	53	22	18	40
7:52	22	9	20	51	16	16	32
7:54	23	23	15	61	16	13	29
7:57	24	11	17	52	16	17	33
7:59	22	20	15	57	17	14	31
8:01	22	20	15	57	20	15	35
8:03	32	19	29	80	19	14	33
8:05	23	23	19	65	17	25	42
8:07	21	16	22	59	26	23	49
8:10	20	22	21	63	17	14	31
8:12	20	26	17	63	20	19	39
8:14	22	29	15	66	20	15	35
8:17	25	20	16	61	20	23	43
8:19	18	19	19	56	16	13	29
8:21	12	21	17	50	21	20	41
8:23	17	33	17	67	20	19	39
8:26	12	29	23	64	25	20	45
8:28	20	23	11	54	16	15	31
8:30	20	42	26	88	27	23	50
8:32	16	35	22	73	24	26	50
8:35	28	28	14	70	26	23	49
8:37	22	20	14	56	22	20	42
8:39	26	28	23	77	16	20	36
8:42	15	24	24	63	21	22	43
8:44	24	27	25	76	33	23	56
Total	581	592	509	1682	540	504	1044
Average	21.5	21.9	18.9	62.3	20.0	18.7	38.7

Project: 7238-19
Project No: Block 7
Location: Leslie St & 401 WB Ramps
Date: Wednesday March 27, 2019

PM Lane Utilization

Time	North Approach				South Approach		
	Left	Middle	Curb	Total	Curb	Left	Total
17:01	20	18	4	42	20	18	38
17:03	19	8	7	34	17	19	36
17:05	24	14	17	55	24	20	44
17:07	28	16	19	63	32	25	57
17:09	17	12	15	44	16	19	35
17:11	33	17	27	77	35	32	67
17:13	18	9	25	52	18	18	36
17:15	20	10	23	53	19	18	37
17:17	35	23	33	91	22	29	51
17:19	27	14	42	83	19	25	44
17:21	23	15	27	65	16	23	39
17:23	21	13	31	65	14	12	26
17:26	21	13	20	54	17	18	35
17:28	23	15	44	82	20	21	41
17:30	10	13	21	44	19	20	39
17:32	17	12	25	54	20	17	37
17:34	20	13	19	52	20	21	41
17:36	25	10	30	65	27	29	56
17:38	22	8	33	63	19	26	45
17:40	18	11	29	58	23	26	49
17:42	24	10	17	51	14	20	34
17:44	19	12	26	57	21	22	43
17:46	29	13	28	70	24	33	57
17:48	27	13	23	63	20	24	44
17:50	19	13	36	68	28	32	60
17:52	27	19	20	66	22	19	41
17:54	17	14	26	57	19	24	43
17:57	22	10	22	54	21	25	46
17:59	10	9	16	35	14	11	25
Total	635	377	705	1717	600	646	1246
Average	21.9	13.0	24.3	59.2	20.7	22.3	43.0



INTERGREEN MEANS RED OR AMBER TIME OF SIGNAL PHASE



INTERGREEN MEANS RED OR AMBER TIME OF SIGNAL PHASE



B GROUP
Transportation
Consultants

[illegible]

INTERGREEN MEANS RED OR AMBER TIME OF SIGNAL PHASE



B GROUP
Transportation
Consultants

[illegible]

INTERGREEN MEANS RED OR AMBER TIME OF SIGNAL PHASE

Project Name:	CPP - Blocks 7 and 9
Project No:	7238-19
Location	Leslie St / Sheppard Ave
Date	2019-03-27 8:15AM-9:15AM Wednesday
Description	RTOR - EBR

[illegible]

Project Name: CPP - Blocks 7 and 9
Project No: 7238-19
Location: Leslie St / Sheppard Ave
Date: 2019-03-27 17:00PM-18:00PM Wednesday
Description: RTOR - EBR

[illegible]

INTERGREEN MEANS RED OR AMBER TIME OF SIGNAL PHASE



B GROUP
Transportation
Consultants

[illegible]



B GROUP
Transportation
Consultants

[illegible]

ATTACHMENT G: Synchro Analysis Worksheets



Queues

1: Bessarion Road/Burbank Drive & Sheppard Avenue East

Existing AM Peak Hour

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		 		 		 		 
Traffic Volume (vph)	25	1330	15	1245	15	20	275	15
Future Volume (vph)	25	1330	15	1245	15	20	275	15
Lane Group Flow (vph)	28	1489	17	1505	17	55	306	84
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases	2		6		4		8	
Permitted Phases	2		6		4		8	
Detector Phase	2	2	6	6	4	4	8	8
Switch Phase								
Minimum Initial (s)	24.0	24.0	24.0	24.0	7.0	7.0	7.0	7.0
Minimum Split (s)	30.0	30.0	30.0	30.0	35.0	35.0	35.0	35.0
Total Split (s)	66.0	66.0	66.0	66.0	39.0	39.0	39.0	39.0
Total Split (%)	62.9%	62.9%	62.9%	62.9%	37.1%	37.1%	37.1%	37.1%
Yellow Time (s)	4.0	4.0	4.0	4.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	4.0	4.0	4.0	4.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	6.0	6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	C-Min	C-Min	C-Min	C-Min	None	None	None	None
v/c Ratio	0.27	0.71	0.17	0.72	0.05	0.11	0.86	0.19
Control Delay	19.8	17.1	15.8	17.4	25.7	16.8	58.7	16.7
Queue Delay	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0
Total Delay	19.8	17.1	15.8	17.9	25.7	16.8	58.7	16.7
Queue Length 50th (m)	2.8	114.6	1.6	116.7	2.6	4.5	59.9	7.0
Queue Length 95th (m)	10.4	144.4	6.3	147.2	7.8	13.6	#103.8	18.6
Internal Link Dist (m)	449.7		65.9		131.2		187.8	
Turn Bay Length (m)	30.0	30.0		15.0		40.0		
Base Capacity (vph)	103	2115	98	2094	387	542	393	498
Starvation Cap Reductn	0	0	0	222	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.70	0.17	0.80	0.04	0.10	0.78	0.17

Intersection Summary

Cycle Length: 105

Actuated Cycle Length: 105

Offset: 55 (52%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

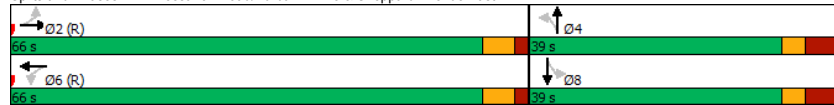
Natural Cycle: 75

Control Type: Actuated-Coordinated

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

Queue shown is maximum after two cycles.

Splits and Phases: 1: Bessarion Road/Burbank Drive & Sheppard Avenue East

Block 7
BA Group - TCSSynchro 10 Report
EX_AM.syn

HCM Signalized Intersection Capacity Analysis

1: Bessarion Road/Burbank Drive & Sheppard Avenue East

Existing AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↗		↖	↖↗		↖	↖		↖	↖	
Traffic Volume (vph)	25	1330	10	15	1245	110	15	20	30	275	15	60
Future Volume (vph)	25	1330	10	15	1245	110	15	20	30	275	15	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.5	3.0	3.5	3.5	3.0	3.5	3.5	3.0	3.5	3.5
Total Lost time (s)	5.0	5.0		5.0	5.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	0.99		1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.98	1.00		0.99	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.91		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1620	3458		1504	3415		1659	1662		1643	1497	
Flt Permitted	0.10	1.00		0.10	1.00		0.70	1.00		0.72	1.00	
Satd. Flow (perm)	169	3458		162	3415		1227	1662		1247	1497	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	28	1478	11	17	1383	122	17	22	33	306	17	67
RTOR Reduction (vph)	0	0	0	0	6	0	0	18	0	0	27	0
Lane Group Flow (vph)	28	1489	0	17	1499	0	17	37	0	306	57	0
Confl. Peds. (#/hr)	30		70	70		30	15		5	5		15
Heavy Vehicles (%)	4%	3%	0%	12%	2%	9%	0%	0%	3%	2%	12%	7%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	2			6			4			8		
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	63.0	63.0		63.0	63.0		29.0	29.0		29.0	29.0	
Effective Green, g (s)	64.0	64.0		64.0	64.0		30.0	30.0		30.0	30.0	
Actuated g/C Ratio	0.61	0.61		0.61	0.61		0.29	0.29		0.29	0.29	
Clearance Time (s)	6.0	6.0		6.0	6.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	103	2107		98	2081		350	474		356	427	
v/s Ratio Prot		0.43			0.44			0.02			0.04	
v/s Ratio Perm	0.17			0.10			0.01			0.25		
v/c Ratio	0.27	0.71		0.17	0.72		0.05	0.08		0.86	0.13	
Uniform Delay, d1	9.6	14.1		9.0	14.3		27.2	27.4		35.5	27.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	6.4	2.0		3.8	2.2		0.1	0.1		18.2	0.1	
Delay (s)	16.0	16.1		12.8	16.5		27.2	27.5		53.8	28.0	
Level of Service	B	B		B	B		C	C		D	C	
Approach Delay (s)	16.1		16.4		27.4		48.2					
Approach LOS	B		B		C		D					

Intersection Summary

HCM 2000 Control Delay

20.0

HCM 2000 Level of Service

C

HCM 2000 Volume to Capacity ratio

0.76

Actuated Cycle Length (s)

105.0

Sum of lost time (s)

11.0

Intersection Capacity Utilization

69.8%

ICU Level of Service

C

Analysis Period (min)

15

c Critical Lane Group

Block 7
BA Group - TCSSynchro 10 Report
EX_AM.syn

Queues

2: CTC West Access/Blue Ridge Road & Sheppard Avenue East

Existing AM Peak Hour

								
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	SBL	SBR
Lane Configurations		 			 			
Traffic Volume (vph)	15	1450	190	5	1305	80	55	20
Future Volume (vph)	15	1450	190	5	1305	80	55	20
Lane Group Flow (vph)	17	1611	211	6	1478	89	61	22
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	Perm
Protected Phases	2				6			
Permitted Phases	2		2	6		4	8	8
Detector Phase	2	2	2	6	6	4	8	8
Switch Phase								
Minimum Initial (s)	27.0	27.0	27.0	27.0	27.0	7.0	7.0	7.0
Minimum Split (s)	33.0	33.0	33.0	33.0	33.0	36.0	36.0	36.0
Total Split (s)	73.0	73.0	73.0	73.0	73.0	37.0	37.0	37.0
Total Split (%)	66.4%	66.4%	66.4%	66.4%	66.4%	33.6%	33.6%	33.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	C-Min	C-Min	C-Min	C-Min	C-Min	None	None	None
v/c Ratio	0.09	0.58	0.20	0.03	0.54	0.39	0.27	0.10
Control Delay	6.9	7.6	3.4	5.6	6.7	45.6	42.2	9.1
Queue Delay	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.9	7.9	3.4	5.6	6.7	45.6	42.2	9.1
Queue Length 50th (m)	0.7	57.7	4.9	0.4	82.8	19.2	12.9	0.0
Queue Length 95th (m)	5.0	153.1	21.7	m0.6	59.0	28.7	21.2	4.8
Internal Link Dist (m)	32.6				120.2			
Turn Bay Length (m)	30.0	25.0		35.0				
Base Capacity (vph)	188	2760	1034	179	2750	484	480	449
Starvation Cap Reductn	0	533	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.72	0.20	0.03	0.54	0.18	0.13	0.05

Intersection Summary

Cycle Length: 110

Actuated Cycle Length: 110

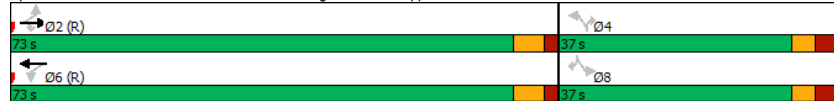
Offset: 56 (51%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

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

Splits and Phases: 2: CTC West Access/Blue Ridge Road & Sheppard Avenue East

Block 7
BA Group - TCSSynchro 10 Report
EX_AM.syn

HCM Signalized Intersection Capacity Analysis

2: CTC West Access/Blue Ridge Road & Sheppard Avenue East

Existing AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↩	↩↩	↩	↩	↩↩	↩	↩	↩	↩	↩	↩	↩
Traffic Volume (vph)	15	1450	190	5	1305	25	80	0	0	55	0	20
Future Volume (vph)	15	1450	190	5	1305	25	80	0	0	55	0	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.5	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0		5.0			5.0		5.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00			1.00		1.00
Frpb, ped/bikes	1.00	1.00	0.87	1.00	1.00		1.00			1.00		0.98
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00		0.99			1.00		1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00			1.00		0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95			0.95		1.00
Satd. Flow (prot)	1473	3433	1265	1671	3420		1666			1652		1473
Flt Permitted	0.15	1.00	1.00	0.13	1.00		0.95			0.95		1.00
Satd. Flow (perm)	233	3433	1265	221	3420		1666			1652		1473
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	17	1611	211	6	1450	28	89	0	0	61	0	22
RTOR Reduction (vph)	0	0	19	0	1	0	0	0	0	0	0	19
Lane Group Flow (vph)	17	1611	192	6	1477	0	89	0	0	61	0	3
Confl. Peds. (#/hr)	15		55	55		15	10					10
Heavy Vehicles (%)	14%	4%	2%	0%	4%	4%	0%	0%	0%	2%	0%	0%
Bus Blockages (#/hr)	0	0	4	0	0	0	0	0	0	0	0	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm		Perm	Perm		Perm
Protected Phases	2		2		6		4		4		8	
Permitted Phases	2		2	6			4		4	8		8
Actuated Green, G (s)	85.3	85.3	85.3	85.3	85.3		12.7			12.7		12.7
Effective Green, g (s)	86.3	86.3	86.3	86.3	86.3		13.7			13.7		13.7
Actuated g/C Ratio	0.78	0.78	0.78	0.78	0.78		0.12			0.12		0.12
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		6.0			6.0		6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0			3.0		3.0
Lane Grp Cap (vph)	182	2693	992	173	2683		207			205		183
v/s Ratio Prot	c0.47				0.43							
v/s Ratio Perm	0.07		0.15	0.03			c0.05			0.04		0.00
v/c Ratio	0.09	0.60	0.19	0.03	0.55		0.43			0.30		0.01
Uniform Delay, d1	2.8	4.8	3.0	2.6	4.5		44.5			43.8		42.2
Progression Factor	1.00	1.00	1.00	0.89	1.00		1.00			1.00		1.00
Incremental Delay, d2	1.0	1.0	0.4	0.3	0.6		1.4			0.8		0.0
Delay (s)	3.8	5.8	3.4	2.6	5.1		46.0			44.6		42.3
Level of Service	A	A	A	A	A		D			D		D
Approach Delay (s)	5.5				5.1		46.0		44.0			
Approach LOS	A				A		D		D			

Intersection Summary

HCM 2000 Control Delay	7.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	64.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Block 7
BA Group - TCSSynchro 10 Report
EX_AM.syn

Queues

3: Provost Drive/Ambrose Road & Sheppard Avenue East

Existing AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	NBL	NBR	SBL	SBR
Lane Configurations	↩	↩↩	↩	↩	↩↩	↩	↩	↩	↩
Traffic Volume (vph)	40	1230	250	135	1150	185	135	200	25
Future Volume (vph)	40	1230	250	135	1150	185	135	200	25
Lane Group Flow (vph)	44	1367	278	150	1417	206	150	222	28
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+ov	Perm	Perm
Protected Phases		2		1	6		1		
Permitted Phases	2		2	6		4		8	8
Detector Phase	2	2	2	1	6	4	1	8	8
Switch Phase									
Minimum Initial (s)	30.0	30.0	30.0	6.0	30.0	30.0	6.0	30.0	30.0
Minimum Split (s)	37.0	37.0	37.0	10.0	37.0	38.0	10.0	38.0	38.0
Total Split (s)	59.0	59.0	59.0	12.0	71.0	39.0	12.0	39.0	39.0
Total Split (%)	53.6%	53.6%	53.6%	10.9%	64.5%	35.5%	10.9%	35.5%	35.5%
Yellow Time (s)	4.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	1.0	3.0	4.0	1.0	4.0	4.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	6.0	6.0	6.0	3.0	6.0	7.0	3.0	7.0	7.0
Lead/Lag	Lag	Lag	Lag	Lead			Lead		
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes		
Recall Mode	C-Min	C-Min	C-Min	None	C-Min	None	None	None	None
v/c Ratio	0.37	0.82	0.36	0.70	0.70	0.45	0.25	0.49	0.06
Control Delay	25.2	28.6	9.9	36.6	17.4	36.4	15.4	37.4	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.2	28.6	9.9	36.6	17.4	36.4	15.4	37.4	0.2
Queue Length 50th (m)	7.1	158.1	26.3	15.9	107.5	38.3	14.8	41.8	0.0
Queue Length 95th (m)	m4.9	84.7	10.2	#44.6	133.5	61.4	28.9	66.4	0.0
Internal Link Dist (m)		81.5			111.0				
Turn Bay Length (m)	40.0		40.0	165.0					
Base Capacity (vph)	118	1662	763	216	2016	470	603	466	484
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.82	0.36	0.69	0.70	0.44	0.25	0.48	0.06

Intersection Summary

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 69 (63%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 85

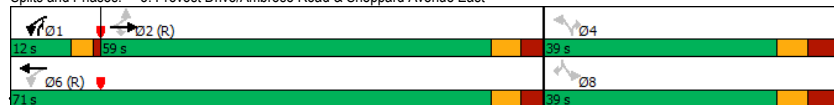
Control Type: Actuated-Coordinated

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 3: Provost Drive/Ambrose Road & Sheppard Avenue East



Block 7

BA Group - TCS

Synchro 10 Report

EX_AM.syn

HCM Signalized Intersection Capacity Analysis

3: Provost Drive/Ambrose Road & Sheppard Avenue East

Existing AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↩	↩↩	↩	↩	↩↩	↩	↩	↩	↩	↩	↩	↩
Traffic Volume (vph)	40	1230	250	135	1150	125	185	0	135	200	0	25
Future Volume (vph)	40	1230	250	135	1150	125	185	0	135	200	0	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.5	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	6.0	6.0	6.0	3.0	6.0		7.0		3.0	7.0		7.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00		1.00	1.00		1.00
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00		1.00		0.96	1.00		0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.99		1.00	0.96		1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00		0.85	1.00		0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95		1.00	0.95		1.00
Satd. Flow (prot)	1600	3433	1420	1636	3349		1618		1422	1604		1473
Flt Permitted	0.14	1.00	1.00	0.08	1.00		0.95		1.00	0.95		1.00
Satd. Flow (perm)	244	3433	1420	130	3349		1618		1422	1604		1473
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	44	1367	278	150	1278	139	206	0	150	222	0	28
RTOR Reduction (vph)	0	0	76	0	7	0	0	0	25	0	0	20
Lane Group Flow (vph)	44	1367	202	150	1410	0	206	0	125	222	0	8
Confl. Peds. (#/hr)	15		25	25		15	10		35	35		10
Heavy Vehicles (%)	5%	4%	2%	3%	4%	1%	3%	0%	2%	1%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	4	4	0	0	0	0	0	0
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm		pm+ov	Perm		Perm
Protected Phases		2		1	6				1			
Permitted Phases	2		2	6			4		4	8		8
Actuated Green, G (s)	52.2	52.2	52.2	65.0	65.0		30.0		38.8	30.0		30.0
Effective Green, g (s)	53.2	53.2	53.2	66.0	66.0		31.0		40.8	31.0		31.0
Actuated g/C Ratio	0.48	0.48	0.48	0.60	0.60		0.28		0.37	0.28		0.28
Clearance Time (s)	7.0	7.0	7.0	4.0	7.0		8.0		4.0	8.0		8.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0		3.0
Lane Grp Cap (vph)	118	1660	686	212	2009		455		527	452		415
v/s Ratio Prot		c0.40		0.06	c0.42				0.02			
v/s Ratio Perm	0.18		0.14	0.36			0.13		0.07	c0.14		0.01
v/c Ratio	0.37	0.82	0.29	0.71	0.70		0.45		0.24	0.49		0.02
Uniform Delay, d1	17.9	24.4	17.1	22.7	15.2		32.5		23.9	32.9		28.5
Progression Factor	0.84	0.98	1.06	1.00	1.00		1.00		1.00	1.00		1.00
Incremental Delay, d2	7.7	4.2	0.9	10.3	2.1		0.7		0.2	0.8		0.0
Delay (s)	22.7	28.1	19.2	32.9	17.3		33.2		24.1	33.8		28.5
Level of Service	C	C	B	C	B		C		C	C		C
Approach Delay (s)		26.5			18.8			29.4			33.2	
Approach LOS		C			B			C			C	

Intersection Summary

HCM 2000 Control Delay

HCM 2000 Level of Service

C

HCM 2000 Volume to Capacity ratio

0.71

Actuated Cycle Length (s)

110.0

Sum of lost time (s)

17.0

Intersection Capacity Utilization

92.0%

ICU Level of Service

F

Analysis Period (min)

15

c Critical Lane Group

Block 7

BA Group - TCS

Synchro 10 Report

EX_AM.syn

Queues

4: Leslie Street & Sheppard Avenue East

Existing AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↩	↩↩↩	↩	↩	↩↩↩	↩	↩↩↩	↩	↩↩↩	↩↩↩
Traffic Volume (vph)	160	750	540	260	1095	345	600	335	100	1220
Future Volume (vph)	160	750	540	260	1095	345	600	335	100	1220
Lane Group Flow (vph)	165	773	557	268	1211	356	619	345	103	1500
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	Prot	NA	Perm	Perm	NA
Protected Phases	5	2	7	1	6	7	4		8	
Permitted Phases	2		2	6				4	8	
Detector Phase	5	2	7	1	6	7	4	4	8	8
Switch Phase										
Minimum Initial (s)	6.0	38.0	6.0	6.0	38.0	6.0	38.0	38.0	38.0	38.0
Minimum Split (s)	10.0	45.0	12.0	10.0	45.0	12.0	45.0	45.0	45.0	45.0
Total Split (s)	14.0	46.0	22.0	14.0	46.0	22.0	75.0	75.0	53.0	53.0
Total Split (%)	10.4%	34.1%	16.3%	10.4%	34.1%	16.3%	55.6%	55.6%	39.3%	39.3%
Yellow Time (s)	3.0	4.0	3.0	3.0	4.0	3.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	3.0	3.0	1.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-2.0	-1.0	-3.0	-3.0	-1.0	-3.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	2.0	6.0	3.0	1.0	6.0	3.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	Min	None	None	Min	None	C-Min	C-Min	C-Min	C-Min
v/c Ratio	0.79	0.53	0.74	0.85	0.82	0.77	0.37	0.45	0.42	0.89
Control Delay	56.4	41.4	19.7	52.6	49.3	48.2	14.4	9.7	40.2	49.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.4	41.4	19.7	52.6	49.3	48.2	14.4	9.7	40.2	49.0
Queue Length 50th (m)	29.1	66.3	55.5	49.3	115.7	50.1	73.1	63.0	22.0	142.0
Queue Length 95th (m)	#66.9	80.4	97.8	#84.3	135.1	#55.6	97.2	103.9	40.7	163.3
Internal Link Dist (m)		434.4			1078.4		224.4			40.9
Turn Bay Length (m)	170.0		130.0	200.0		175.0				
Base Capacity (vph)	208	1475	755	314	1479	466	1710	772	248	1698
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.79	0.52	0.74	0.85	0.82	0.76	0.36	0.45	0.42	0.88

Intersection Summary

Cycle Length: 135

Actuated Cycle Length: 135

Offset: 125 (93%), Referenced to phase 4:NBT and 8:SBTL, Start of Green

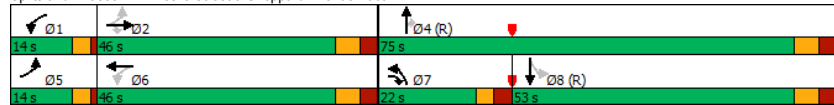
Natural Cycle: 115

Control Type: Actuated-Coordinated

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

Queue shown is maximum after two cycles.

Splits and Phases: 4: Leslie Street & Sheppard Avenue East

Block 7
BA Group - TCSSynchro 10 Report
EX_AM.syn

HCM Signalized Intersection Capacity Analysis

4: Leslie Street & Sheppard Avenue East

Existing AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↩	↩↩↩	↩	↩	↩↩↩		↩	↩↩↩	↩	↩↩↩	↩↩↩	
Traffic Volume (vph)	160	750	540	260	1095	80	345	600	335	100	1220	235
Future Volume (vph)	160	750	540	260	1095	80	345	600	335	100	1220	235
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.5	3.0	3.5	3.0	3.0	3.5	3.5
Total Lost time (s)	2.0	6.0	3.0	1.0	6.0		3.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		0.97	0.95	1.00	1.00	0.91	
Frpb, ped/bikes	1.00	1.00	0.90	1.00	1.00		1.00	1.00	0.93	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00		1.00	1.00	1.00	0.98	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.98	
Flt Protected	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1721	4980	1308	1725	4872		3276	3336	1302	1627	4819	
Flt Permitted	0.10	1.00	1.00	0.24	1.00		1.00	1.00	1.00	0.42	1.00	
Satd. Flow (perm)	170	4980	1308	419	4872		3276	3336	1302	714	4819	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	165	773	557	268	1129	82	356	619	345	103	1258	242
RTOR Reduction (vph)	0	0	160	0	6	0	0	0	106	0	21	0
Lane Group Flow (vph)	165	773	397	268	1205	0	356	619	239	103	1479	0
Confl. Peds. (#/hr)	40		125	125		40	55		55	55		55
Heavy Vehicles (%)	3%	3%	4%	2%	3%	7%	5%	7%	6%	1%	2%	3%
Bus Blockages (#/hr)	0	0	0	0	4	4	0	0	4	0	4	4
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		Prot	NA	Perm	Perm	NA	
Protected Phases	5	2	7	1	6		7	4			8	
Permitted Phases	2		2	6					4	8		
Actuated Green, G (s)	48.6	38.6	54.6	50.6	39.6		16.0	67.4	67.4	45.4	45.4	
Effective Green, g (s)	52.6	39.6	60.6	56.6	40.6		19.0	68.4	68.4	46.4	46.4	
Actuated g/C Ratio	0.39	0.29	0.45	0.42	0.30		0.14	0.51	0.51	0.34	0.34	
Clearance Time (s)	4.0	7.0	6.0	4.0	7.0		6.0	7.0	7.0	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	
Lane Grp Cap (vph)	204	1460	587	311	1465		461	1690	659	245	1656	
v/s Ratio Prot	0.07	0.16	0.10	c0.09	c0.25		c0.11	0.19			c0.31	
v/s Ratio Perm	0.24		0.21	0.27					0.18	0.14		
v/c Ratio	0.81	0.53	0.68	0.86	0.82		0.77	0.37	0.36	0.42	0.89	
Uniform Delay, d1	31.3	39.9	29.4	28.5	43.8		55.9	20.2	20.1	34.0	42.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.65	0.68	1.07	1.00	1.00	
Incremental Delay, d2	20.5	0.3	3.1	20.9	3.9		7.5	0.6	1.5	5.2	7.8	
Delay (s)	51.8	40.3	32.5	49.4	47.7		43.9	14.3	23.0	39.2	49.8	
Level of Service	D	D	C	D	D		D	B	C	D	D	
Approach Delay (s)		38.7			48.0			24.6			49.1	
Approach LOS		D			D			C			D	

Intersection Summary

HCM 2000 Control Delay	40.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	127.7%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Block 7
BA Group - TCSSynchro 10 Report
EX_AM.syn

HCM Unsignalized Intersection Capacity Analysis

5: McMahon Drive/CTC South Access & Esther Shiner Boulevard

Existing AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	5	0	0	20	10	100	0	15	75	185	10	5
Future Volume (vph)	5	0	0	20	10	100	0	15	75	185	10	5
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	5	0	0	22	11	110	0	16	82	203	11	5
Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2							
Volume Total (vph)	5	143	98	214	5							
Volume Left (vph)	5	22	0	203	0							
Volume Right (vph)	0	110	82	0	5							
Hadj (s)	0.20	-0.29	-0.37	0.52	-0.70							
Departure Headway (s)	5.1	4.4	4.3	5.4	4.2							
Degree Utilization, x	0.01	0.18	0.12	0.32	0.01							
Capacity (veh/h)	646	757	803	639	819							
Control Delay (s)	8.1	8.4	7.8	9.8	6.1							
Approach Delay (s)	8.1	8.4	7.8	9.8								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay	8.9											
Level of Service	A											
Intersection Capacity Utilization	37.4%			ICU Level of Service			A					
Analysis Period (min)	15											

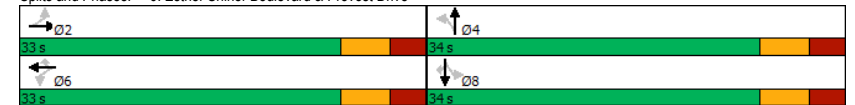
Queues

6: Esther Shiner Boulevard & Provost Drive

Existing AM Peak Hour

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	40	235	20	80	160	5	5	225	15	45
Future Volume (vph)	40	235	20	80	160	5	5	225	15	45
Lane Group Flow (vph)	0	303	22	87	174	0	26	245	16	49
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases		2		6			4		8	
Permitted Phases		2		6		4		8		8
Detector Phase		2		6		4		8		8
Switch Phase										
Minimum Initial (s)	26.0	26.0	26.0	26.0	26.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	33.0	33.0	33.0	33.0	33.0	34.0	34.0	34.0	34.0	34.0
Total Split (s)	33.0	33.0	33.0	33.0	33.0	34.0	34.0	34.0	34.0	34.0
Total Split (%)	49.3%	49.3%	49.3%	49.3%	49.3%	50.7%	50.7%	50.7%	50.7%	50.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)		-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)		6.0	6.0	6.0	6.0		6.0	6.0	6.0	6.0
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	Min	Min	Min	Min	Min	None	None	None	None	None
v/c Ratio	0.36	0.05	0.10	0.22		0.07	0.63	0.03	0.11	
Control Delay	12.4	10.8	10.5	3.2		8.6	24.4	12.6	3.4	
Queue Delay		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Total Delay	12.4	10.8	10.5	3.2		8.6	24.4	12.6	3.4	
Queue Length 50th (m)	18.2	1.1	4.6	0.0		0.7	22.2	1.2	0.0	
Queue Length 95th (m)	47.5	5.8	15.0	10.5		4.8	41.4	4.4	4.2	
Internal Link Dist (m)		80.2		216.2			86.8		118.2	
Turn Bay Length (m)			105.0					75.0		
Base Capacity (vph)		831	468	855	785		609	638	878	675
Starvation Cap Reductn		0	0	0	0		0	0	0	0
Spillback Cap Reductn		0	0	0	0		0	0	0	0
Storage Cap Reductn		0	0	0	0		0	0	0	0
Reduced v/c Ratio		0.36	0.05	0.10	0.22		0.04	0.38	0.02	0.07
Intersection Summary										
Cycle Length: 67										
Actuated Cycle Length: 56.6										
Natural Cycle: 70										
Control Type: Semi Act-Uncoord										

Splits and Phases: 6: Esther Shiner Boulevard & Provost Drive



HCM Signalized Intersection Capacity Analysis 6: Esther Shiner Boulevard & Provost Drive

Existing AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔	↔		↔		↔	↔	↔
Traffic Volume (vph)	40	235	5	20	80	160	5	5	15	225	15	45
Future Volume (vph)	40	235	5	20	80	160	5	5	15	225	15	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.0	3.5	3.0	3.5	3.5	3.0	3.5	3.5	3.0
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	0.97	0.99	0.99	1.00	1.00	0.96	1.00	1.00	0.96
Flpb, ped/bikes	1.00	0.99	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	1.00
Fr t	1.00	1.00	1.00	0.85	0.92	0.92	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.99	0.95	1.00	1.00	0.99	0.99	0.95	1.00	1.00	0.99	0.95	1.00
Satd. Flow (prot)	1799	1524	1773	1446	1242	1642	1756	1291				
Flt Permitted	0.95	0.61	1.00	1.00	0.96	0.74	1.00	1.00				
Satd. Flow (perm)	1723	973	1773	1446	1204	1279	1756	1291				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	43	255	5	22	87	174	5	5	16	245	16	49
RTOR Reduction (vph)	0	1	0	0	0	90	0	11	0	0	0	34
Lane Group Flow (vph)	0	302	0	22	87	84	0	15	0	245	16	15
Confl. Peds. (#/hr)	30	20	20	30	20	10	10	20				
Heavy Vehicles (%)	13%	1%	29%	9%	6%	1%	0%	33%	47%	2%	7%	12%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	2	2		6	6	4	8	8		8	8	8
Permitted Phases	2	6		6	4	8	8	8		8	8	8
Actuated Green, G (s)	26.3	26.3	26.3	26.3	16.1	16.1	16.1	16.1		16.1	16.1	16.1
Effective Green, g (s)	27.3	27.3	27.3	27.3	17.1	17.1	17.1	17.1		17.1	17.1	17.1
Actuated g/C Ratio	0.48	0.48	0.48	0.48	0.30	0.30	0.30	0.30		0.30	0.30	0.30
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0		7.0	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)	834	470	858	699	365	387	532	391				
v/s Ratio Prot			0.05					0.01				0.01
v/s Ratio Perm	c0.18		0.02		0.06		0.01	c0.19				0.01
v/c Ratio	0.36		0.05	0.10	0.12		0.04	0.63		0.03		0.04
Uniform Delay, d1	9.1		7.7	7.9	8.0		13.9	16.9		13.8		13.9
Progression Factor	1.00		1.00	1.00	1.00		1.00	1.00		1.00		1.00
Incremental Delay, d2	0.3		0.0	0.1	0.1		0.0	3.4		0.0		0.0
Delay (s)	9.4		7.7	7.9	8.0		13.9	20.3		13.8		13.9
Level of Service	A		A	A	A		B	C		B		B
Approach Delay (s)	9.4		8.0		13.9		19.0					
Approach LOS	A		A		B		B					

Intersection Summary

HCM 2000 Control Delay	12.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	56.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	68.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Queues

7: Esther Shiner Boulevard & Old Leslie Street

Existing AM Peak Hour

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	35	470	5	230	5	0	235	5
Future Volume (vph)	35	470	5	230	5	0	235	5
Lane Group Flow (vph)	36	495	5	454	5	10	245	36
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases	2	2	6	6	4	4	8	8
Permitted Phases	2	6	6	4	4	8	8	8
Detector Phase	2	2	6	6	4	4	8	8
Switch Phase								
Minimum Initial (s)	28.0	28.0	28.0	28.0	7.0	7.0	7.0	7.0
Minimum Split (s)	35.0	35.0	35.0	35.0	37.0	37.0	37.0	37.0
Total Split (s)	35.0	35.0	35.0	35.0	37.0	37.0	37.0	37.0
Total Split (%)	48.6%	48.6%	48.6%	48.6%	51.4%	51.4%	51.4%	51.4%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	Min	Min	Min	Min	None	None	None	None
v/c Ratio	0.09	0.29	0.02	0.27	0.01	0.02	0.63	0.08
Control Delay	11.6	10.8	11.2	6.0	13.0	0.1	25.1	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.6	10.8	11.2	6.0	13.0	0.1	25.1	6.5
Queue Length 50th (m)	1.9	15.4	0.3	6.9	0.4	0.0	23.5	0.4
Queue Length 95th (m)	8.9	36.4	2.4	20.8	2.3	0.0	42.6	5.2
Internal Link Dist (m)		106.6		130.2		43.8		121.9
Turn Bay Length (m)	40.0		70.0		10.0		40.0	
Base Capacity (vph)	389	1710	309	1679	666	793	680	733
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.29	0.02	0.27	0.01	0.01	0.36	0.05

Intersection Summary

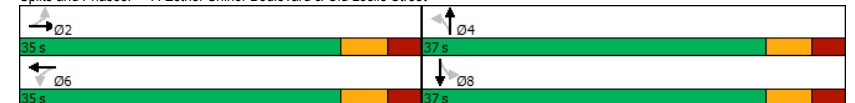
Cycle Length: 72

Actuated Cycle Length: 59.5

Natural Cycle: 75

Control Type: Semi Act-Uncoord

Splits and Phases: 7: Esther Shiner Boulevard & Old Leslie Street



HCM Signalized Intersection Capacity Analysis 7: Esther Shiner Boulevard & Old Leslie Street

Existing AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰		↰	↰		↰	↰		↰	↰	
Traffic Volume (vph)	35	470	5	5	230	205	5	0	10	235	5	30
Future Volume (vph)	35	470	5	5	230	205	5	0	10	235	5	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.5	3.0	3.5	3.5	3.0	3.5	3.5	3.0	3.5	3.5
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.98		1.00	0.99		1.00	0.97	
Flpb, ped/bikes	0.98	1.00		1.00	1.00		0.97	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.93		1.00	0.85		1.00	0.87	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1533	3461		1263	3191		1642	1311		1631	1367	
Flt Permitted	0.49	1.00		0.47	1.00		0.73	1.00		0.75	1.00	
Satd. Flow (perm)	791	3461		626	3191		1268	1311		1289	1367	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	36	490	5	5	240	214	5	0	10	245	5	31
RTOR Reduction (vph)	0	1	0	0	108	0	0	7	0	0	22	0
Lane Group Flow (vph)	36	494	0	5	346	0	5	3	0	245	14	0
Confl. Peds. (#/hr)	30		5	5		30	45		5	5		45
Heavy Vehicles (%)	8%	3%	0%	33%	1%	2%	0%	0%	20%	3%	33%	13%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	28.4	28.4		28.4	28.4		16.9	16.9		16.9	16.9	
Effective Green, g (s)	29.4	29.4		29.4	29.4		17.9	17.9		17.9	17.9	
Actuated g/C Ratio	0.50	0.50		0.50	0.50		0.30	0.30		0.30	0.30	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	392	1715		310	1582		382	395		389	412	
v/s Ratio Prot		c0.14			0.11			0.00			0.01	
v/s Ratio Perm	0.05			0.01			0.00			c0.19		
v/c Ratio	0.09	0.29		0.02	0.22		0.01	0.01		0.63	0.03	
Uniform Delay, d1	7.9	8.8		7.6	8.5		14.5	14.5		17.8	14.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.1		0.0	0.1		0.0	0.0		3.2	0.0	
Delay (s)	8.0	8.9		7.6	8.5		14.5	14.5		21.0	14.6	
Level of Service	A	A		A	A		B	B		C	B	
Approach Delay (s)		8.8			8.5			14.5			20.2	
Approach LOS		A			A			B			C	

Intersection Summary

HCM 2000 Control Delay	11.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	59.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	62.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Block 7
BA Group - TCS

Synchro 10 Report
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Queues

8: Leslie Street & Esther Shiner Boulevard

Existing AM Peak Hour

Lane Group	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBT	SBR
Lane Configurations	↰	↰	↰	↰	↰	↰	↰	↰	↰
Traffic Volume (vph)	55	560	95	35	290	1130	375	1935	195
Future Volume (vph)	55	560	95	35	290	1130	375	1935	195
Lane Group Flow (vph)	58	589	100	37	305	1189	395	2037	205
Turn Type	Perm	pt+ov	Perm	Perm	pm+pt	NA	Perm	NA	Perm
Protected Phases		4 5			5	2		6	
Permitted Phases	4		8	8	2		2		6
Detector Phase	4	4 5	8	8	5	2	2	6	6
Switch Phase									
Minimum Initial (s)	7.0		7.0	7.0	6.0	25.0	25.0	25.0	25.0
Minimum Split (s)	46.0		46.0	46.0	10.0	31.0	31.0	31.0	31.0
Total Split (s)	46.0		46.0	46.0	31.0	89.0	89.0	58.0	58.0
Total Split (%)	34.1%		34.1%	34.1%	23.0%	65.9%	65.9%	43.0%	43.0%
Yellow Time (s)	4.0		4.0	4.0	3.0	4.0	4.0	4.0	4.0
All-Red Time (s)	4.0		4.0	4.0	1.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-2.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	7.0		7.0	7.0	2.0	5.0	5.0	5.0	5.0
Lead/Lag					Lead		Lag	Lag	
Lead-Lag Optimize?					Yes		Yes	Yes	
Recall Mode	None		None	None	None	C-Min	C-Min	C-Min	
v/c Ratio	0.16	0.75	0.24	0.09	0.83	0.37	0.39	0.90	0.27
Control Delay	37.8	24.6	39.6	4.1	48.1	19.1	9.1	48.6	12.1
Queue Delay	0.0	6.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.8	31.4	39.6	4.1	48.1	19.1	9.1	48.6	12.1
Queue Length 50th (m)	12.2	85.3	21.6	0.0	71.2	86.8	39.6	177.9	10.7
Queue Length 95th (m)	24.1	126.8	37.5	4.7	99.2	107.6	76.0	#249.3	m17.4
Internal Link Dist (m)						231.2		224.4	
Turn Bay Length (m)					150.0		170.0		175.0
Base Capacity (vph)	401	814	446	445	423	3186	1006	2261	758
Starvation Cap Reductn	0	178	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.93	0.22	0.08	0.72	0.37	0.39	0.90	0.27

Intersection Summary

Cycle Length: 135
Actuated Cycle Length: 135
Offset: 103 (76%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 8: Leslie Street & Esther Shiner Boulevard



Block 7
BA Group - TCS

Synchro 10 Report
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HCM Signalized Intersection Capacity Analysis 8: Leslie Street & Esther Shiner Boulevard

Existing AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	→	↱	↰	→	↱	↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	55	0	560	95	0	35	290	1130	375	0	1935	195
Future Volume (vph)	55	0	560	95	0	35	290	1130	375	0	1935	195
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.5	3.5	3.0
Total Lost time (s)	7.0		7.0	7.0		7.0	2.0	5.0	5.0		5.0	5.0
Lane Util. Factor	1.00		1.00	1.00		1.00	1.00	0.91	1.00		0.91	1.00
Frpb, ped/bikes	1.00		1.00	1.00		0.93	1.00	1.00	0.94		1.00	0.97
Flpb, ped/bikes	0.94		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00
Frft	1.00		0.85	1.00		0.85	1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95		1.00	0.95		1.00	1.00	1.00	1.00		1.00	1.00
Satd. Flow (prot)	1391		1478	1546		1403	1739	4932	1341		5029	1437
Flt Permitted	0.95		1.00	0.95		1.00	0.06	1.00	1.00		1.00	1.00
Satd. Flow (perm)	1391		1478	1546		1403	109	4932	1341		5029	1437
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	58	0	589	100	0	37	305	1189	395	0	2037	205
RTOR Reduction (vph)	0	0	101	0	0	27	0	0	140	0	0	113
Lane Group Flow (vph)	58	0	488	100	0	10	305	1189	255	0	2037	92
Confl. Peds. (#/hr)	55					55	10		15	15		10
Heavy Vehicles (%)	14%	0%	2%	9%	0%	0%	2%	4%	4%	0%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	4	0	0	0
Turn Type	Perm		pt+ov	Perm		Perm	pm+pt	NA	Perm		NA	Perm
Protected Phases			4 5				5	2			6	
Permitted Phases	4			8		8	2		2			6
Actuated Green, G (s)	34.8		65.3	34.8		34.8	86.2	86.2	86.2		59.7	59.7
Effective Green, g (s)	35.8		66.3	35.8		35.8	88.2	87.2	87.2		60.7	60.7
Actuated g/C Ratio	0.27		0.49	0.27		0.27	0.65	0.65	0.65		0.45	0.45
Clearance Time (s)	8.0			8.0		8.0	4.0	6.0	6.0		6.0	6.0
Vehicle Extension (s)	3.0			3.0		3.0	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	368		725	409		372	367	3185	866		2261	646
v/s Ratio Prot			c0.33				c0.15	0.24			c0.41	
v/s Ratio Perm	0.04			0.06		0.01	0.39		0.19			0.06
v/c Ratio	0.16		0.67	0.24		0.03	0.83	0.37	0.29		0.90	0.14
Uniform Delay, d1	38.0		26.1	39.0		36.7	42.2	11.2	10.5		34.4	21.8
Progression Factor	1.00		1.00	1.00		1.00	0.88	1.62	7.96		1.28	3.33
Incremental Delay, d2	0.2		2.5	0.3		0.0	11.9	0.3	0.7		4.0	0.3
Delay (s)	38.2		28.6	39.3		36.7	49.0	18.4	83.9		47.8	73.0
Level of Service	D		C	D		D	D	B	F		D	E
Approach Delay (s)		29.5			38.6			37.0		50.1		
Approach LOS		C			D			D		D		

Intersection Summary			
HCM 2000 Control Delay	42.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	93.7%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Block 7
BA Group - TCS

Synchro 10 Report
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Queues

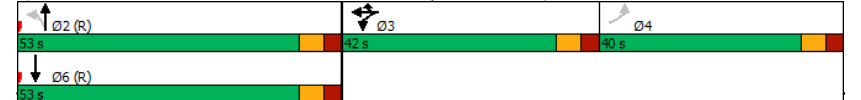
9: Leslie Street & Oriole GO Station Access/Hwy 401 WB Off-Ramp

Existing AM Peak Hour

Lane Group	EBL	EBR	WBL	WBT	WBR	NBL	NBT	SBT
Lane Configurations	↰	↱	↰	→	↱	↰	↱	↱
Traffic Volume (vph)	25	50	850	65	660	40	1110	1665
Future Volume (vph)	25	50	850	65	660	40	1110	1665
Lane Group Flow (vph)	26	52	885	384	372	42	1156	1781
Turn Type	Perm	Free	Split	NA	Prot	Perm	NA	NA
Protected Phases			3	3	3		2	6
Permitted Phases	4	Free				2		
Detector Phase	4		3	3	3	2	2	6
Switch Phase								
Minimum Initial (s)	7.0		7.0	7.0	7.0	27.0	27.0	27.0
Minimum Split (s)	39.0		14.0	14.0	14.0	34.0	34.0	34.0
Total Split (s)	40.0		42.0	42.0	42.0	53.0	53.0	53.0
Total Split (%)	29.6%		31.1%	31.1%	31.1%	39.3%	39.3%	39.3%
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lag		Lead	Lead	Lead			
Lead-Lag Optimize?	Yes		Yes	Yes	Yes			
Recall Mode	None		None	None	None	C-Min	C-Min	C-Min
v/c Ratio	0.29	0.03	0.92	0.70	0.56	0.64	0.64	0.66
Control Delay	59.0	0.0	62.7	31.6	7.2	66.7	32.4	16.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.0	0.0	62.7	31.6	7.2	66.7	32.4	16.8
Queue Length 50th (m)	7.1	0.0	127.8	59.5	0.0	10.8	153.9	107.6
Queue Length 95th (m)	14.3	0.0	#172.4	101.7	28.3	m#19.4 m#203.5	#206.7	
Internal Link Dist (m)			220.4			38.0	231.2	
Turn Bay Length (m)				150.0	35.0			
Base Capacity (vph)	214	1507	959	552	669	66	1810	2700
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.03	0.92	0.70	0.56	0.64	0.64	0.66

Intersection Summary	
Cycle Length:	135
Actuated Cycle Length:	135
Offset: 20 (15%), Referenced to phase 2:NBTL and 6:SBT, Start of Green	
Natural Cycle: 120	
Control Type: Actuated-Coordinated	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 9: Leslie Street & Oriole GO Station Access/Hwy 401 WB Off-Ramp



Block 7
BA Group - TCS

Synchro 10 Report
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HCM Signalized Intersection Capacity Analysis

9: Leslie Street & Oriole GO Station Access/Hwy 401 WB Off-Ramp

Existing AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	→	↱	↰	→	↱	↰	→	↱	↰	→	↱
Traffic Volume (vph)	25	0	50	850	65	660	40	1110	0	0	1665	45
Future Volume (vph)	25	0	50	850	65	660	40	1110	0	0	1665	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.0		3.0	6.0	6.0	6.0	6.0	6.0			6.0	
Lane Util. Factor	1.00		1.00	0.97	0.95	0.95	1.00	*0.97			*0.95	
Frpb, ped/bikes	1.00		1.00	1.00	0.98	1.00	1.00	1.00			1.00	
Flpb, ped/bikes	0.99		1.00	1.00	1.00	1.00	1.00	1.00			1.00	
Frt	1.00		0.85	1.00	0.88	0.85	1.00	1.00			1.00	
Flt Protected	0.95		1.00	1.00	1.00	1.00	0.95	1.00			1.00	
Satd. Flow (prot)	1543		1507	3373	1517	1418	1685	3505			5226	
Flt Permitted	0.52		1.00	1.00	1.00	1.00	0.07	1.00			1.00	
Satd. Flow (perm)	852		1507	3373	1517	1418	127	3505			5226	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	26	0	52	885	68	688	42	1156	0	0	1734	47
RTOR Reduction (vph)	0	0	0	0	121	266	0	0	0	0	2	0
Lane Group Flow (vph)	26	0	52	885	263	106	42	1156	0	0	1779	0
Confl. Peds. (#/hr)	15					15	10		20	20		10
Heavy Vehicles (%)	8%	0%	0%	2%	0%	1%	0%	4%	0%	0%	2%	0%
Turn Type	Perm		Free	Split	NA	Prot	Perm	NA			NA	
Protected Phases				3	3	3		2			6	
Permitted Phases	4		Free				2					
Actuated Green, G (s)	10.6		135.0	37.4	37.4	37.4	66.0	66.0			66.0	
Effective Green, g (s)	11.6		135.0	38.4	38.4	38.4	67.0	67.0			67.0	
Actuated g/C Ratio	0.09		1.00	0.28	0.28	0.28	0.50	0.50			0.50	
Clearance Time (s)	7.0			7.0	7.0	7.0	7.0	7.0			7.0	
Vehicle Extension (s)	3.0			3.0	3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)	73		1507	959	431	403	63	1739			2593	
v/s Ratio Prot				c0.26	0.17	0.07		0.33			c0.34	
v/s Ratio Perm	c0.03		0.03				0.33					
v/c Ratio	0.36		0.03	0.92	0.61	0.26	0.67	0.66			0.69	
Uniform Delay, d1	58.2		0.0	46.9	41.8	37.4	25.6	25.6			26.0	
Progression Factor	1.00		1.00	1.00	1.00	1.00	1.26	1.21			0.60	
Incremental Delay, d2	3.0		0.0	14.0	2.6	0.3	28.5	1.2			0.8	
Delay (s)	61.1		0.0	60.8	44.4	37.7	60.7	32.2			16.3	
Level of Service	E		A	E	D	D	E	C			B	
Approach Delay (s)		20.4			51.7			33.2			16.3	
Approach LOS		C			D			C			B	

Intersection Summary

HCM 2000 Control Delay	33.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	76.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Block 7
BA Group - TCS

Synchro 10 Report
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Queues

10: Leslie Street & Hwy 401 EB Off-Ramp/Lesmill Road

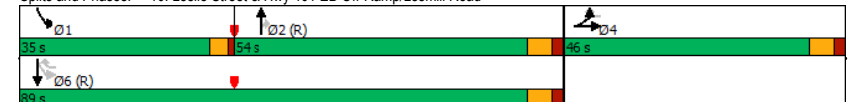
Existing AM Peak Hour

Lane Group	EBL	EBT	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰	↱	↱	↱	↱	↰	↱
Traffic Volume (vph)	475	855	530	1510	105	525	1405
Future Volume (vph)	475	855	530	1510	105	525	1405
Lane Group Flow (vph)	445	941	552	1573	109	525	1464
Turn Type	Split	NA	Perm	NA	Perm	pm+pt	NA
Protected Phases	4	4		2		1	6
Permitted Phases			4 6		2	6	
Detector Phase	4	4	4 6	2	2	1	6
Switch Phase							
Minimum Initial (s)	7.0	7.0		20.0	20.0	6.0	20.0
Minimum Split (s)	43.0	43.0		26.0	26.0	10.0	26.0
Total Split (s)	46.0	46.0		54.0	54.0	35.0	89.0
Total Split (%)	34.1%	34.1%		40.0%	40.0%	25.9%	65.9%
Yellow Time (s)	4.0	4.0		4.0	4.0	3.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	1.0	2.0
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-3.0	-1.0
Total Lost Time (s)	5.0	5.0		5.0	5.0	1.0	5.0
Lead/Lag				Lag	Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	Yes	
Recall Mode	None	None		C-Min	C-Min	None	C-Min
v/c Ratio	0.96	0.91	0.37	0.89	0.20	0.99	0.68
Control Delay	78.3	59.2	0.7	48.4	15.7	71.7	19.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	78.3	59.2	0.7	48.4	15.7	71.7	19.5
Queue Length 50th (m)	135.1	140.3	0.0	150.4	9.6	~113.3	195.5
Queue Length 95th (m)	#211.7	#182.6	0.0	171.9	23.7 m	#189.8	m79.8
Internal Link Dist (m)		272.4		188.8			87.0
Turn Bay Length (m)	130.0				30.0	80.0	
Base Capacity (vph)	465	1029	1496	1790	552	528	2156
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.96	0.91	0.37	0.88	0.20	0.99	0.68

Intersection Summary

Cycle Length: 135
Actuated Cycle Length: 135
Offset: 57 (42%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
- Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 10: Leslie Street & Hwy 401 EB Off-Ramp/Lesmill Road



HCM Signalized Intersection Capacity Analysis

10: Leslie Street & Hwy 401 EB Off-Ramp/Lesmill Road

Existing AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱	↰	↱	↱	↱	↰	↱	↰
Traffic Volume (vph)	475	855	0	0	0	530	0	1510	105	525	1405	0
Future Volume (vph)	475	855	0	0	0	530	0	1510	105	525	1405	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900
Lane Width	3.0	3.5	3.5	3.5	3.5	3.0	3.5	3.5	3.0	3.0	3.5	3.5
Total Lost time (s)	5.0	5.0				5.0		5.0	5.0	1.0	5.0	
Lane Util. Factor	0.91	0.91				1.00		0.91	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00				1.00		1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1.00				1.00		1.00	1.00	1.00	1.00	
Flt Protected	1.00	1.00				1.00		1.00	1.00	1.00	1.00	
Satd. Flow (prot)	1522	3368				1504		4932	1422	1848	3466	
Flt Permitted	1.00	1.00				1.00		1.00	1.00	0.08	1.00	
Satd. Flow (perm)	1522	3368				1504		4932	1422	144	3466	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	1.00	0.96	0.96
Adj. Flow (vph)	495	891	0	0	0	552	0	1573	109	525	1464	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	37	0	0	0
Lane Group Flow (vph)	445	941	0	0	0	552	0	1573	72	525	1464	0
Confl. Peds. (#/hr)			20	20			10		5	5		10
Heavy Vehicles (%)	6%	1%	4%	0%	0%	2%	0%	4%	2%	1%	3%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	4	0	0	0
Turn Type	Split	NA				Perm	NA	Perm	pm+pt	NA		
Protected Phases	4	4					2		1	6		
Permitted Phases						4 6			2	6		
Actuated Green, G (s)	40.3	40.3				135.0		47.3	47.3	82.7	82.7	
Effective Green, g (s)	41.3	41.3				135.0		48.3	48.3	85.7	83.7	
Actuated g/C Ratio	0.31	0.31				1.00		0.36	0.36	0.63	0.62	
Clearance Time (s)	6.0	6.0						6.0	6.0	4.0	6.0	
Vehicle Extension (s)	3.0	3.0						3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	465	1030				1504		1764	508	525	2148	
v/s Ratio Prot	c0.29	0.28						c0.32		c0.25	0.42	
v/s Ratio Perm						0.37			0.05	0.38		
v/c Ratio	0.96	0.91				0.37		0.89	0.14	1.00	0.68	
Uniform Delay, d1	46.0	45.1				0.0		40.9	29.3	42.6	16.9	
Progression Factor	1.00	1.00				1.00		1.00	1.00	1.03	1.07	
Incremental Delay, d2	30.7	12.1				0.2		7.3	0.6	31.9	1.2	
Delay (s)	76.6	57.2				0.2		48.2	29.9	75.8	19.3	
Level of Service	E	E				A		D	C	E	B	
Approach Delay (s)		63.4			0.2			47.0			34.2	
Approach LOS		E			A			D			C	
Intersection Summary												
HCM 2000 Control Delay		41.9				HCM 2000 Level of Service				D		
HCM 2000 Volume to Capacity ratio		0.93										
Actuated Cycle Length (s)		135.0				Sum of lost time (s)				11.0		
Intersection Capacity Utilization		102.3%				ICU Level of Service				G		
Analysis Period (min)		15										
c Critical Lane Group												

Block 7
BA Group - TCS

Synchro 10 Report
EX_AM.syn

HCM Unsignalized Intersection Capacity Analysis

11: CTC North Access & Sheppard Avenue East

Existing AM Peak Hour

							
Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations							
Traffic Volume (veh/h)	1455	50	35	1325	10	65	
Future Volume (Veh/h)	1455	50	35	1325	10	65	
Sign Control	Free		Free	Stop			
Grade	0%		0%	0%			
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	
Hourly flow rate (vph)	1532	53	37	1395	11	68	
Pedestrians					35		
Lane Width (m)					3.0		
Walking Speed (m/s)					1.2		
Percent Blockage					2		
Right turn flare (veh)							
Median type	None		None				
Median storage (veh)							
Upstream signal (m)	144		105				
pX, platoon unblocked			0.80		0.82	0.80	
vC, conflicting volume			1620		2365	828	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol			1274		1126	283	
tC, single (s)			4.2		6.8	7.0	
tC, 2 stage (s)							
tF (s)			2.2		3.5	3.3	
p0 queue free %			91		93	88	
cM capacity (veh/h)			414		147	550	
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	1021	564	37	698	698	11	68
Volume Left	0	0	37	0	0	11	0
Volume Right	0	53	0	0	0	0	68
cSH	1700	1700	414	1700	1700	147	550
Volume to Capacity	0.60	0.33	0.09	0.41	0.41	0.07	0.12
Queue Length 95th (m)	0.0	0.0	2.3	0.0	0.0	1.9	3.4
Control Delay (s)	0.0	0.0	14.6	0.0	0.0	31.5	12.5
Lane LOS			B			D	B
Approach Delay (s)	0.0		0.4			15.1	
Approach LOS						C	
Intersection Summary							
Average Delay			0.6				
Intersection Capacity Utilization			52.6%	ICU Level of Service		A	
Analysis Period (min)			15				

Block 7
BA Group - TCS

Synchro 10 Report
EX_AM.syn

HCM Unsignalized Intersection Capacity Analysis
12: Provost Drive & CTC East Access/Singer Court

Existing AM Peak Hour

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (veh/h)	10	0	15	45	0	60	15	180	10	45	225	30	
Future Volume (Veh/h)	10	0	15	45	0	60	15	180	10	45	225	30	
Sign Control		Stop			Stop			Free			Free		
Grade		0%			0%			0%			0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	11	0	16	49	0	65	16	196	11	49	245	33	
Pedestrians		15			70			10			5		
Lane Width (m)		3.5			3.5			3.3			3.3		
Walking Speed (m/s)		1.2			1.2			1.2			1.2		
Percent Blockage		1			6			1			0		
Right turn flare (veh)													
Median type		None							None				
Median storage (veh)													
Upstream signal (m)		142							103				
pX, platoon unblocked													
vC, conflicting volume	574	684	164	550	694	178	293	277					
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	574	684	164	550	694	178	293	277					
tC, single (s)	7.5	6.5	6.9	7.6	6.5	6.9	4.1	4.2					
tC, 2 stage (s)													
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2	2.2					
p0 queue free %	97	100	98	86	100	92	99	96					
cM capacity (veh/h)	333	330	841	345	325	783	1265	1190					
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3					
Volume Total	27	114	16	131	76	49	163	115					
Volume Left	11	49	16	0	0	49	0	0					
Volume Right	16	65	0	0	11	0	0	33					
cSH	519	507	1265	1700	1700	1190	1700	1700					
Volume to Capacity	0.05	0.22	0.01	0.08	0.04	0.04	0.10	0.07					
Queue Length 95th (m)	1.3	6.8	0.3	0.0	0.0	1.0	0.0	0.0					
Control Delay (s)	12.3	14.1	7.9	0.0	0.0	8.2	0.0	0.0					
Lane LOS	B	B	A					A					
Approach Delay (s)	12.3	14.1	0.6					1.2					
Approach LOS	B	B											
Intersection Summary													
Average Delay	3.6												
Intersection Capacity Utilization	35.1%			ICU Level of Service				A					
Analysis Period (min)	15												

HCM Unsignalized Intersection Capacity Analysis
13: IKEA Driveway & Esther Shiner Boulevard

Existing AM Peak Hour

Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations	↔↔	↔	↔	↔↔		↔	
Traffic Volume (veh/h)	475	0	5	260	0	35	
Future Volume (Veh/h)	475	0	5	260	0	35	
Sign Control	Free			Free	Stop		
Grade	0%			0%	0%		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	
Hourly flow rate (vph)	505	0	5	277	0	37	
Pedestrians					5		
Lane Width (m)					3.0		
Walking Speed (m/s)					1.2		
Percent Blockage					0		
Right turn flare (veh)							
Median type	None			None			
Median storage (veh)							
Upstream signal (m)	240			130			
pX, platoon unblocked							
vC, conflicting volume			510		658	258	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol			510		658	258	
tC, single (s)			4.1		6.8	6.9	
tC, 2 stage (s)							
tF (s)			2.2		3.5	3.3	
p0 queue free %			100		100	95	
cM capacity (veh/h)			1062		398	745	
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1
Volume Total	252	252	0	5	138	138	37
Volume Left	0	0	0	5	0	0	0
Volume Right	0	0	0	0	0	0	37
cSH	1700	1700	1700	1062	1700	1700	745
Volume to Capacity	0.15	0.15	0.00	0.00	0.08	0.08	0.05
Queue Length 95th (m)	0.0	0.0	0.0	0.1	0.0	0.0	1.3
Control Delay (s)	0.0	0.0	0.0	8.4	0.0	0.0	10.1
Lane LOS				A			B
Approach Delay (s)	0.0			0.1			10.1
Approach LOS							B
Intersection Summary							
Average Delay	0.5						
Intersection Capacity Utilization	23.2%			ICU Level of Service		A	
Analysis Period (min)	15						

Queues

1: Bessarion Road/Burbank Drive & Sheppard Avenue East

Existing PM Peak Hour

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		 		 				 
Traffic Volume (vph)	40	1565	30	1575	10	5	220	20
Future Volume (vph)	40	1565	30	1575	10	5	220	20
Lane Group Flow (vph)	41	1607	31	1796	10	25	224	61
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases	2		6		4		8	
Permitted Phases	2		6		4		8	
Detector Phase	2	2	6	6	4	4	8	8
Switch Phase								
Minimum Initial (s)	24.0	24.0	24.0	24.0	7.0	7.0	7.0	7.0
Minimum Split (s)	30.0	30.0	30.0	30.0	35.0	35.0	35.0	35.0
Total Split (s)	74.0	74.0	74.0	74.0	36.0	36.0	36.0	36.0
Total Split (%)	67.3%	67.3%	67.3%	67.3%	32.7%	32.7%	32.7%	32.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	4.0	4.0	4.0	4.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	6.0	6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	C-Min	C-Min	C-Min	C-Min	None	None	None	None
v/c Ratio	0.50	0.67	0.26	0.77	0.04	0.07	0.79	0.16
Control Delay	37.3	13.1	10.5	11.6	30.8	15.1	59.4	19.1
Queue Delay	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Total Delay	37.3	13.1	10.5	11.7	30.8	15.1	59.4	19.1
Queue Length 50th (m)	4.2	105.1	1.7	140.5	1.8	0.9	47.4	5.3
Queue Length 95th (m)	#24.9	148.1	m2.6	58.7	6.1	7.6	72.9	15.7
Internal Link Dist (m)	449.7		65.9		131.2		187.8	
Turn Bay Length (m)	30.0	30.0		15.0		40.0		
Base Capacity (vph)	82	2391	121	2343	345	455	348	463
Starvation Cap Reductn	0	0	0	53	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.67	0.26	0.78	0.03	0.05	0.64	0.13

Intersection Summary

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 57 (52%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 80

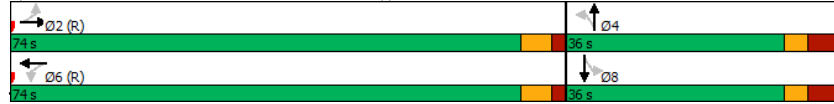
Control Type: Actuated-Coordinated

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 1: Bessarion Road/Burbank Drive & Sheppard Avenue East



Block 7

BA Group - TCS

Synchro 10 Report

EX_PM.syn

HCM Signalized Intersection Capacity Analysis

1: Bessarion Road/Burbank Drive & Sheppard Avenue East

Existing PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↩	↩↩		↩	↩↩		↩	↩		↩	↩	↩
Traffic Volume (vph)	40	1565	10	30	1575	185	10	5	20	220	20	40
Future Volume (vph)	40	1565	10	30	1575	185	10	5	20	220	20	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.5	3.0	3.5	3.5	3.0	3.5	3.5	3.0	3.5	3.5
Total Lost time (s)	5.0	5.0		5.0	5.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	0.98		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00		0.98	1.00	
Frt	1.00	1.00		1.00	0.98		1.00	0.88		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1685	3528		1685	3447		1676	1615		1640	1616	
Flt Permitted	0.07	1.00		0.10	1.00		0.72	1.00		0.74	1.00	
Satd. Flow (perm)	123	3528		178	3447		1265	1615		1279	1616	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	41	1597	10	31	1607	189	10	5	20	224	20	41
RTOR Reduction (vph)	0	0	0	0	7	0	0	16	0	0	24	0
Lane Group Flow (vph)	41	1607	0	31	1789	0	10	9	0	224	37	0
Confl. Peds. (#/hr)	25		55	55		25	5		15	15		5
Heavy Vehicles (%)	0%	1%	0%	0%	1%	2%	0%	0%	0%	1%	6%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	2			6			4			8		
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	73.6	73.6		73.6	73.6		23.4	23.4		23.4	23.4	
Effective Green, g (s)	74.6	74.6		74.6	74.6		24.4	24.4		24.4	24.4	
Actuated g/C Ratio	0.68	0.68		0.68	0.68		0.22	0.22		0.22	0.22	
Clearance Time (s)	6.0	6.0		6.0	6.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	83	2392		120	2337		280	358		283	358	
v/s Ratio Prot		0.46			c0.52			0.01			0.02	
v/s Ratio Perm	0.33			0.17			0.01			c0.18		
v/c Ratio	0.49	0.67		0.26	0.77		0.04	0.03		0.79	0.10	
Uniform Delay, d1	8.6	10.5		6.9	11.8		33.6	33.5		40.4	34.1	
Progression Factor	1.00	1.00		0.65	0.74		1.00	1.00		1.00	1.00	
Incremental Delay, d2	19.5	1.5		3.9	1.8		0.1	0.0		14.0	0.1	
Delay (s)	28.1	12.0		8.3	10.7		33.6	33.5		54.4	34.2	
Level of Service	C	B		A	B		C	C		D	C	
Approach Delay (s)	12.4		10.6		33.6		50.1					
Approach LOS	B		B		C		D					

Intersection Summary

HCM 2000 Control Delay

14.6

HCM 2000 Volume to Capacity ratio

0.77

Actuated Cycle Length (s)

110.0

Intersection Capacity Utilization

78.4%

Analysis Period (min)

15

c Critical Lane Group

HCM 2000 Level of Service	B
Sum of lost time (s)	11.0
ICU Level of Service	D

Block 7

BA Group - TCS

Synchro 10 Report

EX_PM.syn

Queues

2: CTC West Access/Blue Ridge Road & Sheppard Avenue East

Existing PM Peak Hour

									
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBR	SBL	SBR
Lane Configurations		 			 				
Traffic Volume (vph)	15	1535	210	5	1685	120	5	20	10
Future Volume (vph)	15	1535	210	5	1685	120	5	20	10
Lane Group Flow (vph)	16	1616	221	5	1832	126	5	21	11
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	Perm	Perm
Protected Phases	2				6				
Permitted Phases	2		2	6		4	4	8	8
Detector Phase	2	2	2	6	6	4	4	8	8
Switch Phase									
Minimum Initial (s)	27.0	27.0	27.0	27.0	27.0	7.0	7.0	7.0	7.0
Minimum Split (s)	33.0	33.0	33.0	33.0	33.0	36.0	36.0	36.0	36.0
Total Split (s)	73.0	73.0	73.0	73.0	73.0	37.0	37.0	37.0	37.0
Total Split (%)	66.4%	66.4%	66.4%	66.4%	66.4%	33.6%	33.6%	33.6%	33.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	C-Min	C-Min	C-Min	C-Min	C-Min	None	None	None	None
v/c Ratio	0.14	0.61	0.23	0.03	0.69	0.50	0.02	0.08	0.04
Control Delay	6.9	5.3	2.5	6.2	9.1	47.4	0.2	36.2	2.4
Queue Delay	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Total Delay	6.9	5.4	2.5	6.2	9.2	47.4	0.2	36.2	2.4
Queue Length 50th (m)	0.6	48.2	4.6	0.3	98.4	27.1	0.0	4.2	0.0
Queue Length 95th (m)	m1.3	61.1	9.1	m0.4	79.0	38.8	0.0	9.8	1.3
Internal Link Dist (m)	32.6				120.2				
Turn Bay Length (m)	30.0	25.0		35.0					
Base Capacity (vph)	114	2644	976	159	2653	482	449	484	452
Starvation Cap Reductn	0	127	0	0	105	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.64	0.23	0.03	0.72	0.26	0.01	0.04	0.02

Intersection Summary

Cycle Length: 110

Actuated Cycle Length: 110

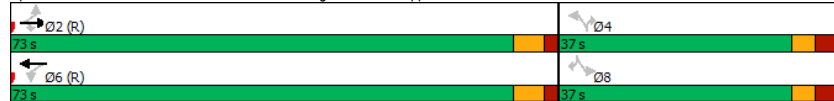
Offset: 56 (51%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

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

Splits and Phases: 2: CTC West Access/Blue Ridge Road & Sheppard Avenue East

Block 7
BA Group - TCSSynchro 10 Report
EX_PM.syn

HCM Signalized Intersection Capacity Analysis

2: CTC West Access/Blue Ridge Road & Sheppard Avenue East

Existing PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	15	1535	210	5	1685	55	120	0	5	20	0	10
Traffic Volume (vph)	15	1535	210	5	1685	55	120	0	5	20	0	10
Future Volume (vph)	16	1616	221	5	1832	58	126	0	5	21	0	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.5	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0		5.0		5.0	5.0		5.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00		1.00	1.00		1.00
Frpb, ped/bikes	1.00	1.00	0.86	1.00	1.00		1.00		0.98	1.00		0.98
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00		0.99		1.00	0.99		1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00		0.85	1.00		0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95		1.00	0.95		1.00
Satd. Flow (prot)	1682	3500	1263	1671	3512		1659		1473	1666		1481
Flt Permitted	0.08	1.00	1.00	0.12	1.00		0.95		1.00	0.95		1.00
Satd. Flow (perm)	150	3500	1263	209	3512		1659		1473	1666		1481
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	16	1616	221	5	1774	58	126	0	5	21	0	11
RTOR Reduction (vph)	0	0	22	0	1	0	0	0	4	0	0	9
Lane Group Flow (vph)	16	1616	199	5	1831	0	126	0	1	21	0	2
Confl. Peds. (#/hr)	20		60	60		20	5		10	10		5
Heavy Vehicles (%)	0%	2%	1%	0%	1%	0%	1%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	4	0	0	0	0	0	0	0	0	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm		Perm	Perm		Perm
Protected Phases	2		6		6		4		4		8	
Permitted Phases	2		2	6			4		4	8		8
Actuated Green, G (s)	82.1	82.1	82.1	82.1	82.1		15.9		15.9	15.9		15.9
Effective Green, g (s)	83.1	83.1	83.1	83.1	83.1		16.9		16.9	16.9		16.9
Actuated g/C Ratio	0.76	0.76	0.76	0.76	0.76		0.15		0.15	0.15		0.15
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		6.0		6.0	6.0		6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0		3.0
Lane Grp Cap (vph)	113	2644	954	157	2653		254		226	255		227
v/s Ratio Prot	0.46		c0.52									
v/s Ratio Perm	0.11		0.16	0.02			c0.08		0.00	0.01		0.00
v/c Ratio	0.14	0.61	0.21	0.03	0.69		0.50		0.00	0.08		0.01
Uniform Delay, d1	3.7	6.1	3.9	3.4	6.9		42.6		39.4	39.9		39.4
Progression Factor	0.69	0.60	0.63	0.98	0.93		1.00		1.00	1.00		1.00
Incremental Delay, d2	2.0	0.8	0.4	0.3	1.0		1.5		0.0	0.1		0.0
Delay (s)	4.5	4.4	2.8	3.6	7.4		44.2		39.4	40.0		39.5
Level of Service	A	A	A	A	A		D		D	D		D
Approach Delay (s)	4.3		7.4		44.0		39.8					
Approach LOS	A		A		D		D					

Intersection Summary

HCM 2000 Control Delay	7.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	76.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Block 7
BA Group - TCSSynchro 10 Report
EX_PM.syn

Queues

3: Provost Drive/Ambrose Road & Sheppard Avenue East

Existing PM Peak Hour

									
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBR	SBL	SBR
Lane Configurations		 			 				
Traffic Volume (vph)	15	1365	185	205	1470	260	175	195	30
Future Volume (vph)	15	1365	185	205	1470	260	175	195	30
Lane Group Flow (vph)	15	1379	187	207	1647	263	177	197	30
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+ov	Perm	Perm
Protected Phases	2		1		6		1		
Permitted Phases	2		2	6		4	4	8	8
Detector Phase	2	2	2	1	6	4	1	8	8
Switch Phase									
Minimum Initial (s)	30.0	30.0	30.0	6.0	30.0	30.0	6.0	30.0	30.0
Minimum Split (s)	37.0	37.0	37.0	10.0	37.0	38.0	10.0	38.0	38.0
Total Split (s)	54.0	54.0	54.0	17.0	71.0	39.0	17.0	39.0	39.0
Total Split (%)	49.1%	49.1%	49.1%	15.5%	64.5%	35.5%	15.5%	35.5%	35.5%
Yellow Time (s)	4.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	1.0	3.0	4.0	1.0	4.0	4.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	6.0	6.0	6.0	3.0	6.0	7.0	3.0	7.0	7.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes				
Recall Mode	C-Min	C-Min	C-Min	None	C-Min	None	None	None	None
v/c Ratio	0.20	0.88	0.27	0.77	0.80	0.56	0.27	0.43	0.06
Control Delay	21.1	29.5	8.8	42.6	20.4	39.3	14.4	35.7	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.1	29.5	8.8	42.6	20.4	39.3	14.4	35.7	0.3
Queue Length 50th (m)	1.3	162.3	9.9	28.6	138.8	50.8	17.1	36.4	0.0
Queue Length 95th (m)	m2.0	#164.1	15.3	#61.1	172.3	78.2	31.6	58.5	0.0
Internal Link Dist (m)	81.5				111.0				
Turn Bay Length (m)	40.0	40.0		165.0					
Base Capacity (vph)	74	1576	702	286	2067	482	667	473	482
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.88	0.27	0.72	0.80	0.55	0.27	0.42	0.06

Intersection Summary

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 72 (65%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 85

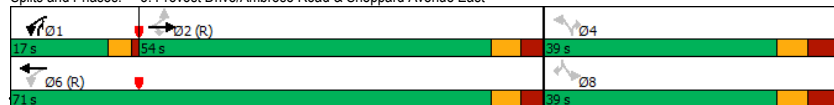
Control Type: Actuated-Coordinated

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 3: Provost Drive/Ambrose Road & Sheppard Avenue East



Block 7

BA Group - TCS

Synchro 10 Report

EX_PM.syn

HCM Signalized Intersection Capacity Analysis

3: Provost Drive/Ambrose Road & Sheppard Avenue East

Existing PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↩	↩↩	↩	↩	↩↩	↩	↩	↩	↩	↩	↩	↩
Traffic Volume (vph)	15	1365	185	205	1470	160	260	0	175	195	0	30
Future Volume (vph)	15	1365	185	205	1470	160	260	0	175	195	0	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.5	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	6.0	6.0	6.0	3.0	6.0		7.0		3.0	7.0		7.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00		1.00	1.00		1.00
Frpb, ped/bikes	1.00	1.00	0.96	1.00	0.99		1.00		0.97	1.00		0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.98		1.00	0.97		1.00
Frft	1.00	1.00	0.85	1.00	0.99		1.00		0.85	1.00		0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95		1.00	0.95		1.00
Satd. Flow (prot)	1680	3500	1449	1668	3436		1657		1432	1629		1465
Flt Permitted	0.09	1.00	1.00	0.08	1.00		0.95		1.00	0.95		1.00
Satd. Flow (perm)	166	3500	1449	134	3436		1657		1432	1629		1465
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	15	1379	187	207	1485	162	263	0	177	197	0	30
RTOR Reduction (vph)	0	0	49	0	7	0	0	0	24	0	0	22
Lane Group Flow (vph)	15	1379	138	207	1640	0	263	0	153	197	0	8
Confl. Peds. (#/hr)	20		25	25		20	15		30	30		15
Heavy Vehicles (%)	0%	2%	0%	1%	1%	1%	0%	0%	2%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	4	4	0	0	0	0	0	0
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm		pm+ov	Perm		Perm
Protected Phases	2		1		6		1		1		1	
Permitted Phases	2		2	6			4		4	8		8
Actuated Green, G (s)	48.6	48.6	48.6	65.0	65.0		30.0		42.4	30.0		30.0
Effective Green, g (s)	49.6	49.6	49.6	66.0	66.0		31.0		44.4	31.0		31.0
Actuated g/C Ratio	0.45	0.45	0.45	0.60	0.60		0.28		0.40	0.28		0.28
Clearance Time (s)	7.0	7.0	7.0	4.0	7.0		8.0		4.0	8.0		8.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0		3.0
Lane Grp Cap (vph)	74	1578	653	267	2061		466		578	459		412
v/s Ratio Prot	c0.39			0.09	c0.48				0.03			
v/s Ratio Perm	0.09		0.09	0.37			c0.16		0.07	0.12		0.01
v/c Ratio	0.20	0.87	0.21	0.78	0.80		0.56		0.26	0.43		0.02
Uniform Delay, d1	18.3	27.4	18.3	29.1	16.8		33.7		21.9	32.3		28.5
Progression Factor	0.75	0.82	0.79	1.00	1.00		1.00		1.00	1.00		1.00
Incremental Delay, d2	5.0	5.8	0.6	13.1	3.3		1.6		0.2	0.6		0.0
Delay (s)	18.6	28.4	15.1	42.2	20.1		35.3		22.1	32.9		28.6
Level of Service	B	C	B	D	C		D		C	C		C
Approach Delay (s)	26.7		22.6		30.0		32.3					
Approach LOS	C		C		C		C		C			

Intersection Summary

HCM 2000 Control Delay	25.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	105.3%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Block 7

BA Group - TCS

Synchro 10 Report

EX_PM.syn

Queues

4: Leslie Street & Sheppard Avenue East

Existing PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↩	↩↩↩	↩	↩	↩↩↩	↩	↩↩	↩	↩	↩↩↩
Traffic Volume (vph)	250	1240	480	210	1205	350	1205	455	110	885
Future Volume (vph)	250	1240	480	210	1205	350	1205	455	110	885
Lane Group Flow (vph)	253	1253	485	212	1369	354	1217	460	111	1141
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	Prot	NA	Perm	Perm	NA
Protected Phases	5	2	7	1	6	7	4			8
Permitted Phases	2		2	6				4	8	
Detector Phase	5	2	7	1	6	7	4	4	8	8
Switch Phase										
Minimum Initial (s)	6.0	38.0	6.0	6.0	38.0	6.0	38.0	38.0	38.0	38.0
Minimum Split (s)	10.0	45.0	12.0	10.0	45.0	12.0	45.0	45.0	45.0	45.0
Total Split (s)	17.0	46.0	30.0	17.0	46.0	30.0	77.0	77.0	47.0	47.0
Total Split (%)	12.1%	32.9%	21.4%	12.1%	32.9%	21.4%	55.0%	55.0%	33.6%	33.6%
Yellow Time (s)	3.0	4.0	3.0	3.0	4.0	3.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	3.0	3.0	1.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-3.0	-1.0	-3.0	-2.0	-1.0	-3.0	-1.0	-1.0	-2.0	-1.0
Total Lost Time (s)	1.0	6.0	3.0	2.0	6.0	3.0	6.0	6.0	5.0	6.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	Min	None	None	Min	None	C-Min	C-Min	C-Min	C-Min
v/c Ratio	0.99	0.86	0.62	0.88	0.97	0.63	0.68	0.58	0.97	0.72
Control Delay	91.9	54.7	16.0	69.4	66.1	59.5	28.4	17.1	122.7	43.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0
Total Delay	91.9	54.7	16.0	69.4	66.1	59.5	28.9	17.1	122.7	43.6
Queue Length 50th (m)	57.9	127.3	47.9	44.9	143.4	49.9	136.8	54.6	32.0	104.1
Queue Length 95th (m)	#116.4	146.8	77.3	#92.3	#176.8	65.1	162.3	90.2	#76.5	126.8
Internal Link Dist (m)		434.4			1078.4		224.4			40.9
Turn Bay Length (m)	170.0		130.0	200.0		175.0				
Base Capacity (vph)	256	1451	813	241	1414	663	1792	787	115	1578
Starvation Cap Reductn	0	0	0	0	0	0	224	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.99	0.86	0.60	0.88	0.97	0.53	0.78	0.58	0.97	0.72

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 77 (55%), Referenced to phase 4:NBT and 8:SBTL, Start of Green

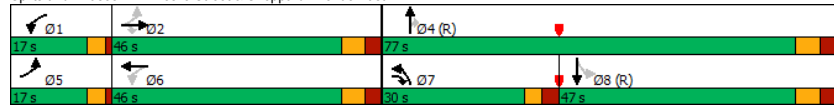
Natural Cycle: 125

Control Type: Actuated-Coordinated

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

Queue shown is maximum after two cycles.

Splits and Phases: 4: Leslie Street & Sheppard Avenue East



Block 7

BA Group - TCS

Synchro 10 Report

EX_PM.syn

HCM Signalized Intersection Capacity Analysis

4: Leslie Street & Sheppard Avenue East

Existing PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↩	↩↩↩	↩	↩	↩↩↩	↩	↩↩	↩	↩	↩	↩↩↩	↩
Traffic Volume (vph)	250	1240	480	210	1205	150	350	1205	455	110	885	245
Future Volume (vph)	250	1240	480	210	1205	150	350	1205	455	110	885	245
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.5	3.0	3.5	3.0	3.0	3.5	3.5
Total Lost time (s)	1.0	6.0	3.0	2.0	6.0		3.0	6.0	6.0	5.0	6.0	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		0.97	0.95	1.00	1.00	0.91	
Frpb, ped/bikes	1.00	1.00	0.92	1.00	0.99		1.00	1.00	0.92	1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	0.99	1.00	
Frft	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	0.97	
Flt Protected	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1773	5079	1385	1755	4913		3440	3535	1375	1666	4790	
Flt Permitted	0.10	1.00	1.00	0.10	1.00		1.00	1.00	1.00	0.20	1.00	
Satd. Flow (perm)	169	5079	1385	171	4913		3440	3535	1375	350	4790	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	253	1253	485	212	1217	152	354	1217	460	111	894	247
RTOR Reduction (vph)	0	0	127	0	11	0	0	0	90	0	34	0
Lane Group Flow (vph)	253	1253	358	212	1358	0	354	1217	370	111	1107	0
Confl. Peds. (#/hr)	80		105	105		80	65		60	60		65
Heavy Vehicles (%)	0%	1%	0%	1%	1%	1%	0%	1%	0%	0%	1%	2%
Bus Blockages (#/hr)	0	0	0	0	4	4	0	0	3	0	4	4
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		Prot	NA	Perm	Perm	NA	
Protected Phases	5	2	7	1	6		7	4			8	
Permitted Phases	2		2	6					4	8		
Actuated Green, G (s)	52.0	39.0	58.9	52.0	39.0		19.9	70.0	70.0	44.1	44.1	
Effective Green, g (s)	58.0	40.0	64.9	56.0	40.0		22.9	71.0	71.0	46.1	45.1	
Actuated g/C Ratio	0.41	0.29	0.46	0.40	0.29		0.16	0.51	0.51	0.33	0.32	
Clearance Time (s)	4.0	7.0	6.0	4.0	7.0		6.0	7.0	7.0	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	
Lane Grp Cap (vph)	253	1451	642	238	1403		562	1792	697	115	1543	
v/s Ratio Prot	c0.11	0.25	0.09	0.10	c0.28		0.10	c0.34			0.23	
v/s Ratio Perm	0.30		0.17	0.26					0.27	c0.32		
v/c Ratio	1.00	0.86	0.56	0.89	0.97		0.63	0.68	0.53	0.97	0.72	
Uniform Delay, d1	43.0	47.4	27.2	38.6	49.4		54.6	25.9	23.3	46.2	41.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	56.6	5.6	1.1	31.1	16.7		2.2	2.1	2.9	75.0	2.9	
Delay (s)	99.6	53.0	28.2	69.7	66.1		56.8	28.0	26.1	121.2	44.7	
Level of Service	F	D	C	E	E		E	C	C	F	D	
Approach Delay (s)		52.9			66.6			32.6			51.5	
Approach LOS		D			E			C			D	

Intersection Summary

HCM 2000 Control Delay	49.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	128.0%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Block 7

BA Group - TCS

Synchro 10 Report

EX_PM.syn

HCM Unsignalized Intersection Capacity Analysis

5: McMahon Drive/CTC South Access & Esther Shiner Boulevard

Existing PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	5	5	0	60	0	165	0	5	40	250	25	0
Future Volume (vph)	5	5	0	60	0	165	0	5	40	250	25	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	5	5	0	64	0	176	0	5	43	266	27	0
Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2							
Volume Total (vph)	10	240	48	293	0							
Volume Left (vph)	5	64	0	266	0							
Volume Right (vph)	0	176	43	0	0							
Hadj (s)	0.10	-0.39	-0.54	0.47	0.00							
Departure Headway (s)	5.3	4.5	4.5	5.6	5.2							
Degree Utilization, x	0.01	0.30	0.06	0.46	0.00							
Capacity (veh/h)	613	748	739	617	684							
Control Delay (s)	8.4	9.4	7.8	12.1	7.0							
Approach Delay (s)	8.4	9.4	7.8	12.1								
Approach LOS	A	A	A	B								
Intersection Summary												
Delay	10.6											
Level of Service	B											
Intersection Capacity Utilization	43.0%			ICU Level of Service					A			
Analysis Period (min)	15											

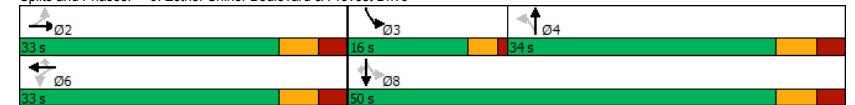
Queues

6: Esther Shiner Boulevard & Provost Drive

Existing PM Peak Hour

										
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	50	235	10	160	205	15	80	225	30	50
Future Volume (vph)	50	235	10	160	205	15	80	225	30	50
Lane Group Flow (vph)	0	301	10	163	209	0	138	230	31	51
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	pm+pt	NA	Perm
Protected Phases	2		6		6		4		3	
Permitted Phases	2		6		6		4		8	
Detector Phase	2		6		6		4		8	
Switch Phase										
Minimum Initial (s)	26.0	26.0	26.0	26.0	26.0	7.0	7.0	6.0	7.0	7.0
Minimum Split (s)	33.0	33.0	33.0	33.0	33.0	34.0	34.0	10.0	34.0	34.0
Total Split (s)	33.0	33.0	33.0	33.0	33.0	34.0	34.0	16.0	50.0	50.0
Total Split (%)	39.8%	39.8%	39.8%	39.8%	39.8%	41.0%	41.0%	19.3%	60.2%	60.2%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	1.0	3.0	3.0
Lost Time Adjust (s)	-1.0		-1.0		-1.0		-1.0		-1.0	
Total Lost Time (s)	6.0		6.0		6.0		6.0		6.0	
Lead/Lag						Lag	Lag	Lead		
Lead-Lag Optimize?						Yes	Yes	Yes		
Recall Mode	Min	Min	Min	Min	Min	None	None	None	None	None
v/c Ratio	0.41	0.04	0.04	0.20	0.29	0.40	0.41	0.05	0.09	0.09
Control Delay	18.3	16.7	16.1	4.2	22.2	13.5	13.5	10.9	3.5	3.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.3	16.7	16.1	4.2	22.2	13.5	13.5	10.9	3.5	3.5
Queue Length 50th (m)	25.6	0.7	12.6	0.0	12.6	17.8	17.8	2.3	0.0	0.0
Queue Length 95th (m)	65.7	4.8	35.3	14.6	26.5	30.0	30.0	6.3	4.8	4.8
Internal Link Dist (m)	80.2		216.2		86.8		118.2			
Turn Bay Length (m)	105.0						75.0			
Base Capacity (vph)	730	268	802	733		743	577	1233	1029	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.04	0.04	0.20	0.29		0.19	0.40	0.03	0.05
Intersection Summary										
Cycle Length: 83										
Actuated Cycle Length: 64.7										
Natural Cycle: 80										
Control Type: Semi Act-Uncoord										

Splits and Phases: 6: Esther Shiner Boulevard & Provost Drive



HCM Signalized Intersection Capacity Analysis 6: Esther Shiner Boulevard & Provost Drive

Existing PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔	↔		↔		↔	↔	↔
Traffic Volume (vph)	50	235	10	10	160	205	15	80	40	225	30	50
Future Volume (vph)	50	235	10	10	160	205	15	80	40	225	30	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.0	3.5	3.0	3.5	3.5	3.0	3.5	3.5	3.0
Total Lost time (s)		6.0		6.0	6.0	6.0		6.0		6.0	6.0	6.0
Lane Util. Factor		1.00		1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frpb, ped/bikes		1.00		1.00	1.00	0.96		0.99		1.00	1.00	0.96
Flpb, ped/bikes		1.00		0.99	1.00	1.00		1.00		1.00	1.00	1.00
Frt		1.00		1.00	1.00	0.85		0.96		1.00	1.00	0.85
Flt Protected		0.99		0.95	1.00	1.00		0.99		0.95	1.00	1.00
Satd. Flow (prot)		1819		1041	1860	1435		1692		1677	1756	1450
Flt Permitted		0.92		0.57	1.00	1.00		0.96		0.57	1.00	1.00
Satd. Flow (perm)		1693		624	1860	1435		1632		1012	1756	1450
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	51	240	10	10	163	209	15	82	41	230	31	51
RTOR Reduction (vph)	0	1	0	0	0	121	0	23	0	0	0	31
Lane Group Flow (vph)	0	300	0	10	163	88	0	115	0	230	31	20
Confl. Peds. (#/hr)	35		15	15		35	15		15	15		15
Heavy Vehicles (%)	4%	1%	0%	60%	1%	1%	6%	4%	7%	0%	7%	0%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA	pm+pt	NA	Perm	
Protected Phases		2			6			4		3	8	
Permitted Phases	2			6		6	4			8		8
Actuated Green, G (s)		26.9		26.9	26.9	26.9		10.0		25.2	25.2	25.2
Effective Green, g (s)		27.9		27.9	27.9	27.9		11.0		26.2	26.2	26.2
Actuated g/C Ratio		0.42		0.42	0.42	0.42		0.17		0.40	0.40	0.40
Clearance Time (s)		7.0		7.0	7.0	7.0		7.0		4.0	7.0	7.0
Vehicle Extension (s)		3.0		3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)		714		263	785	605		271		523	696	574
v/s Ratio Prot					0.09					c0.08	0.02	
v/s Ratio Perm		c0.18		0.02		0.06		0.07		c0.09		0.01
v/c Ratio		0.42		0.04	0.21	0.15		0.42		0.44	0.04	0.04
Uniform Delay, d1		13.4		11.2	12.1	11.8		24.7		14.2	12.3	12.2
Progression Factor		1.00		1.00	1.00	1.00		1.00		1.00	1.00	1.00
Incremental Delay, d2		0.4		0.1	0.1	0.1		1.1		0.6	0.0	0.0
Delay (s)		13.8		11.3	12.2	11.9		25.8		14.8	12.3	12.2
Level of Service		B		B	B	B		C		B	B	B
Approach Delay (s)		13.8			12.0			25.8			14.1	
Approach LOS		B			B			C			B	

Intersection Summary

HCM 2000 Control Delay	14.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	66.1	Sum of lost time (s)	15.0
Intersection Capacity Utilization	78.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Queues

7: Esther Shiner Boulevard & Old Leslie Street

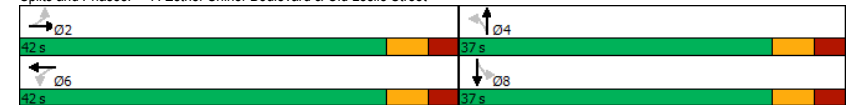
Existing PM Peak Hour

Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	40	550	480	5	0	340	0
Future Volume (vph)	40	550	480	5	0	340	0
Lane Group Flow (vph)	42	578	578	5	5	354	78
Turn Type	Perm	NA	NA	Perm	NA	Perm	NA
Protected Phases		2	6		4		8
Permitted Phases	2			4		8	
Detector Phase	2	2	6	4	4	8	8
Switch Phase							
Minimum Initial (s)	28.0	28.0	28.0	7.0	7.0	7.0	7.0
Minimum Split (s)	35.0	35.0	35.0	37.0	37.0	37.0	37.0
Total Split (s)	42.0	42.0	42.0	37.0	37.0	37.0	37.0
Total Split (%)	53.2%	53.2%	53.2%	46.8%	46.8%	46.8%	46.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	Min	Min	Min	None	None	None	None
v/c Ratio	0.13	0.36	0.37	0.01	0.01	0.76	0.12
Control Delay	14.2	13.6	13.1	12.0	0.0	29.1	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.2	13.6	13.1	12.0	0.0	29.1	0.4
Queue Length 50th (m)	2.9	23.5	22.3	0.4	0.0	37.9	0.0
Queue Length 95th (m)	10.1	42.6	41.3	2.3	0.0	66.6	0.0
Internal Link Dist (m)		106.6	130.2		43.8		121.9
Turn Bay Length (m)	40.0			10.0		40.0	
Base Capacity (vph)	402	1984	1932	573	854	629	803
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.29	0.30	0.01	0.01	0.56	0.10

Intersection Summary

Cycle Length: 79
Actuated Cycle Length: 64.7
Natural Cycle: 75
Control Type: Semi Act-Uncoord

Splits and Phases: 7: Esther Shiner Boulevard & Old Leslie Street



HCM Signalized Intersection Capacity Analysis 7: Esther Shiner Boulevard & Old Leslie Street

Existing PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰
Traffic Volume (vph)	40	550	5	0	480	75	5	0	5	340	0	75
Future Volume (vph)	40	550	5	0	480	75	5	0	5	340	0	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.5	3.0	3.5	3.5	3.0	3.5	3.5	3.0	3.5	3.5
Total Lost time (s)	6.0	6.0			6.0	6.0	6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95			0.95	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00			0.99	1.00	0.98	1.00		0.94	0.94	
Flpb, ped/bikes	0.99	1.00			1.00	0.96	1.00	0.99		1.00	1.00	
Flt Protected	1.00	1.00			0.98	1.00	0.85	1.00		0.85	0.85	
Satd. Flow (prot)	1635	3529			3416	1611	1568	1641		1431	1431	
Flt Permitted	0.42	1.00			1.00	0.71	1.00	0.75		1.00	1.00	
Satd. Flow (perm)	717	3529			3416	1198	1568	1303		1431	1431	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	42	573	5	0	500	78	5	0	5	354	0	78
RTOR Reduction (vph)	0	1	0	0	16	0	0	3	0	0	50	0
Lane Group Flow (vph)	42	577	0	0	562	0	5	2	0	354	28	0
Confl. Peds. (#/hr)	20		20	20		20	75		10	10		75
Heavy Vehicles (%)	2%	1%	0%	0%	1%	7%	0%	0%	0%	2%	0%	5%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	28.3	28.3			28.3		22.3	22.3		22.3	22.3	
Effective Green, g (s)	29.3	29.3			29.3		23.3	23.3		23.3	23.3	
Actuated g/C Ratio	0.45	0.45			0.45		0.36	0.36		0.36	0.36	
Clearance Time (s)	7.0	7.0			7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	325	1600			1549		432	565		469	516	
v/s Ratio Prot		0.16			c0.16			0.00			0.02	
v/s Ratio Perm	0.06						0.00			c0.27		
v/c Ratio	0.13	0.36			0.36		0.01	0.00		0.75	0.05	
Uniform Delay, d1	10.2	11.5			11.5		13.3	13.2		18.1	13.5	
Progression Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.1			0.1		0.0	0.0		6.8	0.0	
Delay (s)	10.4	11.7			11.7		13.3	13.2		24.9	13.5	
Level of Service	B	B			B		B	B		C	B	
Approach Delay (s)		11.6			11.7			13.2			22.9	
Approach LOS		B			B			B			C	

Intersection Summary

HCM 2000 Control Delay	14.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	64.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	68.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Block 7
BA Group - TCS

Synchro 10 Report
EX_PM.syn

Queues

8: Leslie Street & Esther Shiner Boulevard

Existing PM Peak Hour

Lane Group	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBT	SBR
Lane Configurations	↰	↰	↰	↰	↰	↰	↰	↰	↰
Traffic Volume (vph)	175	675	150	70	335	1730	135	1570	160
Future Volume (vph)	175	675	150	70	335	1730	135	1570	160
Lane Group Flow (vph)	182	703	156	73	349	1802	141	1635	167
Turn Type	Perm	pt+ov	Perm	Perm	pm+pt	NA	Perm	NA	Perm
Protected Phases		4 5			5	2		6	
Permitted Phases	4		8	8	2		2		6
Detector Phase	4	4 5	8	8	5	2	2	6	6
Switch Phase									
Minimum Initial (s)	7.0		7.0	7.0	6.0	25.0	25.0	25.0	25.0
Minimum Split (s)	46.0		46.0	46.0	10.0	31.0	31.0	31.0	31.0
Total Split (s)	46.0		46.0	46.0	28.0	79.0	79.0	51.0	51.0
Total Split (%)	36.8%		36.8%	36.8%	22.4%	63.2%	63.2%	40.8%	40.8%
Yellow Time (s)	4.0		4.0	4.0	3.0	4.0	4.0	4.0	4.0
All-Red Time (s)	4.0		4.0	4.0	1.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-2.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	7.0		7.0	7.0	2.0	5.0	5.0	5.0	5.0
Lead/Lag					Lead		Lag	Lag	
Lead-Lag Optimize?					Yes		Yes	Yes	
Recall Mode	None		None	None	None	C-Min	C-Min	C-Min	C-Min
v/c Ratio	0.40	0.81	0.32	0.16	0.89	0.58	0.17	0.80	0.25
Control Delay	37.7	25.5	35.9	10.8	40.5	22.2	4.8	37.8	4.8
Queue Delay	0.0	16.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.7	41.6	35.9	10.8	40.5	22.2	4.8	37.8	4.8
Queue Length 50th (m)	36.6	99.9	30.6	2.2	76.2	153.8	9.0	143.4	0.0
Queue Length 95th (m)	58.3	157.6	49.7	13.5	m#100.8	160.9	m11.0	164.8	14.9
Internal Link Dist (m)						231.2		224.4	
Turn Bay Length (m)					150.0		170.0		175.0
Base Capacity (vph)	489	874	515	483	417	3106	854	2040	679
Starvation Cap Reductn	0	171	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.37	1.00	0.30	0.15	0.84	0.58	0.17	0.80	0.25

Intersection Summary

Cycle Length: 125
Actuated Cycle Length: 125
Offset: 98 (78%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 8: Leslie Street & Esther Shiner Boulevard



Block 7
BA Group - TCS

Synchro 10 Report
EX_PM.syn

HCM Signalized Intersection Capacity Analysis 8: Leslie Street & Esther Shiner Boulevard

Existing PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								  			  	
Traffic Volume (vph)	175	0	675	150	0	70	335	1730	135	0	1570	160
Future Volume (vph)	175	0	675	150	0	70	335	1730	135	0	1570	160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.5	3.5	3.0
Total Lost time (s)	7.0		7.0	7.0		7.0	2.0	5.0	5.0		5.0	5.0
Lane Util. Factor	1.00		1.00	1.00		1.00	1.00	0.91	1.00		0.91	1.00
Frpb, ped/bikes	1.00		1.00	1.00		0.94	1.00	1.00	0.93		1.00	0.97
Flpb, ped/bikes	0.95		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00
Frt	1.00		0.85	1.00		0.85	1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95		1.00	0.95		1.00	1.00	1.00	1.00		1.00	1.00
Satd. Flow (prot)	1570		1507	1652		1416	1739	5079	1308		5079	1442
Flt Permitted	0.95		1.00	0.95		1.00	0.08	1.00	1.00		1.00	1.00
Satd. Flow (perm)	1570		1507	1652		1416	131	5079	1308		5079	1442
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	182	0	703	156	0	73	349	1802	141	0	1635	167
RTOR Reduction (vph)	0	0	101	0	0	43	0	0	55	0	0	100
Lane Group Flow (vph)	182	0	602	156	0	30	349	1802	86	0	1635	67
Confl. Peds. (#/hr)	50					50	15		20	20		15
Heavy Vehicles (%)	2%	0%	0%	2%	0%	0%	2%	1%	6%	0%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	3	0	0	0
Turn Type	Perm		pt+ov	Perm		Perm	pm+pt	NA	Perm		NA	Perm
Protected Phases			4 5				5	2			6	
Permitted Phases	4			8		8	2		2			6
Actuated Green, G (s)	35.5		65.8	35.5		35.5	75.5	75.5	75.5		49.2	49.2
Effective Green, g (s)	36.5		66.8	36.5		36.5	77.5	76.5	76.5		50.2	50.2
Actuated g/C Ratio	0.29		0.53	0.29		0.29	0.62	0.61	0.61		0.40	0.40
Clearance Time (s)	8.0			8.0		8.0	4.0	6.0	6.0		6.0	6.0
Vehicle Extension (s)	3.0			3.0		3.0	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	458		805	482		413	393	3108	800		2039	579
v/s Ratio Prot			c0.40				c0.17	0.35			c0.32	
v/s Ratio Perm	0.12			0.09		0.02	0.38		0.07			0.05
v/c Ratio	0.40		0.75	0.32		0.07	0.89	0.58	0.11		0.80	0.12
Uniform Delay, d1	35.4		22.6	34.6		32.0	38.0	14.6	10.1		33.0	23.5
Progression Factor	1.00		1.00	1.00		1.00	0.69	1.44	2.56		1.00	1.00
Incremental Delay, d2	0.6		3.8	0.4		0.1	13.2	0.5	0.2		3.4	0.4
Delay (s)	36.0		26.4	35.0		32.1	39.6	21.4	25.9		36.5	23.9
Level of Service	D		C	C		C	D	C	C		D	C
Approach Delay (s)		28.4			34.1			24.5			35.3	
Approach LOS		C			C			C			D	
Intersection Summary												
HCM 2000 Control Delay	29.3			HCM 2000 Level of Service					C			
HCM 2000 Volume to Capacity ratio	0.84											
Actuated Cycle Length (s)	125.0			Sum of lost time (s)					16.0			
Intersection Capacity Utilization	96.3%			ICU Level of Service					F			
Analysis Period (min)	15											
c Critical Lane Group												

Block 7
BA Group - TCS

Synchro 10 Report
EX_PM.syn

Queues

9: Leslie Street & Oriole GO Station Access/Hwy 401 WB Off-Ramp

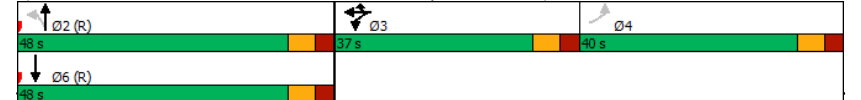
Existing PM Peak Hour

Lane Group	EBL	EBR	WBL	WBT	WBR	NBL	NBT	SBT
Lane Configurations	↰	↱	↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	105	145	715	15	790	15	1305	1800
Future Volume (vph)	105	145	715	15	790	15	1305	1800
Lane Group Flow (vph)	109	151	745	419	420	16	1359	1896
Turn Type	Perm	Free	Split	NA	Prot	Perm	NA	NA
Protected Phases			3	3	3		2	6
Permitted Phases	4	Free				2		
Detector Phase	4		3	3	3	2	2	6
Switch Phase								
Minimum Initial (s)	7.0		7.0	7.0	7.0	27.0	27.0	27.0
Minimum Split (s)	39.0		14.0	14.0	14.0	34.0	34.0	34.0
Total Split (s)	40.0		37.0	37.0	37.0	48.0	48.0	48.0
Total Split (%)	32.0%		29.6%	29.6%	29.6%	38.4%	38.4%	38.4%
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lag		Lead	Lead	Lead			
Lead-Lag Optimize?	Yes		Yes	Yes	Yes			
Recall Mode	None		None	None	None	C-Min	C-Min	C-Min
v/c Ratio	0.70	0.10	0.90	0.72	0.73	0.28	0.88	0.85
Control Delay	70.1	0.1	60.7	20.4	21.4	31.6	34.0	31.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.1	0.1	60.7	20.4	21.4	31.6	34.0	31.1
Queue Length 50th (m)	26.9	0.0	96.3	30.5	31.2	2.3	177.8	168.4
Queue Length 95th (m)	43.4	0.0	#130.0	73.4	75.4	m3.7	#263.4	#234.8
Internal Link Dist (m)			220.4				38.0	231.2
Turn Bay Length (m)				150.0	35.0			
Base Capacity (vph)	242	1507	836	588	575	57	1539	2228
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.10	0.89	0.71	0.73	0.28	0.88	0.85

Intersection Summary

Cycle Length: 125
Actuated Cycle Length: 125
Offset: 25 (20%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 9: Leslie Street & Oriole GO Station Access/Hwy 401 WB Off-Ramp



Block 7
BA Group - TCS

Synchro 10 Report
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HCM Signalized Intersection Capacity Analysis

9: Leslie Street & Oriole GO Station Access/Hwy 401 WB Off-Ramp

Existing PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	→	↱	↰	→	↱	↰	→	↱	↰	→	↱
Traffic Volume (vph)	105	0	145	715	15	790	15	1305	0	0	1800	20
Future Volume (vph)	105	0	145	715	15	790	15	1305	0	0	1800	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.0		3.0	6.0	6.0	6.0	6.0	6.0			6.0	
Lane Util. Factor	1.00		1.00	0.97	0.95	0.95	1.00	0.95			0.91	
Frpb, ped/bikes	1.00		1.00	1.00	0.97	1.00	1.00	1.00			1.00	
Flpb, ped/bikes	0.99		1.00	1.00	1.00	1.00	1.00	1.00			1.00	
Frt	1.00		0.85	1.00	0.86	0.85	1.00	1.00			1.00	
Flt Protected	0.95		1.00	1.00	1.00	1.00	0.95	1.00			1.00	
Satd. Flow (prot)	1668		1507	3373	1483	1432	1685	3535			5119	
Flt Permitted	0.51		1.00	1.00	1.00	1.00	0.07	1.00			1.00	
Satd. Flow (perm)	890		1507	3373	1483	1432	130	3535			5119	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	109	0	151	745	16	823	16	1359	0	0	1875	21
RTOR Reduction (vph)	0	0	0	0	221	221	0	0	0	0	1	0
Lane Group Flow (vph)	109	0	151	745	198	199	16	1359	0	0	1895	0
Confl. Peds. (#/hr)	15					15	5		10	10		5
Heavy Vehicles (%)	0%	0%	0%	2%	0%	0%	0%	1%	0%	0%	0%	0%
Turn Type	Perm		Free	Split	NA	Prot	Perm	NA			NA	
Protected Phases				3	3	3		2			6	
Permitted Phases	4		Free				2					
Actuated Green, G (s)	20.9		125.0	29.7	29.7	29.7	53.4	53.4			53.4	
Effective Green, g (s)	21.9		125.0	30.7	30.7	30.7	54.4	54.4			54.4	
Actuated g/C Ratio	0.18		1.00	0.25	0.25	0.25	0.44	0.44			0.44	
Clearance Time (s)	7.0			7.0	7.0	7.0	7.0	7.0			7.0	
Vehicle Extension (s)	3.0			3.0	3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)	155		1507	828	364	351	56	1538			2227	
v/s Ratio Prot				c0.22	0.13	0.14		c0.38			0.37	
v/s Ratio Perm	c0.12		0.10				0.12					
v/c Ratio	0.70		0.10	0.90	0.54	0.57	0.29	0.88			0.85	
Uniform Delay, d1	48.5		0.0	45.7	41.1	41.3	22.8	32.4			31.7	
Progression Factor	1.00		1.00	1.00	1.00	1.00	0.70	0.81			0.85	
Incremental Delay, d2	13.5		0.1	12.6	1.7	2.1	9.3	5.9			2.7	
Delay (s)	62.0		0.1	58.2	42.7	43.4	25.1	32.1			29.5	
Level of Service	E		A	E	D	D	C	C			C	
Approach Delay (s)		26.1			50.2			32.0			29.5	
Approach LOS		C			D			C			C	

Intersection Summary

HCM 2000 Control Delay	36.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	89.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Block 7
BA Group - TCS

Synchro 10 Report
EX_PM.syn

Queues

10: Leslie Street & Hwy 401 EB Off-Ramp/Lesmill Road

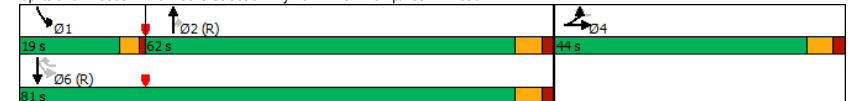
Existing PM Peak Hour

Lane Group	EBL	EBT	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰	↱	↱	↱	↱	↰	↱
Traffic Volume (vph)	355	125	880	2115	110	240	1420
Future Volume (vph)	355	125	880	2115	110	240	1420
Lane Group Flow (vph)	179	306	889	2136	111	242	1434
Turn Type	Split	NA	Perm	NA	Perm	pm+pt	NA
Protected Phases	4	4		2		1	6
Permitted Phases			4 6		2	6	
Detector Phase	4	4	4 6	2	2	1	6
Switch Phase							
Minimum Initial (s)	7.0	7.0		20.0	20.0	6.0	20.0
Minimum Split (s)	43.0	43.0		26.0	26.0	10.0	26.0
Total Split (s)	44.0	44.0		62.0	62.0	19.0	81.0
Total Split (%)	35.2%	35.2%		49.6%	49.6%	15.2%	64.8%
Yellow Time (s)	4.0	4.0		4.0	4.0	3.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	1.0	2.0
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-3.0	-1.0
Total Lost Time (s)	5.0	5.0		5.0	5.0	1.0	5.0
Lead/Lag				Lag	Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	Yes	
Recall Mode	None	None		C-Min	C-Min	None	C-Min
v/c Ratio	0.56	0.47	0.59	0.75	0.14	0.73	0.56
Control Delay	50.4	45.2	1.7	24.6	8.6	27.8	13.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.4	45.2	1.7	24.6	8.6	27.8	13.3
Queue Length 50th (m)	46.8	39.2	0.0	145.9	5.6	33.4	146.8
Queue Length 95th (m)	63.4	46.8	0.0	212.2	18.6	m54.0	213.4
Internal Link Dist (m)		272.4		188.8			87.0
Turn Bay Length (m)	130.0				30.0	80.0	
Base Capacity (vph)	498	1021	1509	2841	811	346	2570
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.36	0.30	0.59	0.75	0.14	0.70	0.56

Intersection Summary

Cycle Length: 125
Actuated Cycle Length: 125
Offset: 101 (81%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 10: Leslie Street & Hwy 401 EB Off-Ramp/Lesmill Road



Block 7
BA Group - TCS

Synchro 10 Report
EX_PM.syn

HCM Signalized Intersection Capacity Analysis

10: Leslie Street & Hwy 401 EB Off-Ramp/Lesmill Road

Existing PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰
Traffic Volume (vph)	355	125	0	0	0	880	0	2115	110	240	1420	0
Future Volume (vph)	355	125	0	0	0	880	0	2115	110	240	1420	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900
Lane Width	3.0	3.5	3.5	3.5	3.5	3.0	3.5	3.5	3.0	3.0	3.5	3.5
Total Lost time (s)	5.0	5.0				5.0	5.0	5.0	1.0	5.0		
Lane Util. Factor	0.91	0.91				1.00	0.91	1.00	1.00	0.95		
Frpb, ped/bikes	1.00	1.00				1.00	1.00	0.97	1.00	1.00		
Flpb, ped/bikes	1.00	1.00				1.00	1.00	1.00	1.00	1.00		
Frft	1.00	1.00				0.86	1.00	0.85	1.00	1.00		
Flt Protected	1.00	0.97				1.00	1.00	1.00	1.00	1.00		
Satd. Flow (prot)	1598	3276				1519	5029	1388	1848	3570		
Flt Permitted	1.00	0.97				1.00	1.00	1.00	0.05	1.00		
Satd. Flow (perm)	1598	3276				1519	5029	1388	100	3570		
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	359	126	0	0	0	889	0	2136	111	242	1434	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	27	0	0	0
Lane Group Flow (vph)	179	306	0	0	0	889	0	2136	84	242	1434	0
Confl. Peds. (#/hr)			5	5			5		10	10		5
Heavy Vehicles (%)	1%	2%	3%	0%	0%	1%	0%	2%	4%	1%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	3	0	0	0
Turn Type	Split	NA				Perm	NA	Perm	pm+pt	NA		
Protected Phases	4	4					2		1	6		
Permitted Phases						4 6		2	6			
Actuated Green, G (s)	24.0	24.0				125.0	69.6	69.6	89.0	89.0		
Effective Green, g (s)	25.0	25.0				125.0	70.6	70.6	92.0	90.0		
Actuated g/C Ratio	0.20	0.20				1.00	0.56	0.56	0.74	0.72		
Clearance Time (s)	6.0	6.0					6.0	6.0	4.0	6.0		
Vehicle Extension (s)	3.0	3.0					3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	319	655				1519	2840	783	330	2570		
v/s Ratio Prot	0.11	0.09					c0.42		c0.11	0.40		
v/s Ratio Perm						c0.59		0.06	0.43			
v/c Ratio	0.56	0.47				0.59	0.75	0.11	0.73	0.56		
Uniform Delay, d1	45.1	44.1				0.0	20.6	12.6	36.5	8.2		
Progression Factor	1.00	1.00				1.00	1.00	1.00	0.62	1.35		
Incremental Delay, d2	2.3	0.5				0.6	1.9	0.3	4.6	0.5		
Delay (s)	47.3	44.7				0.6	22.5	12.9	27.3	11.5		
Level of Service	D	D				A	C	B	C	B		
Approach Delay (s)		45.6			0.6		22.0			13.8		
Approach LOS		D			A		C			B		
Intersection Summary												
HCM 2000 Control Delay		18.0				HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio		0.73										
Actuated Cycle Length (s)		125.0				Sum of lost time (s)			11.0			
Intersection Capacity Utilization		120.9%				ICU Level of Service			H			
Analysis Period (min)		15										
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

11: CTC North Access & Sheppard Avenue East

Existing PM Peak Hour

							
Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations	 			 			
Traffic Volume (veh/h)	1525	35	30	1730	15	40	
Future Volume (Veh/h)	1525	35	30	1730	15	40	
Sign Control	Free			Free	Stop		
Grade	0%			0%	0%		
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	
Hourly flow rate (vph)	1556	36	31	1765	15	41	
Pedestrians					50		
Lane Width (m)					3.0		
Walking Speed (m/s)					1.2		
Percent Blockage					3		
Right turn flare (veh)							
Median type	None			None			
Median storage (veh)							
Upstream signal (m)	144			105			
pX, platoon unblocked			0.77		0.74	0.77	
vC, conflicting volume			1642		2568	846	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol			1247		1056	219	
tC, single (s)			4.1		6.8	6.9	
tC, 2 stage (s)							
tF (s)			2.2		3.5	3.3	
p0 queue free %			93		90	93	
cM capacity (veh/h)			423		149	590	
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	1037	555	31	882	882	15	41
Volume Left	0	0	31	0	0	15	0
Volume Right	0	36	0	0	0	0	41
cSH	1700	1700	423	1700	1700	149	590
Volume to Capacity	0.61	0.33	0.07	0.52	0.52	0.10	0.07
Queue Length 95th (m)	0.0	0.0	1.9	0.0	0.0	2.6	1.8
Control Delay (s)	0.0	0.0	14.2	0.0	0.0	31.9	11.6
Lane LOS			B			D	B
Approach Delay (s)	0.0		0.2			17.0	
Approach LOS						C	
Intersection Summary							
Average Delay			0.4				
Intersection Capacity Utilization			57.8%		ICU Level of Service		B
Analysis Period (min)			15				

HCM Unsignalized Intersection Capacity Analysis
12: Provost Drive & CTC East Access/Singer Court

Existing PM Peak Hour

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (veh/h)	60	0	5	25	0	60	25	270	40	60	275	55	
Future Volume (Veh/h)	60	0	5	25	0	60	25	270	40	60	275	55	
Sign Control		Stop				Stop				Free			
Grade		0%				0%				0%			
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	
Hourly flow rate (vph)	64	0	5	27	0	64	27	287	43	64	293	59	
Pedestrians		20				70				20			
Lane Width (m)		3.5				3.5				3.3			
Walking Speed (m/s)		1.2				1.2				1.2			
Percent Blockage		2				6				2			
Right turn flare (veh)													
Median type		None								None			
Median storage (veh)													
Upstream signal (m)		142								103			
pX, platoon unblocked													
vC, conflicting volume	752	924	221	737	932	255	372						400
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	752	924	221	737	932	255	372						400
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1						4.1
tC, 2 stage (s)													
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2						2.2
p0 queue free %	73	100	99	89	100	91	98						94
cM capacity (veh/h)	236	232	761	253	229	697	1178						1103
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3					
Volume Total	69	91	27	191	139	64	195	157					
Volume Left	64	27	27	0	0	64	0	0					
Volume Right	5	64	0	0	43	0	0	59					
cSH	249	459	1178	1700	1700	1103	1700	1700					
Volume to Capacity	0.28	0.20	0.02	0.11	0.08	0.06	0.11	0.09					
Queue Length 95th (m)	8.8	5.8	0.6	0.0	0.0	1.5	0.0	0.0					
Control Delay (s)	24.9	14.8	8.1	0.0	0.0	8.5	0.0	0.0					
Lane LOS	C	B	A					A					
Approach Delay (s)	24.9	14.8	0.6					1.3					
Approach LOS	C	B											
Intersection Summary													
Average Delay	4.1												
Intersection Capacity Utilization	38.0%			ICU Level of Service					A				
Analysis Period (min)	15												

HCM Unsignalized Intersection Capacity Analysis
13: IKEA Driveway & Esther Shiner Boulevard

Existing PM Peak Hour

							
Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations	 			 			
Traffic Volume (veh/h)	395	105	185	375	0	200	
Future Volume (Veh/h)	395	105	185	375	0	200	
Sign Control	Free			Free	Stop		
Grade	0%			0%	0%		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	
Hourly flow rate (vph)	420	112	197	399	0	213	
Pedestrians					45		
Lane Width (m)					3.0		
Walking Speed (m/s)					1.2		
Percent Blockage					3		
Right turn flare (veh)							
Median type	None			None			
Median storage (veh)							
Upstream signal (m)	240			130			
pX, platoon unblocked							
vC, conflicting volume			465		1058	255	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol			465		1058	255	
tC, single (s)			4.1		6.8	6.9	
tC, 2 stage (s)							
tF (s)			2.2		3.5	3.3	
p0 queue free %			82		100	71	
cM capacity (veh/h)			1072		176	727	
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1
Volume Total	210	210	112	197	200	200	213
Volume Left	0	0	0	197	0	0	0
Volume Right	0	0	112	0	0	0	213
cSH	1700	1700	1700	1072	1700	1700	727
Volume to Capacity	0.12	0.12	0.07	0.18	0.12	0.12	0.29
Queue Length 95th (m)	0.0	0.0	0.0	5.4	0.0	0.0	9.8
Control Delay (s)	0.0	0.0	0.0	9.1	0.0	0.0	12.0
Lane LOS				A			B
Approach Delay (s)	0.0			3.0			12.0
Approach LOS							B
Intersection Summary							
Average Delay	3.2						
Intersection Capacity Utilization	31.8%			ICU Level of Service			A
Analysis Period (min)	15						

Queues

1: Bessarion Road/Burbank Drive & Sheppard Avenue East

Future Background AM Peak Hour

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		  		  				 
Traffic Volume (vph)	25	1570	15	1390	15	20	275	15
Future Volume (vph)	25	1570	15	1390	15	20	275	15
Lane Group Flow (vph)	28	1755	17	1666	17	55	306	84
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases	2		6		4		8	
Permitted Phases	2		6		4		8	
Detector Phase	2		6		4		8	
Switch Phase								
Minimum Initial (s)	24.0	24.0	24.0	24.0	7.0	7.0	7.0	7.0
Minimum Split (s)	30.0	30.0	30.0	30.0	35.0	35.0	35.0	35.0
Total Split (s)	66.0	66.0	66.0	66.0	39.0	39.0	39.0	39.0
Total Split (%)	62.9%	62.9%	62.9%	62.9%	37.1%	37.1%	37.1%	37.1%
Yellow Time (s)	4.0	4.0	4.0	4.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	4.0	4.0	4.0	4.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	6.0	6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	C-Min	C-Min	C-Min	C-Min	None	None	None	None
v/c Ratio	0.39	0.83	0.29	0.79	0.05	0.11	0.87	0.19
Control Delay	32.1	21.4	26.7	19.7	25.9	21.7	59.7	20.1
Queue Delay	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Total Delay	32.1	21.4	26.7	20.7	25.9	21.7	59.7	20.1
Queue Length 50th (m)	3.1	156.2	1.7	141.1	2.6	6.4	59.9	8.9
Queue Length 95th (m)	#16.5	197.1	9.0	178.2	7.8	15.6	#103.8	20.7
Internal Link Dist (m)	449.7		65.9		131.2		187.8	
Turn Bay Length (m)	30.0		30.0		15.0		40.0	
Base Capacity (vph)	72	2115	59	2098	385	531	391	488
Starvation Cap Reductn	0	0	0	204	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.83	0.29	0.88	0.04	0.10	0.78	0.17

Intersection Summary

Cycle Length: 105

Actuated Cycle Length: 105

Offset: 55 (52%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

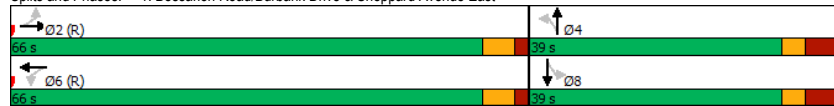
Natural Cycle: 80

Control Type: Actuated-Coordinated

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

Queue shown is maximum after two cycles.

Splits and Phases: 1: Bessarion Road/Burbank Drive & Sheppard Avenue East

Block 7
BA Group - TCSSynchro 10 Report
FB_AM.syn

HCM Signalized Intersection Capacity Analysis

1: Bessarion Road/Burbank Drive & Sheppard Avenue East

Future Background AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↩	↩↩		↩	↩↩		↩	↩		↩	↩	
Traffic Volume (vph)	25	1570	10	15	1390	110	15	20	30	275	15	60
Future Volume (vph)	25	1570	10	15	1390	110	15	20	30	275	15	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.5	3.0	3.5	3.5	3.0	3.5	3.5	3.0	3.5	3.5
Total Lost time (s)	5.0	5.0		5.0	5.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	0.99		1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.98	1.00		0.99	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.91		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1620	3460		1504	3423		1659	1662		1643	1497	
Flt Permitted	0.07	1.00		0.06	1.00		0.70	1.00		0.72	1.00	
Satd. Flow (perm)	118	3460		99	3423		1227	1662		1247	1497	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	28	1744	11	17	1544	122	17	22	33	306	17	67
RTOR Reduction (vph)	0	0	0	0	5	0	0	9	0	0	19	0
Lane Group Flow (vph)	28	1755	0	17	1661	0	17	46	0	306	65	0
Confl. Peds. (#/hr)	30		70	70		30	15		5	5		15
Heavy Vehicles (%)	4%	3%	0%	12%	2%	9%	0%	0%	3%	2%	12%	7%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	2			6			4			8		
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	63.2	63.2		63.2	63.2		28.8	28.8		28.8	28.8	
Effective Green, g (s)	64.2	64.2		64.2	64.2		29.8	29.8		29.8	29.8	
Actuated g/C Ratio	0.61	0.61		0.61	0.61		0.28	0.28		0.28	0.28	
Clearance Time (s)	6.0	6.0		6.0	6.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	72	2115		60	2092		348	471		353	424	
v/s Ratio Prot	c0.51			0.49			0.03			0.04		
v/s Ratio Perm	0.24			0.17			0.01			c0.25		
v/c Ratio	0.39	0.83		0.28	0.79		0.05	0.10		0.87	0.15	
Uniform Delay, d1	10.4	16.1		9.6	15.4		27.3	27.7		35.7	28.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	15.1	3.9		11.5	3.2		0.1	0.1		19.4	0.2	
Delay (s)	25.5	20.0		21.0	18.6		27.4	27.8		55.2	28.3	
Level of Service	C	C		C	B		C	C		E	C	
Approach Delay (s)	20.1			18.6			27.7			49.4		
Approach LOS	C			B			C			D		

Intersection Summary

HCM 2000 Control Delay

HCM 2000 Level of Service

C

HCM 2000 Volume to Capacity ratio

0.84

Actuated Cycle Length (s)

105.0

Sum of lost time (s)

11.0

Intersection Capacity Utilization

75.4%

ICU Level of Service

D

Analysis Period (min)

15

c Critical Lane Group

Block 7
BA Group - TCSSynchro 10 Report
FB_AM.syn

Queues

2: CTC West Access/Blue Ridge Road & Sheppard Avenue East

Future Background AM Peak Hour

								
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	SBL	SBR
Lane Configurations		 			 			
Traffic Volume (vph)	15	1685	195	5	1435	95	55	20
Future Volume (vph)	15	1685	195	5	1435	95	55	20
Lane Group Flow (vph)	17	1872	217	6	1622	106	61	22
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	Perm
Protected Phases	2				6			
Permitted Phases	2		2	6		4	8	8
Detector Phase	2	2	2	6	6	4	8	8
Switch Phase								
Minimum Initial (s)	27.0	27.0	27.0	27.0	27.0	7.0	7.0	7.0
Minimum Split (s)	33.0	33.0	33.0	33.0	33.0	36.0	36.0	36.0
Total Split (s)	73.0	73.0	73.0	73.0	73.0	37.0	37.0	37.0
Total Split (%)	66.4%	66.4%	66.4%	66.4%	66.4%	33.6%	33.6%	33.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	C-Min	C-Min	C-Min	C-Min	C-Min	None	None	None
v/c Ratio	0.12	0.71	0.22	0.05	0.62	0.44	0.26	0.09
Control Delay	8.2	10.5	3.9	5.4	5.8	46.5	41.3	8.9
Queue Delay	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.2	11.4	3.9	5.4	5.8	46.5	41.3	8.9
Queue Length 50th (m)	0.7	83.3	6.0	0.2	47.6	22.8	12.8	0.0
Queue Length 95th (m)	5.3	208.5	23.8	m0.7	66.6	33.4	21.2	4.8
Internal Link Dist (m)	32.6		25.0		120.2		35.0	
Turn Bay Length (m)	30.0							
Base Capacity (vph)	142	2625	985	110	2615	484	480	449
Starvation Cap Reductn	0	442	0	0	55	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.86	0.22	0.05	0.63	0.22	0.13	0.05

Intersection Summary

Cycle Length: 110

Actuated Cycle Length: 110

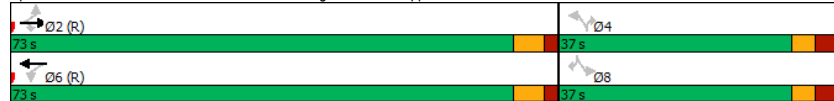
Offset: 56 (51%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

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

Splits and Phases: 2: CTC West Access/Blue Ridge Road & Sheppard Avenue East

Block 7
BA Group - TCSSynchro 10 Report
FB_AM.syn

HCM Signalized Intersection Capacity Analysis

2: CTC West Access/Blue Ridge Road & Sheppard Avenue East

Future Background AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↩	↗↘	↗	↩	↗↘	↗	↩	↗↘	↗	↩	↗	↘
Traffic Volume (vph)	15	1685	195	5	1435	25	95	0	0	55	0	20
Future Volume (vph)	15	1685	195	5	1435	25	95	0	0	55	0	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.5	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0		5.0			5.0		5.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00			1.00		1.00
Frpb, ped/bikes	1.00	1.00	0.87	1.00	1.00		1.00			1.00		0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.99			1.00		1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00			1.00		0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95			0.95		1.00
Satd. Flow (prot)	1475	3433	1265	1677	3421		1666			1652		1473
Flt Permitted	0.12	1.00	1.00	0.08	1.00		0.95			0.95		1.00
Satd. Flow (perm)	186	3433	1265	144	3421		1666			1652		1473
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	17	1872	217	6	1594	28	106	0	0	61	0	22
RTOR Reduction (vph)	0	0	18	0	1	0	0	0	0	0	0	19
Lane Group Flow (vph)	17	1872	199	6	1621	0	106	0	0	61	0	3
Confl. Peds. (#/hr)	15		55	55		15	10					10
Heavy Vehicles (%)	14%	4%	2%	0%	4%	4%	0%	0%	0%	2%	0%	0%
Bus Blockages (#/hr)	0	0	4	0	0	0	0	0	0	0	0	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm		Perm	Perm		Perm
Protected Phases	2		2		6		4		4		8	
Permitted Phases	2		2	6			4		4	8		8
Actuated Green, G (s)	83.1	83.1	83.1	83.1	83.1		14.9			14.9		14.9
Effective Green, g (s)	84.1	84.1	84.1	84.1	84.1		15.9			15.9		15.9
Actuated g/C Ratio	0.76	0.76	0.76	0.76	0.76		0.14			0.14		0.14
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		6.0			6.0		6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0			3.0		3.0
Lane Grp Cap (vph)	142	2624	967	110	2615		240			238		212
v/s Ratio Prot	c0.55		0.47									
v/s Ratio Perm	0.09		0.16	0.04			c0.06			0.04		0.00
v/c Ratio	0.12	0.71	0.21	0.05	0.62		0.44			0.26		0.01
Uniform Delay, d1	3.4	6.7	3.6	3.2	5.8		43.0			41.8		40.3
Progression Factor	1.00	1.00	1.00	0.72	0.65		1.00			1.00		1.00
Incremental Delay, d2	1.7	1.7	0.5	0.8	0.9		1.3			0.6		0.0
Delay (s)	5.1	8.4	4.1	3.1	4.7		44.3			42.4		40.4
Level of Service	A	A	A	A	A		D			D		D
Approach Delay (s)	7.9		4.7		44.3		41.8					
Approach LOS	A		A		D		D					

Intersection Summary

HCM 2000 Control Delay	8.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	68.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Block 7
BA Group - TCSSynchro 10 Report
FB_AM.syn

Queues

3: Provost Drive/Ambrose Road & Sheppard Avenue East

Future Background AM Peak Hour

									
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBR	SBL	SBR
Lane Configurations		 			 				
Traffic Volume (vph)	40	1580	135	265	1230	235	190	200	25
Future Volume (vph)	40	1580	135	265	1230	235	190	200	25
Lane Group Flow (vph)	40	1580	135	265	1355	235	190	200	25
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+ov	Perm	Perm
Protected Phases	2		1		6		1		
Permitted Phases	2		2	6		4	4	8	8
Detector Phase	2	2	2	1	6	4	1	8	8
Switch Phase									
Minimum Initial (s)	30.0	30.0	30.0	6.0	30.0	30.0	6.0	30.0	30.0
Minimum Split (s)	37.0	37.0	37.0	10.0	37.0	38.0	10.0	38.0	38.0
Total Split (s)	56.0	56.0	56.0	16.0	72.0	38.0	16.0	38.0	38.0
Total Split (%)	50.9%	50.9%	50.9%	14.5%	65.5%	34.5%	14.5%	34.5%	34.5%
Yellow Time (s)	4.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	1.0	3.0	4.0	1.0	4.0	4.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	6.0	6.0	6.0	3.0	6.0	7.0	3.0	7.0	7.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes				
Recall Mode	C-Min	C-Min	C-Min	None	C-Min	None	None	None	None
v/c Ratio	0.30	1.01	0.19	1.02	0.67	0.52	0.30	0.44	0.05
Control Delay	21.6	52.6	6.8	92.3	16.6	38.0	15.6	36.2	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.6	52.6	6.8	92.3	16.6	38.0	15.6	36.2	0.2
Queue Length 50th (m)	5.6	~191.1	9.3	~47.9	99.5	44.6	19.7	37.1	0.0
Queue Length 95th (m)	m5.1	#239.5	m9.0	#101.2	123.6	70.1	35.6	59.8	0.0
Internal Link Dist (m)	81.5				111.0				
Turn Bay Length (m)	40.0	40.0		165.0					
Base Capacity (vph)	132	1560	694	259	2018	455	643	452	471
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	1.01	0.19	1.02	0.67	0.52	0.30	0.44	0.05

Intersection Summary

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 69 (63%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 105

Control Type: Actuated-Coordinated

- Volume exceeds capacity, queue is theoretically infinite.

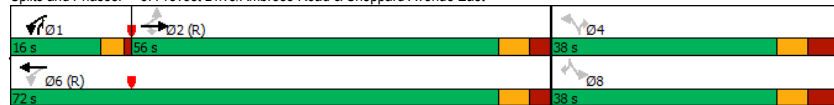
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 3: Provost Drive/Ambrose Road & Sheppard Avenue East



HCM Signalized Intersection Capacity Analysis

3: Provost Drive/Ambrose Road & Sheppard Avenue East

Future Background AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↩	↩↩	↩	↩	↩↩	↩	↩	↩	↩	↩	↩	↩
Traffic Volume (vph)	40	1580	135	265	1230	125	235	0	190	200	0	25
Future Volume (vph)	40	1580	135	265	1230	125	235	0	190	200	0	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.5	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	6.0	6.0	6.0	3.0	6.0		7.0		3.0	7.0		7.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00		1.00	1.00		1.00
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00		1.00		0.96	1.00		0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.99		1.00	0.96		1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00		0.85	1.00		0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95		1.00	0.95		1.00
Satd. Flow (prot)	1598	3433	1420	1636	3352		1618		1426	1604		1473
Flt Permitted	0.17	1.00	1.00	0.08	1.00		0.95		1.00	0.95		1.00
Satd. Flow (perm)	291	3433	1420	130	3352		1618		1426	1604		1473
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	40	1580	135	265	1230	125	235	0	190	200	0	25
RTOR Reduction (vph)	0	0	49	0	7	0	0	0	24	0	0	18
Lane Group Flow (vph)	40	1580	86	265	1348	0	235	0	166	200	0	7
Confl. Peds. (#/hr)	15		25	25		15	10		35	35		10
Heavy Vehicles (%)	5%	4%	2%	3%	4%	1%	3%	0%	2%	1%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	4	4	0	0	0	0	0	0
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm		pm+ov	Perm		Perm
Protected Phases	2		1		6		1		1		1	
Permitted Phases	2		2		6		4		4		8	
Actuated Green, G (s)	49.0	49.0	49.0	65.0	65.0		30.0		42.0	30.0		30.0
Effective Green, g (s)	50.0	50.0	50.0	66.0	66.0		31.0		44.0	31.0		31.0
Actuated g/C Ratio	0.45	0.45	0.45	0.60	0.60		0.28		0.40	0.28		0.28
Clearance Time (s)	7.0	7.0	7.0	4.0	7.0		8.0		4.0	8.0		8.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0		3.0
Lane Grp Cap (vph)	132	1560	645	255	2011		455		570	452		415
v/s Ratio Prot	0.46		c0.12		0.40				0.03			
v/s Ratio Perm	0.14		0.06		c0.50		c0.15		0.08		0.12	
v/c Ratio	0.30	1.01	0.13	1.04	0.67		0.52		0.29	0.44		0.02
Uniform Delay, d1	19.0	30.0	17.4	35.5	14.7		33.2		22.4	32.4		28.5
Progression Factor	0.82	0.97	0.90	1.00	1.00		1.00		1.00	1.00		1.00
Incremental Delay, d2	4.3	22.8	0.3	67.0	1.8		1.0		0.3	0.7		0.0
Delay (s)	19.9	52.0	16.0	102.5	16.5		34.2		22.7	33.1		28.5
Level of Service	B	D	B	F	B		C		C	C		C
Approach Delay (s)	48.5		30.6		29.1		32.6					
Approach LOS	D		C		C		C					

Intersection Summary

HCM 2000 Control Delay	38.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	96.1%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Block 7
BA Group - TCSSynchro 10 Report
FB_AM.syn

Queues

4: Leslie Street & Sheppard Avenue East

Future Background AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↩	↩↩↩	↩	↩	↩↩↩	↩	↩↩	↩	↩	↩↩↩
Traffic Volume (vph)	205	895	835	260	1180	425	635	335	100	1225
Future Volume (vph)	205	895	835	260	1180	425	635	335	100	1225
Lane Group Flow (vph)	205	895	835	260	1260	425	635	335	100	1510
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	Prot	NA	Perm	Perm	NA
Protected Phases	5	2	7	1	6	7	4			8
Permitted Phases	2		2	6				4	8	
Detector Phase	5	2	7	1	6	7	4	4	8	8
Switch Phase										
Minimum Initial (s)	6.0	38.0	6.0	6.0	38.0	6.0	38.0	38.0	38.0	38.0
Minimum Split (s)	10.0	45.0	12.0	10.0	45.0	12.0	45.0	45.0	45.0	45.0
Total Split (s)	15.0	47.0	27.0	13.0	45.0	27.0	75.0	75.0	48.0	48.0
Total Split (%)	11.1%	34.8%	20.0%	9.6%	33.3%	20.0%	55.6%	55.6%	35.6%	35.6%
Yellow Time (s)	3.0	4.0	3.0	3.0	4.0	3.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	3.0	3.0	1.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-2.0	-1.0	-3.0	-3.0	-1.0	-3.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	2.0	6.0	3.0	1.0	6.0	3.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	Min	None	None	Min	None	C-Min	C-Min	C-Min	C-Min
v/c Ratio	0.93	0.59	1.02	0.97	0.89	0.73	0.37	0.43	0.46	0.99
Control Delay	79.3	41.8	57.1	76.7	54.7	43.6	15.7	10.7	45.5	66.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	79.3	41.8	57.1	76.7	54.7	43.6	15.7	10.7	45.5	66.8
Queue Length 50th (m)	41.5	78.1	~157.8	47.6	123.6	61.0	76.3	59.4	22.5	151.5
Queue Length 95th (m)	#91.5	93.4	#203.9	#95.9	143.8	79.7	103.1	96.6	42.4	#188.6
Internal Link Dist (m)		434.4			1078.4		224.4			40.9
Turn Bay Length (m)	170.0		130.0	200.0		175.0				
Base Capacity (vph)	220	1512	820	269	1414	582	1705	771	219	1518
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.93	0.59	1.02	0.97	0.89	0.73	0.37	0.43	0.46	0.99

Intersection Summary

Cycle Length: 135

Actuated Cycle Length: 135

Offset: 0 (0%), Referenced to phase 4:NBT and 8:SBTL, Start of Green

Natural Cycle: 125

Control Type: Actuated-Coordinated

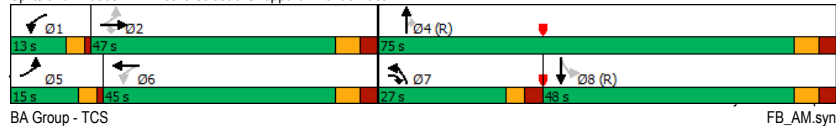
Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 4: Leslie Street & Sheppard Avenue East



HCM Signalized Intersection Capacity Analysis

4: Leslie Street & Sheppard Avenue East

Future Background AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↩	↩↩↩	↩	↩	↩↩↩		↩	↩↩	↩	↩	↩↩↩	
Traffic Volume (vph)	205	895	835	260	1180	80	425	635	335	100	1225	285
Future Volume (vph)	205	895	835	260	1180	80	425	635	335	100	1225	285
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.5	3.0	3.5	3.0	3.0	3.5	3.5
Total Lost time (s)	2.0	6.0	3.0	1.0	6.0		3.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		0.97	0.95	1.00	1.00	0.91	
Frpb, ped/bikes	1.00	1.00	0.91	1.00	1.00		1.00	1.00	0.93	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00		1.00	1.00	1.00	0.98	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.97	
Flt Protected	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1721	4980	1317	1729	4877		3276	3336	1302	1628	4788	
Flt Permitted	0.10	1.00	1.00	0.21	1.00		1.00	1.00	1.00	0.41	1.00	
Satd. Flow (perm)	164	4980	1317	362	4877		3276	3336	1302	704	4788	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	205	895	835	260	1180	80	425	635	335	100	1225	285
RTOR Reduction (vph)	0	0	160	0	6	0	0	0	106	0	28	0
Lane Group Flow (vph)	205	895	675	260	1254	0	425	635	229	100	1482	0
Confl. Peds. (#/hr)	40		125	125		40	55		55	55		55
Heavy Vehicles (%)	3%	3%	4%	2%	3%	7%	5%	7%	6%	1%	2%	3%
Bus Blockages (#/hr)	0	0	0	0	4	4	0	0	4	0	4	4
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		Prot	NA	Perm	Perm	NA	
Protected Phases	5	2	7	1	6		7	4			8	
Permitted Phases	2		2	6					4	8		
Actuated Green, G (s)	51.0	40.0	61.0	47.0	38.0		21.0	68.0	68.0	41.0	41.0	
Effective Green, g (s)	55.0	41.0	67.0	53.0	39.0		24.0	69.0	69.0	42.0	42.0	
Actuated g/C Ratio	0.41	0.30	0.50	0.39	0.29		0.18	0.51	0.51	0.31	0.31	
Clearance Time (s)	4.0	7.0	6.0	4.0	7.0		6.0	7.0	7.0	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	
Lane Grp Cap (vph)	216	1512	653	263	1408		582	1705	665	219	1489	
v/s Ratio Prot	c0.09	0.18	c0.18	c0.09	0.26		0.13	0.19			c0.31	
v/s Ratio Perm	0.29		0.33	0.30					0.18	0.14		
v/c Ratio	0.95	0.59	1.03	0.99	0.89		0.73	0.37	0.34	0.46	1.00	
Uniform Delay, d1	37.5	39.9	34.0	33.8	46.0		52.4	19.9	19.6	37.3	46.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.68	0.75	1.32	1.00	1.00	
Incremental Delay, d2	46.4	0.6	44.1	51.8	7.5		4.5	0.6	1.3	6.7	22.2	
Delay (s)	83.9	40.5	78.1	85.6	53.4		40.3	15.6	27.1	44.1	68.6	
Level of Service	F	D	E	F	D		D	B	C	D	E	
Approach Delay (s)		61.3			58.9			25.9			67.1	
Approach LOS		E			E			C			E	

Intersection Summary

HCM 2000 Control Delay	54.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	127.7%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Block 7
BA Group - TCSSynchro 10 Report
FB_AM.syn

HCM Unsignalized Intersection Capacity Analysis

5: McMahon Drive/CTC South Access & Esther Shiner Boulevard

Future Background AM Peak Hour

																		
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR						
Lane Configurations																		
Sign Control		Stop			Stop			Stop			Stop							
Traffic Volume (vph)	5	0	0	90	10	135	0	15	320	340	10	5						
Future Volume (vph)	5	0	0	90	10	135	0	15	320	340	10	5						
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91						
Hourly flow rate (vph)	5	0	0	99	11	148	0	16	352	374	11	5						
Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2													
Volume Total (vph)	5	258	368	385	5													
Volume Left (vph)	5	99	0	374	0													
Volume Right (vph)	0	148	352	0	5													
Hadj (s)	0.20	-0.07	-0.44	0.53	-0.70													
Departure Headway (s)	6.8	5.9	5.1	6.3	5.1													
Degree Utilization, x	0.01	0.42	0.52	0.67	0.01													
Capacity (veh/h)	411	561	673	556	684													
Control Delay (s)	9.9	13.1	13.4	20.1	6.9													
Approach Delay (s)	9.9	13.1	13.4	19.9														
Approach LOS	A	B	B	C														
Intersection Summary																		
Delay			15.8															
Level of Service			C															
Intersection Capacity Utilization			63.7%		ICU Level of Service		B											
Analysis Period (min)			15															

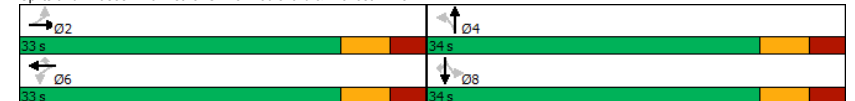
Queues

6: Esther Shiner Boulevard & Provost Drive

Future Background AM Peak Hour

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↔		↔	↔	↔	↔		↔	↔	↔
Traffic Volume (vph)	90	585	20	170	195	5	35	115	25	60
Future Volume (vph)	90	585	20	170	195	5	35	115	25	60
Lane Group Flow (vph)	0	739	22	185	212	0	108	125	27	65
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases	2		6		4		8		8	
Permitted Phases	2	6	6	6	4	4	8	8	8	8
Detector Phase	2	2	6	6	6	4	4	8	8	8
Switch Phase										
Minimum Initial (s)	26.0	26.0	26.0	26.0	26.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	33.0	33.0	33.0	33.0	33.0	34.0	34.0	34.0	34.0	34.0
Total Split (s)	33.0	33.0	33.0	33.0	33.0	34.0	34.0	34.0	34.0	34.0
Total Split (%)	49.3%	49.3%	49.3%	49.3%	49.3%	50.7%	50.7%	50.7%	50.7%	50.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	Min	Min	Min	Min	Min	None	None	None	None	None
v/c Ratio	0.73	0.06	0.17	0.22	0.22	0.31	0.42	0.06	0.17	0.17
Control Delay	19.6	10.2	9.3	2.7	2.7	9.6	20.0	13.8	5.3	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.6	10.2	9.3	2.7	2.7	9.6	20.0	13.8	5.3	5.3
Queue Length 50th (m)	51.1	0.9	8.1	0.0	0.0	3.3	10.2	2.0	0.0	0.0
Queue Length 95th (m)	#175.9	6.1	28.9	11.5	11.5	12.1	21.4	6.2	6.4	6.4
Internal Link Dist (m)	80.2		216.2			86.8		118.2		
Turn Bay Length (m)	105.0		75.0							
Base Capacity (vph)	1017	363	1066	951	951	671	632	935	715	715
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.73	0.06	0.17	0.22	0.22	0.16	0.20	0.03	0.09	0.09
Intersection Summary										
Cycle Length: 67										
Actuated Cycle Length: 53.3										
Natural Cycle: 75										
Control Type: Semi Act-Uncoord										
# 95th percentile volume exceeds capacity, queue may be longer.										
Queue shown is maximum after two cycles.										

Splits and Phases: 6: Esther Shiner Boulevard & Provost Drive



HCM Signalized Intersection Capacity Analysis 6: Esther Shiner Boulevard & Provost Drive

Future Background AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔	↔		↔		↔	↔	↔
Traffic Volume (vph)	90	585	5	20	170	195	5	35	60	115	25	60
Future Volume (vph)	90	585	5	20	170	195	5	35	60	115	25	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.0	3.5	3.0	3.5	3.5	3.0	3.5	3.5	3.0
Total Lost time (s)	6.0			6.0	6.0	6.0		6.0		6.0	6.0	6.0
Lane Util. Factor	1.00			1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00			1.00	1.00	0.97		0.99		1.00	1.00	0.96
Flpb, ped/bikes	1.00			0.99	1.00	1.00		1.00		0.99	1.00	1.00
Frt	1.00			1.00	1.00	0.85		0.92		1.00	1.00	0.85
Flt Protected	0.99			0.95	1.00	1.00		1.00		0.95	1.00	1.00
Satd. Flow (prot)	1810			1535	1773	1447		1217		1643	1756	1292
Flt Permitted	0.93			0.37	1.00	1.00		0.99		0.69	1.00	1.00
Satd. Flow (perm)	1692			605	1773	1447		1203		1189	1756	1292
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	98	636	5	22	185	212	5	38	65	125	27	65
RTOR Reduction (vph)	0	0	0	0	0	93	0	51	0	0	0	51
Lane Group Flow (vph)	0	739	0	22	185	119	0	57	0	125	27	14
Confl. Peds. (#/hr)	30		20	20		30	20		10	10		20
Heavy Vehicles (%)	13%	1%	29%	9%	6%	1%	0%	33%	47%	2%	7%	12%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases		2			6			4			8	
Permitted Phases	2			6		6	4			8		8
Actuated Green, G (s)		29.7		29.7	29.7	29.7		10.9		10.9	10.9	10.9
Effective Green, g (s)		30.7		30.7	30.7	30.7		11.9		11.9	11.9	11.9
Actuated g/C Ratio		0.56		0.56	0.56	0.56		0.22		0.22	0.22	0.22
Clearance Time (s)		7.0		7.0	7.0	7.0		7.0		7.0	7.0	7.0
Vehicle Extension (s)		3.0		3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)		951		340	996	813		262		259	382	281
v/s Ratio Prot					0.10						0.02	
v/s Ratio Perm		c0.44		0.04		0.08		0.05		c0.11		0.01
v/c Ratio		0.78		0.06	0.19	0.15		0.22		0.48	0.07	0.05
Uniform Delay, d1		9.3		5.4	5.8	5.7		17.5		18.7	17.0	16.9
Progression Factor		1.00		1.00	1.00	1.00		1.00		1.00	1.00	1.00
Incremental Delay, d2		4.0		0.1	0.1	0.1		0.4		1.4	0.1	0.1
Delay (s)		13.3		5.5	5.9	5.8		18.0		20.1	17.0	17.0
Level of Service		B		A	A	A		B		C	B	B
Approach Delay (s)		13.3			5.8			18.0			18.8	
Approach LOS		B			A			B			B	

Intersection Summary

HCM 2000 Control Delay	12.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	54.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	90.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Queues 7: Esther Shiner Boulevard & Old Leslie Street

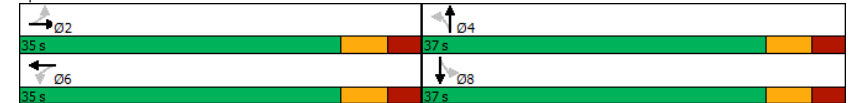
Future Background AM Peak Hour

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	35	755	5	355	5	0	280	5
Future Volume (vph)	35	755	5	355	5	0	280	5
Lane Group Flow (vph)	36	791	5	604	5	10	292	36
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		2		6		4		8
Permitted Phases	2		6		4		8	
Detector Phase	2	2	6	6	4	4	8	8
Switch Phase								
Minimum Initial (s)	28.0	28.0	28.0	28.0	7.0	7.0	7.0	7.0
Minimum Split (s)	35.0	35.0	35.0	35.0	37.0	37.0	37.0	37.0
Total Split (s)	35.0	35.0	35.0	35.0	37.0	37.0	37.0	37.0
Total Split (%)	48.6%	48.6%	48.6%	48.6%	51.4%	51.4%	51.4%	51.4%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	Min	Min	Min	Min	None	None	None	None
v/c Ratio	0.11	0.48	0.03	0.36	0.01	0.02	0.70	0.08
Control Delay	12.7	13.3	12.2	7.7	12.6	0.1	27.3	6.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.7	13.3	12.2	7.7	12.6	0.1	27.3	6.3
Queue Length 50th (m)	2.2	30.5	0.3	12.5	0.4	0.0	29.4	0.4
Queue Length 95th (m)	9.1	61.3	2.5	30.5	2.3	0.0	52.4	5.2
Internal Link Dist (m)		106.6		130.2		43.8		121.9
Turn Bay Length (m)	40.0		70.0		10.0		40.0	
Base Capacity (vph)	317	1656	196	1672	645	707	658	710
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.48	0.03	0.36	0.01	0.01	0.44	0.05

Intersection Summary

Cycle Length: 72
Actuated Cycle Length: 61.3
Natural Cycle: 75
Control Type: Semi Act-Uncoord

Splits and Phases: 7: Esther Shiner Boulevard & Old Leslie Street



HCM Signalized Intersection Capacity Analysis 7: Esther Shiner Boulevard & Old Leslie Street

Future Background AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰		↰	↰		↰	↰		↰	↰	
Traffic Volume (vph)	35	755	5	5	355	225	5	0	10	280	5	30
Future Volume (vph)	35	755	5	5	355	225	5	0	10	280	5	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.5	3.0	3.5	3.5	3.0	3.5	3.5	3.0	3.5	3.5
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.98		1.00	0.99		1.00	0.97	
Flpb, ped/bikes	0.99	1.00		1.00	1.00		0.97	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.94		1.00	0.85		1.00	0.87	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1538	3463		1265	3249		1641	1311		1631	1366	
Flt Permitted	0.41	1.00		0.31	1.00		0.73	1.00		0.75	1.00	
Satd. Flow (perm)	666	3463		412	3249		1267	1311		1289	1366	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	36	786	5	5	370	234	5	0	10	292	5	31
RTOR Reduction (vph)	0	1	0	0	121	0	0	7	0	0	21	0
Lane Group Flow (vph)	36	790	0	5	483	0	5	3	0	292	15	0
Confl. Peds. (#/hr)	30		5	5		30	45		5	5		45
Heavy Vehicles (%)	8%	3%	0%	33%	1%	2%	0%	0%	20%	3%	33%	13%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	28.3	28.3		28.3	28.3		18.9	18.9		18.9	18.9	
Effective Green, g (s)	29.3	29.3		29.3	29.3		19.9	19.9		19.9	19.9	
Actuated g/C Ratio	0.48	0.48		0.48	0.48		0.33	0.33		0.33	0.33	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	318	1657		197	1555		411	426		419	444	
v/s Ratio Prot		c0.23			0.15			0.00			0.01	
v/s Ratio Perm	0.05			0.01			0.00			c0.23		
v/c Ratio	0.11	0.48		0.03	0.31		0.01	0.01		0.70	0.03	
Uniform Delay, d1	8.8	10.8		8.4	9.8		14.0	14.0		18.0	14.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.2		0.1	0.1		0.0	0.0		5.0	0.0	
Delay (s)	8.9	11.0		8.5	9.9		14.0	14.0		23.0	14.1	
Level of Service	A	B		A	A		B	B		C	B	
Approach Delay (s)		10.9			9.9			14.0			22.0	
Approach LOS		B			A			B			C	

Intersection Summary

HCM 2000 Control Delay	12.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	61.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	63.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Block 7
BA Group - TCS

Synchro 10 Report
FB_AM.syn

Queues

8: Leslie Street & Esther Shiner Boulevard

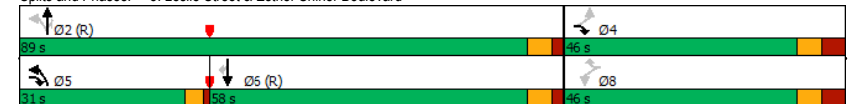
Future Background AM Peak Hour

Lane Group	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBT	SBR
Lane Configurations	↰	↰	↰	↰	↰	↰	↰	↰	↰
Traffic Volume (vph)	90	855	95	35	430	1210	375	2230	200
Future Volume (vph)	90	855	95	35	430	1210	375	2230	200
Lane Group Flow (vph)	90	855	95	35	430	1210	375	2230	200
Turn Type	Perm	pt+ov	Perm	Perm	pm+pt	NA	Perm	NA	Perm
Protected Phases		4 5			5	2		6	
Permitted Phases	4		8	8	2		2		6
Detector Phase	4	4 5	8	8	5	2	2	6	6
Switch Phase									
Minimum Initial (s)	7.0		7.0	7.0	6.0	25.0	25.0	25.0	25.0
Minimum Split (s)	46.0		46.0	46.0	10.0	31.0	31.0	31.0	31.0
Total Split (s)	46.0		46.0	46.0	31.0	89.0	89.0	58.0	58.0
Total Split (%)	34.1%		34.1%	34.1%	23.0%	65.9%	65.9%	43.0%	43.0%
Yellow Time (s)	4.0		4.0	4.0	3.0	4.0	4.0	4.0	4.0
All-Red Time (s)	4.0		4.0	4.0	1.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-2.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	7.0		7.0	7.0	2.0	5.0	5.0	5.0	5.0
Lead/Lag					Lead		Lag	Lag	
Lead-Lag Optimize?					Yes		Yes	Yes	
Recall Mode	None		None	None	None	C-Min	C-Min	C-Min	C-Min
v/c Ratio	0.22	0.98	0.21	0.08	1.01	0.39	0.38	1.13	0.29
Control Delay	38.4	49.8	38.0	3.6	79.0	20.8	8.9	110.8	13.7
Queue Delay	0.0	39.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.4	89.2	38.0	3.6	79.0	20.8	8.9	110.8	13.7
Queue Length 50th (m)	19.3	189.6	20.2	0.0	~109.1	89.5	36.6	~263.2	12.6
Queue Length 95th (m)	34.7	#292.8	35.7	4.1	#179.2	110.0	72.3	m#264.7	m13.2
Internal Link Dist (m)						231.2		224.4	
Turn Bay Length (m)					150.0		170.0		175.0
Base Capacity (vph)	401	873	446	445	426	3068	976	1974	685
Starvation Cap Reductn	0	128	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	1.15	0.21	0.08	1.01	0.39	0.38	1.13	0.29

Intersection Summary

Cycle Length: 135
Actuated Cycle Length: 135
Offset: 103 (76%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 140
Control Type: Actuated-Coordinated
- Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 8: Leslie Street & Esther Shiner Boulevard



HCM Signalized Intersection Capacity Analysis 8: Leslie Street & Esther Shiner Boulevard

Future Background AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	→	↱	↰	→	↱	↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	90	0	855	95	0	35	430	1210	375	0	2230	200
Future Volume (vph)	90	0	855	95	0	35	430	1210	375	0	2230	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.5	3.5	3.0
Total Lost time (s)	7.0		7.0	7.0		7.0	2.0	5.0	5.0		5.0	5.0
Lane Util. Factor	1.00		1.00	1.00		1.00	1.00	0.91	1.00		0.91	1.00
Frpb, ped/bikes	1.00		1.00	1.00		0.93	1.00	1.00	0.94		1.00	0.97
Flpb, ped/bikes	0.94		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00
Frft	1.00		0.85	1.00		0.85	1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95		1.00	0.95		1.00	1.00	1.00	1.00		1.00	1.00
Satd. Flow (prot)	1391		1478	1546		1403	1739	4932	1341		5029	1437
Flt Permitted	0.95		1.00	0.95		1.00	0.07	1.00	1.00		1.00	1.00
Satd. Flow (perm)	1391		1478	1546		1403	124	4932	1341		5029	1437
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	90	0	855	95	0	35	430	1210	375	0	2230	200
RTOR Reduction (vph)	0	0	101	0	0	25	0	0	142	0	0	121
Lane Group Flow (vph)	90	0	754	95	0	10	430	1210	233	0	2230	79
Confl. Peds. (#/hr)	55					55	10		15	15		10
Heavy Vehicles (%)	14%	0%	2%	9%	0%	0%	2%	4%	4%	0%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	4	0	0	0
Turn Type	Perm		pt+ov	Perm		Perm	pm+pt	NA	Perm		NA	Perm
Protected Phases			4 5				5	2			6	
Permitted Phases	4			8		8	2		2			6
Actuated Green, G (s)	38.0		73.0	38.0		38.0	83.0	83.0	83.0		52.0	52.0
Effective Green, g (s)	39.0		74.0	39.0		39.0	85.0	84.0	84.0		53.0	53.0
Actuated g/C Ratio	0.29		0.55	0.29		0.29	0.63	0.62	0.62		0.39	0.39
Clearance Time (s)	8.0			8.0		8.0	4.0	6.0	6.0		6.0	6.0
Vehicle Extension (s)	3.0			3.0		3.0	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	401		810	446		405	425	3068	834		1974	564
v/s Ratio Prot			c0.51				c0.22	0.25			c0.44	
v/s Ratio Perm	0.06			0.06		0.01	0.42		0.17			0.05
v/c Ratio	0.22		0.93	0.21		0.02	1.01	0.39	0.28		1.13	0.14
Uniform Delay, d1	36.5		28.1	36.4		34.4	44.9	12.8	11.7		41.0	26.3
Progression Factor	1.00		1.00	1.00		1.00	0.94	1.60	7.69		1.37	3.82
Incremental Delay, d2	0.3		17.2	0.2		0.0	40.7	0.3	0.6		60.8	0.2
Delay (s)	36.8		45.3	36.6		34.4	82.8	20.7	90.4		117.1	100.8
Level of Service	D		D	D		C	F	C	F		F	F
Approach Delay (s)		44.5			36.0			46.9		115.7		
Approach LOS		D			D			D		F		

Intersection Summary			
HCM 2000 Control Delay	76.5	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	117.7%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Queues

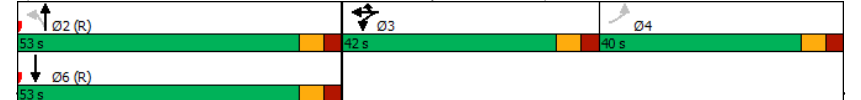
9: Leslie Street & Oriole GO Station Access/Hwy 401 WB Off-Ramp

Future Background AM Peak Hour

Lane Group	EBL	EBR	WBL	WBT	WBR	NBL	NBT	SBT
Lane Configurations	↰	↱	↰	→	↱	↰	↱	↱
Traffic Volume (vph)	25	50	850	65	760	40	1230	2090
Future Volume (vph)	25	50	850	65	760	40	1230	2090
Lane Group Flow (vph)	25	50	850	415	410	40	1230	2135
Turn Type	Perm	Free	Split	NA	Prot	Perm	NA	NA
Protected Phases			3	3	3		2	6
Permitted Phases	4	Free				2		
Detector Phase	4		3	3	3	2	2	6
Switch Phase								
Minimum Initial (s)	7.0		7.0	7.0	7.0	27.0	27.0	27.0
Minimum Split (s)	39.0		14.0	14.0	14.0	34.0	34.0	34.0
Total Split (s)	40.0		42.0	42.0	42.0	53.0	53.0	53.0
Total Split (%)	29.6%		31.1%	31.1%	31.1%	39.3%	39.3%	39.3%
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lag		Lead	Lead	Lead			
Lead-Lag Optimize?	Yes		Yes	Yes	Yes			
Recall Mode	None		None	None	None	C-Min	C-Min	C-Min
v/c Ratio	0.28	0.03	0.95	0.76	0.61	0.73	0.66	0.76
Control Delay	59.0	0.0	68.0	33.6	8.0	83.5	33.0	18.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.0	0.0	68.0	33.6	8.0	83.5	33.0	18.9
Queue Length 50th (m)	6.8	0.0	121.0	61.8	0.8	11.1	167.2	200.7
Queue Length 95th (m)	13.8	0.0	#161.5	107.3	31.7	m#19.8 m#226.7 m#218.1		
Internal Link Dist (m)				220.4		38.0	231.2	
Turn Bay Length (m)					150.0	35.0		
Base Capacity (vph)	208	1507	899	545	675	55	1873	2797
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.03	0.95	0.76	0.61	0.73	0.66	0.76

Intersection Summary	
Cycle Length:	135
Actuated Cycle Length:	135
Offset:	20 (15%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle:	140
Control Type:	Actuated-Coordinated
#	95th percentile volume exceeds capacity, queue may be longer.
	Queue shown is maximum after two cycles.
m	Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 9: Leslie Street & Oriole GO Station Access/Hwy 401 WB Off-Ramp



HCM Signalized Intersection Capacity Analysis

9: Leslie Street & Oriole GO Station Access/Hwy 401 WB Off-Ramp

Future Background AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	→	↱	↰	→	↱	↰	→	↱	↰	→	↱
Traffic Volume (vph)	25	0	50	850	65	760	40	1230	0	0	2090	45
Future Volume (vph)	25	0	50	850	65	760	40	1230	0	0	2090	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.0		3.0	6.0	6.0	6.0	6.0	6.0			6.0	
Lane Util. Factor	1.00		1.00	0.97	0.95	0.95	1.00	*0.97			*0.95	
Frpb, ped/bikes	1.00		1.00	1.00	0.98	1.00	1.00	1.00			1.00	
Flpb, ped/bikes	0.99		1.00	1.00	1.00	1.00	1.00	1.00			1.00	
Frt	1.00		0.85	1.00	0.87	0.85	1.00	1.00			1.00	
Flt Protected	0.95		1.00	1.00	1.00	1.00	0.95	1.00			1.00	
Satd. Flow (prot)	1543		1507	3373	1509	1418	1685	3505			5230	
Flt Permitted	0.51		1.00	1.00	1.00	1.00	0.06	1.00			1.00	
Satd. Flow (perm)	827		1507	3373	1509	1418	102	3505			5230	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	25	0	50	850	65	760	40	1230	0	0	2090	45
RTOR Reduction (vph)	0	0	0	0	144	298	0	0	0	0	1	0
Lane Group Flow (vph)	25	0	50	850	271	112	40	1230	0	0	2134	0
Confl. Peds. (#/hr)	15					15	10		20	20		10
Heavy Vehicles (%)	8%	0%	0%	2%	0%	1%	0%	4%	0%	0%	2%	0%
Turn Type	Perm		Free	Split	NA	Prot	Perm	NA			NA	
Protected Phases				3	3	3		2			6	
Permitted Phases	4		Free				2					
Actuated Green, G (s)	10.6		135.0	35.0	35.0	35.0	68.4	68.4			68.4	
Effective Green, g (s)	11.6		135.0	36.0	36.0	36.0	69.4	69.4			69.4	
Actuated g/C Ratio	0.09		1.00	0.27	0.27	0.27	0.51	0.51			0.51	
Clearance Time (s)	7.0			7.0	7.0	7.0	7.0	7.0			7.0	
Vehicle Extension (s)	3.0			3.0	3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)	71		1507	899	402	378	52	1801			2688	
v/s Ratio Prot				c0.25	0.18	0.08		0.35			c0.41	
v/s Ratio Perm	c0.03		0.03				0.39					
v/c Ratio	0.35		0.03	0.95	0.67	0.30	0.77	0.68			0.79	
Uniform Delay, d1	58.2		0.0	48.5	44.3	39.4	26.4	24.6			26.9	
Progression Factor	1.00		1.00	1.00	1.00	1.00	1.27	1.27			0.65	
Incremental Delay, d2	3.0		0.0	18.1	4.4	0.4	46.7	1.3			0.2	
Delay (s)	61.2		0.0	66.6	48.7	39.9	80.3	32.4			17.7	
Level of Service	E		A	E	D	D	F	C			B	
Approach Delay (s)	20.4				55.6			33.9			17.7	
Approach LOS	C				E			C			B	
Intersection Summary												
HCM 2000 Control Delay			34.1									
HCM 2000 Volume to Capacity ratio			0.80									
Actuated Cycle Length (s)			135.0					19.0				
Intersection Capacity Utilization			83.5%									
Analysis Period (min)			15									
c Critical Lane Group												

Block 7
BA Group - TCS

Synchro 10 Report
FB_AM.syn

Queues

10: Leslie Street & Hwy 401 EB Off-Ramp/Lesmill Road

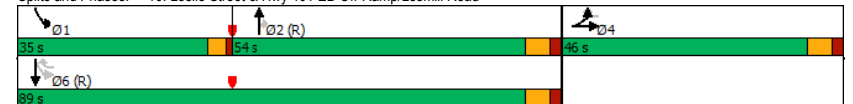
Future Background AM Peak Hour

Lane Group	EBL	EBT	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰	↱	↱	↱	↱	↱	↱
Traffic Volume (vph)	530	855	530	1580	105	525	1480
Future Volume (vph)	530	855	530	1580	105	525	1480
Lane Group Flow (vph)	450	935	530	1580	105	525	1480
Turn Type	Split	NA	Perm	NA	Perm	pm+pt	NA
Protected Phases	4	4		2		1	6
Permitted Phases			4 6		2	6	
Detector Phase	4	4	4 6	2	2	1	6
Switch Phase							
Minimum Initial (s)	7.0	7.0		20.0	20.0	6.0	20.0
Minimum Split (s)	43.0	43.0		26.0	26.0	10.0	26.0
Total Split (s)	46.0	46.0		54.0	54.0	35.0	89.0
Total Split (%)	34.1%	34.1%		40.0%	40.0%	25.9%	65.9%
Yellow Time (s)	4.0	4.0		4.0	4.0	3.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	1.0	2.0
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-3.0	-1.0
Total Lost Time (s)	5.0	5.0		5.0	5.0	1.0	5.0
Lead/Lag				Lag	Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	Yes	
Recall Mode	None	None		C-Min	C-Min	None	C-Min
v/c Ratio	0.96	0.90	0.35	0.90	0.19	1.01	0.69
Control Delay	78.4	57.6	0.6	48.6	15.2	73.4	17.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	78.4	57.6	0.6	48.6	15.2	73.4	17.0
Queue Length 50th (m)	137.3	139.2	0.0	151.4	8.9	~119.1	117.9
Queue Length 95th (m)	#214.9	#181.1	0.0	172.8	22.6 m#188.3	m68.7	
Internal Link Dist (m)				188.8			87.0
Turn Bay Length (m)	130.0				30.0	80.0	
Base Capacity (vph)	470	1036	1501	1790	552	522	2156
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.96	0.90	0.35	0.88	0.19	1.01	0.69

Intersection Summary

Cycle Length: 135
 Actuated Cycle Length: 135
 Offset: 57 (42%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 110
 Control Type: Actuated-Coordinated
 - Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 10: Leslie Street & Hwy 401 EB Off-Ramp/Lesmill Road



HCM Signalized Intersection Capacity Analysis

10: Leslie Street & Hwy 401 EB Off-Ramp/Lesmill Road

Future Background AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱	↱	↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	530	855	0	0	0	530	0	1580	105	525	1480	0
Future Volume (vph)	530	855	0	0	0	530	0	1580	105	525	1480	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900
Lane Width	3.0	3.5	3.5	3.5	3.5	3.0	3.5	3.5	3.0	3.0	3.5	3.5
Total Lost time (s)	5.0	5.0				5.0	5.0	5.0	1.0	5.0		
Lane Util. Factor	0.91	0.91				1.00	0.91	1.00	1.00	0.95		
Frpb, ped/bikes	1.00	1.00				1.00	1.00	0.98	1.00	1.00		
Flpb, ped/bikes	1.00	1.00				1.00	1.00	1.00	1.00	1.00		
Flt Protected	1.00	1.00				1.00	1.00	1.00	1.00	1.00		
Satd. Flow (prot)	1522	3357				1504	4932	1422	1848	3466		
Flt Permitted	1.00	1.00				1.00	1.00	1.00	0.08	1.00		
Satd. Flow (perm)	1522	3357				1504	4932	1422	144	3466		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	530	855	0	0	0	530	0	1580	105	525	1480	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	37	0	0	0
Lane Group Flow (vph)	450	935	0	0	0	530	0	1580	68	525	1480	0
Confl. Peds. (#/hr)			20	20			10		5	5		10
Heavy Vehicles (%)	6%	1%	4%	0%	0%	2%	0%	4%	2%	1%	3%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	4	0	0	0
Turn Type	Split	NA				Perm	NA	Perm	pm+pt	NA		
Protected Phases	4	4					2		1	6		
Permitted Phases						4 6		2	6			
Actuated Green, G (s)	40.7	40.7				135.0	47.3	47.3	82.3	82.3		
Effective Green, g (s)	41.7	41.7				135.0	48.3	48.3	85.3	83.3		
Actuated g/C Ratio	0.31	0.31				1.00	0.36	0.36	0.63	0.62		
Clearance Time (s)	6.0	6.0					6.0	6.0	4.0	6.0		
Vehicle Extension (s)	3.0	3.0					3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	470	1036				1504	1764	508	520	2138		
v/s Ratio Prot	c0.30	0.28					c0.32		c0.25	0.43		
v/s Ratio Perm						0.35		0.05	0.38			
v/c Ratio	0.96	0.90				0.35	0.90	0.13	1.01	0.69		
Uniform Delay, d1	45.8	44.7				0.0	41.0	29.2	42.7	17.3		
Progression Factor	1.00	1.00				1.00	1.00	1.00	1.06	0.91		
Incremental Delay, d2	30.5	10.8				0.1	7.5	0.6	32.1	1.1		
Delay (s)	76.3	55.5				0.1	48.5	29.8	77.5	16.8		
Level of Service	E	E				A	D	C	E	B		
Approach Delay (s)		62.3			0.1		47.4			32.7		
Approach LOS		E			A		D			C		
Intersection Summary												
HCM 2000 Control Delay		41.3				HCM 2000 Level of Service		D				
HCM 2000 Volume to Capacity ratio		0.94										
Actuated Cycle Length (s)		135.0				Sum of lost time (s)		11.0				
Intersection Capacity Utilization		104.2%				ICU Level of Service		G				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

11: CTC North Access & Sheppard Avenue East

Future Background AM Peak Hour

Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations	↕↕		↖	↕↕	↖	↖	
Traffic Volume (veh/h)	1690	50	35	1455	10	65	
Future Volume (Veh/h)	1690	50	35	1455	10	65	
Sign Control	Free			Free	Stop		
Grade	0%			0%	0%		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	
Hourly flow rate (vph)	1779	53	37	1532	11	68	
Pedestrians					35		
Lane Width (m)					3.0		
Walking Speed (m/s)					1.2		
Percent Blockage					2		
Right turn flare (veh)							
Median type	None			None			
Median storage (veh)							
Upstream signal (m)	144			105			
pX, platoon unblocked			0.69		0.82	0.69	
vC, conflicting volume			1867		2680	951	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol			1360		1167	35	
tC, single (s)			4.2		6.8	7.0	
tC, 2 stage (s)							
tF (s)			2.2		3.5	3.3	
p0 queue free %			89		92	90	
cM capacity (veh/h)			331		135	688	
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	1186	646	37	766	766	11	68
Volume Left	0	0	37	0	0	11	0
Volume Right	0	53	0	0	0	0	68
cSH	1700	1700	331	1700	1700	135	688
Volume to Capacity	0.70	0.38	0.11	0.45	0.45	0.08	0.10
Queue Length 95th (m)	0.0	0.0	3.0	0.0	0.0	2.1	2.6
Control Delay (s)	0.0	0.0	17.2	0.0	0.0	33.9	10.8
Lane LOS			C			D	B
Approach Delay (s)	0.0		0.4			14.0	
Approach LOS						B	
Intersection Summary							
Average Delay			0.5				
Intersection Capacity Utilization			59.1%		ICU Level of Service		B
Analysis Period (min)			15				

HCM Unsignalized Intersection Capacity Analysis
12: Provost Drive & CTC East Access/Singer Court

Future Background AM Peak Hour

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (veh/h)	10	0	15	70	0	85	15	260	45	170	115	30	
Future Volume (Veh/h)	10	0	15	70	0	85	15	260	45	170	115	30	
Sign Control		Stop			Stop			Free			Free		
Grade		0%			0%			0%			0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	11	0	16	76	0	92	16	283	49	185	125	33	
Pedestrians		15			70			10			5		
Lane Width (m)		3.5			3.5			3.3			3.3		
Walking Speed (m/s)		1.2			1.2			1.2			1.2		
Percent Blockage		1			6			1			0		
Right turn flare (veh)													
Median type								None			None		
Median storage (veh)													
Upstream signal (m)								142			103		
pX, platoon unblocked													
vC, conflicting volume	797	960	104	868	952	241	173				402		
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	797	960	104	868	952	241	173				402		
tC, single (s)	7.5	6.5	6.9	7.6	6.5	6.9	4.1				4.2		
tC, 2 stage (s)													
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2				2.2		
p0 queue free %	94	100	98	58	100	87	99				83		
cM capacity (veh/h)	197	197	919	182	199	714	1399				1068		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3					
Volume Total	27	168	16	189	143	185	83	75					
Volume Left	11	76	16	0	0	185	0	0					
Volume Right	16	92	0	0	49	0	0	33					
cSH	368	308	1399	1700	1700	1068	1700	1700					
Volume to Capacity	0.07	0.55	0.01	0.11	0.08	0.17	0.05	0.04					
Queue Length 95th (m)	1.9	24.5	0.3	0.0	0.0	5.0	0.0	0.0					
Control Delay (s)	15.6	29.9	7.6	0.0	0.0	9.1	0.0	0.0					
Lane LOS	C	D	A					A					
Approach Delay (s)	15.6	29.9	0.3					4.9					
Approach LOS	C	D											
Intersection Summary													
Average Delay	8.2												
Intersection Capacity Utilization	45.1%			ICU Level of Service			A						
Analysis Period (min)	15												

HCM Unsignalized Intersection Capacity Analysis
13: IKEA Driveway & Esther Shiner Boulevard

Future Background AM Peak Hour

							
Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations							
Traffic Volume (veh/h)	760	0	5	385	0	35	
Future Volume (Veh/h)	760	0	5	385	0	35	
Sign Control	Free			Free	Stop		
Grade	0%			0%	0%		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	
Hourly flow rate (vph)	809	0	5	410	0	37	
Pedestrians					5		
Lane Width (m)					3.0		
Walking Speed (m/s)					1.2		
Percent Blockage					0		
Right turn flare (veh)							
Median type	None			None			
Median storage (veh)							
Upstream signal (m)	240			130			
pX, platoon unblocked							
vC, conflicting volume			814		1029	410	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol			814		1029	410	
tC, single (s)			4.1		6.8	6.9	
tC, 2 stage (s)							
tF (s)			2.2		3.5	3.3	
p0 queue free %			99		100	94	
cM capacity (veh/h)			819		231	595	
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1
Volume Total	404	404	0	5	205	205	37
Volume Left	0	0	0	5	0	0	0
Volume Right	0	0	0	0	0	0	37
cSH	1700	1700	1700	819	1700	1700	595
Volume to Capacity	0.24	0.24	0.00	0.01	0.12	0.12	0.06
Queue Length 95th (m)	0.0	0.0	0.0	0.1	0.0	0.0	1.6
Control Delay (s)	0.0	0.0	0.0	9.4	0.0	0.0	11.5
Lane LOS				A			B
Approach Delay (s)	0.0			0.1			11.5
Approach LOS							B
Intersection Summary							
Average Delay	0.4						
Intersection Capacity Utilization	31.0%			ICU Level of Service			A
Analysis Period (min)	15						

Queues

1: Bessarion Road/Burbank Drive & Sheppard Avenue East

Future Background PM Peak Hour

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	40	1775	30	1815	10	5	220	20
Future Volume (vph)	40	1775	30	1815	10	5	220	20
Lane Group Flow (vph)	41	1821	31	2041	10	25	224	61
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases	2		6		4		8	
Permitted Phases	2		6		4		8	
Detector Phase	2	2	6	6	4	4	8	8
Switch Phase								
Minimum Initial (s)	24.0	24.0	24.0	24.0	7.0	7.0	7.0	7.0
Minimum Split (s)	30.0	30.0	30.0	30.0	35.0	35.0	35.0	35.0
Total Split (s)	74.0	74.0	74.0	74.0	36.0	36.0	36.0	36.0
Total Split (%)	67.3%	67.3%	67.3%	67.3%	32.7%	32.7%	32.7%	32.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	4.0	4.0	4.0	4.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	6.0	6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	C-Min	C-Min	C-Min	C-Min	None	None	None	None
v/c Ratio	0.63	0.76	0.39	0.87	0.04	0.07	0.79	0.16
Control Delay	60.7	15.5	17.8	14.5	30.8	17.2	59.4	25.4
Queue Delay	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0
Total Delay	60.7	15.5	17.8	14.8	30.8	17.2	59.4	25.4
Queue Length 50th (m)	4.9	134.0	1.6	44.4	1.8	1.4	47.4	7.9
Queue Length 95th (m)	#28.7	189.4	m2.5	#75.1	6.1	8.1	72.9	18.3
Internal Link Dist (m)	449.7		65.9		131.2		187.8	
Turn Bay Length (m)	30.0		30.0		15.0		40.0	
Base Capacity (vph)	65	2391	79	2349	345	452	348	452
Starvation Cap Reductn	0	0	0	48	0	0	0	0
Spillback Cap Reductn	0	3	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.76	0.39	0.89	0.03	0.06	0.64	0.13

Intersection Summary

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 57 (52%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 90

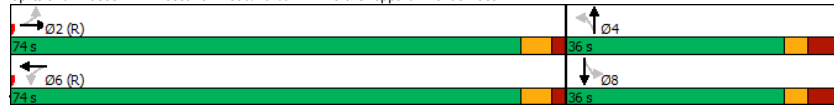
Control Type: Actuated-Coordinated

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 1: Bessarion Road/Burbank Drive & Sheppard Avenue East



Block 7

BA Group - TCS

Synchro 10 Report

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HCM Signalized Intersection Capacity Analysis

1: Bessarion Road/Burbank Drive & Sheppard Avenue East

Future Background PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↩	↩↩		↩	↩↩		↩	↩		↩	↩	↩
Traffic Volume (vph)	40	1775	10	30	1815	185	10	5	20	220	20	40
Future Volume (vph)	40	1775	10	30	1815	185	10	5	20	220	20	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.5	3.0	3.5	3.5	3.0	3.5	3.5	3.0	3.5	3.5
Total Lost time (s)	5.0	5.0		5.0	5.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	0.98		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00		0.98	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.88		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1685	3529		1685	3458		1676	1615		1640	1616	
Flt Permitted	0.05	1.00		0.07	1.00		0.72	1.00		0.74	1.00	
Satd. Flow (perm)	95	3529		117	3458		1265	1615		1279	1616	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	41	1811	10	31	1852	189	10	5	20	224	20	41
RTOR Reduction (vph)	0	0	0	0	6	0	0	13	0	0	13	0
Lane Group Flow (vph)	41	1821	0	31	2035	0	10	12	0	224	48	0
Confl. Peds. (#/hr)	25		55	55		25	5		15	15		5
Heavy Vehicles (%)	0%	1%	0%	0%	1%	2%	0%	0%	0%	1%	6%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	2			6			4			8		
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	73.6	73.6		73.6	73.6		23.4	23.4		23.4	23.4	
Effective Green, g (s)	74.6	74.6		74.6	74.6		24.4	24.4		24.4	24.4	
Actuated g/C Ratio	0.68	0.68		0.68	0.68		0.22	0.22		0.22	0.22	
Clearance Time (s)	6.0	6.0		6.0	6.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	64	2393		79	2345		280	358		283	358	
v/s Ratio Prot		0.52			c0.59			0.01			0.03	
v/s Ratio Perm	0.43			0.27			0.01			c0.18		
v/c Ratio	0.64	0.76		0.39	0.87		0.04	0.03		0.79	0.13	
Uniform Delay, d1	10.1	11.8		7.8	13.8		33.6	33.6		40.4	34.3	
Progression Factor	1.00	1.00		0.61	0.71		1.00	1.00		1.00	1.00	
Incremental Delay, d2	40.2	2.3		9.1	3.1		0.1	0.0		14.0	0.2	
Delay (s)	50.2	14.1		13.8	12.9		33.6	33.6		54.4	34.5	
Level of Service	D	B		B	B		C	C		D	C	
Approach Delay (s)	14.9		12.9		33.6		50.1					
Approach LOS	B		B		C		D					

Intersection Summary

HCM 2000 Control Delay

HCM 2000 Level of Service

B

HCM 2000 Volume to Capacity ratio

0.85

Actuated Cycle Length (s)

110.0

Sum of lost time (s)

11.0

Intersection Capacity Utilization

85.0%

ICU Level of Service

E

Analysis Period (min)

15

c Critical Lane Group

Block 7

BA Group - TCS

Synchro 10 Report

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Queues

2: CTC West Access/Blue Ridge Road & Sheppard Avenue East

Future Background PM Peak Hour

									
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBR	SBL	SBR
Lane Configurations									
Traffic Volume (vph)	15	1725	230	5	1915	130	5	20	10
Future Volume (vph)	15	1725	230	5	1915	130	5	20	10
Lane Group Flow (vph)	16	1816	242	5	2074	137	5	21	11
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	Perm	Perm
Protected Phases	2								
Permitted Phases	2		2	6		4	4	8	8
Detector Phase	2	2	2	6	6	4	4	8	8
Switch Phase									
Minimum Initial (s)	27.0	27.0	27.0	27.0	27.0	7.0	7.0	7.0	7.0
Minimum Split (s)	33.0	33.0	33.0	33.0	33.0	36.0	36.0	36.0	36.0
Total Split (s)	73.0	73.0	73.0	73.0	73.0	37.0	37.0	37.0	37.0
Total Split (%)	66.4%	66.4%	66.4%	66.4%	66.4%	33.6%	33.6%	33.6%	33.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	C-Min	C-Min	C-Min	C-Min	C-Min	None	None	None	None
v/c Ratio	0.23	0.69	0.25	0.04	0.79	0.52	0.02	0.08	0.04
Control Delay	11.3	6.2	3.1	7.2	10.3	47.9	0.2	35.9	2.4
Queue Delay	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Total Delay	11.3	6.3	3.1	7.2	10.4	47.9	0.2	35.9	2.4
Queue Length 50th (m)	0.7	48.0	5.3	0.2	81.5	29.4	0.0	4.2	0.0
Queue Length 95th (m)	m1.5	80.4	m12.2	m0.5	m#87.5	41.6	0.0	9.8	1.3
Internal Link Dist (m)	32.6				120.2				
Turn Bay Length (m)	30.0	25.0		35.0					
Base Capacity (vph)	70	2628	970	114	2640	482	449	484	452
Starvation Cap Reductn	0	114	0	0	55	0	0	0	0
Spillback Cap Reductn	0	0	0	0	60	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.72	0.25	0.04	0.80	0.28	0.01	0.04	0.02

Intersection Summary

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 56 (51%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 2: CTC West Access/Blue Ridge Road & Sheppard Avenue East



Block 7

BA Group - TCS

Synchro 10 Report

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HCM Signalized Intersection Capacity Analysis

2: CTC West Access/Blue Ridge Road & Sheppard Avenue East

Future Background PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	15	1725	230	5	1915	55	130	0	5	20	0	10
Traffic Volume (vph)	15	1725	230	5	1915	55	130	0	5	20	0	10
Future Volume (vph)	16	1816	242	5	2074	58	137	0	5	21	0	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.5	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0		5.0		5.0	5.0		5.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00		1.00	1.00		1.00
Frpb, ped/bikes	1.00	1.00	0.86	1.00	1.00		1.00		0.98	1.00		0.98
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00		0.99		1.00	0.99		1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00		0.85	1.00		0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95		1.00	0.95		1.00
Satd. Flow (prot)	1685	3500	1263	1676	3515		1659		1473	1666		1481
Flt Permitted	0.05	1.00	1.00	0.09	1.00		0.95		1.00	0.95		1.00
Satd. Flow (perm)	94	3500	1263	152	3515		1659		1473	1666		1481
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	16	1816	242	5	2016	58	137	0	5	21	0	11
RTOR Reduction (vph)	0	0	22	0	1	0	0	0	4	0	0	9
Lane Group Flow (vph)	16	1816	220	5	2073	0	137	0	1	21	0	2
Confl. Peds. (#/hr)	20		60	60		20	5		10	10		5
Heavy Vehicles (%)	0%	2%	1%	0%	1%	0%	1%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	4	0	0	0	0	0	0	0	0	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm		Perm	Perm		Perm
Protected Phases	2		2		6		4		4		8	
Permitted Phases	2		2	6			4		4	8		8
Actuated Green, G (s)	81.6	81.6	81.6	81.6	81.6		16.4		16.4	16.4		16.4
Effective Green, g (s)	82.6	82.6	82.6	82.6	82.6		17.4		17.4	17.4		17.4
Actuated g/C Ratio	0.75	0.75	0.75	0.75	0.75		0.16		0.16	0.16		0.16
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		6.0		6.0	6.0		6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0		3.0
Lane Grp Cap (vph)	70	2628	948	114	2639		262		233	263		234
v/s Ratio Prot	0.52		0.59		0.59		0.59		0.59		0.59	
v/s Ratio Perm	0.17		0.17	0.03			0.08		0.00	0.01		0.00
v/c Ratio	0.23	0.69	0.23	0.04	0.79		0.52		0.00	0.08		0.01
Uniform Delay, d1	4.1	7.1	4.1	3.5	8.3		42.5		39.0	39.5		39.0
Progression Factor	0.69	0.59	0.76	1.04	0.83		1.00		1.00	1.00		1.00
Incremental Delay, d2	5.0	1.0	0.4	0.4	1.3		1.9		0.0	0.1		0.0
Delay (s)	7.8	5.2	3.5	4.1	8.2		44.4		39.0	39.6		39.0
Level of Service	A	A	A	A	A		D		D	D		D
Approach Delay (s)	5.0		8.2		44.2		39.4		39.4		39.4	
Approach LOS	A		A		D		D		D		D	

Intersection Summary

HCM 2000 Control Delay	8.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	83.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Block 7

BA Group - TCS

Synchro 10 Report

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Queues

3: Provost Drive/Ambrose Road & Sheppard Avenue East

Future Background PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	NBL	NBR	SBL	SBR
Lane Configurations	↩	↩↩	↩	↩	↩↩	↩	↩	↩	↩
Traffic Volume (vph)	15	1510	230	290	1785	175	200	195	30
Future Volume (vph)	15	1510	230	290	1785	175	200	195	30
Lane Group Flow (vph)	15	1510	230	290	1945	175	200	195	30
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+ov	Perm	Perm
Protected Phases		2		1	6		1		
Permitted Phases	2		2	6		4		8	8
Detector Phase	2	2	2	1	6	4	1	8	8
Switch Phase									
Minimum Initial (s)	30.0	30.0	30.0	6.0	30.0	30.0	6.0	30.0	30.0
Minimum Split (s)	37.0	37.0	37.0	10.0	37.0	38.0	10.0	38.0	38.0
Total Split (s)	54.0	54.0	54.0	17.0	71.0	39.0	17.0	39.0	39.0
Total Split (%)	49.1%	49.1%	49.1%	15.5%	64.5%	35.5%	15.5%	35.5%	35.5%
Yellow Time (s)	4.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	1.0	3.0	4.0	1.0	4.0	4.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	6.0	6.0	6.0	3.0	6.0	7.0	3.0	7.0	7.0
Lead/Lag	Lag	Lag	Lag	Lead			Lead		
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes		
Recall Mode	C-Min	C-Min	C-Min	None	C-Min	None	None	None	None
v/c Ratio	0.23	0.99	0.33	0.99	0.94	0.38	0.30	0.42	0.06
Control Delay	24.7	42.3	9.5	80.1	30.4	34.6	14.9	35.7	0.3
Queue Delay	0.0	0.0	0.0	0.0	2.3	0.0	0.0	0.0	0.0
Total Delay	24.7	42.3	9.5	80.1	32.6	34.6	14.9	35.7	0.3
Queue Length 50th (m)	1.7	125.3	12.0	49.5	196.7	31.8	20.4	36.0	0.0
Queue Length 95th (m)	m1.8	#225.3	m18.9	#106.0	#269.0	52.2	36.3	58.0	0.0
Internal Link Dist (m)		81.5			111.0				
Turn Bay Length (m)	40.0		40.0	165.0					
Base Capacity (vph)	64	1527	689	294	2074	482	672	473	482
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	64	0	0	0	1
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.99	0.33	0.99	0.97	0.36	0.30	0.41	0.06

Intersection Summary

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 72 (65%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 105

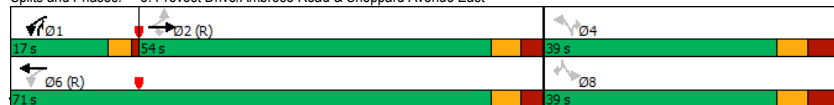
Control Type: Actuated-Coordinated

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 3: Provost Drive/Ambrose Road & Sheppard Avenue East



Block 7

BA Group - TCS

Synchro 10 Report

FB_PM.syn

HCM Signalized Intersection Capacity Analysis

3: Provost Drive/Ambrose Road & Sheppard Avenue East

Future Background PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↩	↩↩	↩	↩	↩↩	↩	↩	↩	↩	↩	↩	↩
Traffic Volume (vph)	15	1510	230	290	1785	160	175	0	200	195	0	30
Future Volume (vph)	15	1510	230	290	1785	160	175	0	200	195	0	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.5	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	6.0	6.0	6.0	3.0	6.0		7.0		3.0	7.0		7.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00		1.00	1.00		1.00
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00		1.00		0.97	1.00		0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.98		1.00	0.97		1.00
Frft	1.00	1.00	0.85	1.00	0.99		1.00		0.85	1.00		0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95		1.00	0.95		1.00
Satd. Flow (prot)	1685	3500	1449	1668	3447		1657		1434	1629		1465
Flt Permitted	0.08	1.00	1.00	0.08	1.00		0.95		1.00	0.95		1.00
Satd. Flow (perm)	148	3500	1449	138	3447		1657		1434	1629		1465
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	15	1510	230	290	1785	160	175	0	200	195	0	30
RTOR Reduction (vph)	0	0	57	0	6	0	0	0	23	0	0	22
Lane Group Flow (vph)	15	1510	173	290	1939	0	175	0	177	195	0	8
Confl. Peds. (#/hr)	20		25	25		20	15		30	30		15
Heavy Vehicles (%)	0%	2%	0%	1%	1%	1%	0%	0%	2%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	4	4	0	0	0	0	0	0
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm		pm+ov	Perm		Perm
Protected Phases		2		1	6				1			
Permitted Phases	2		2	6			4		4	8		8
Actuated Green, G (s)	47.0	47.0	47.0	65.0	65.0		30.0		44.0	30.0		30.0
Effective Green, g (s)	48.0	48.0	48.0	66.0	66.0		31.0		46.0	31.0		31.0
Actuated g/C Ratio	0.44	0.44	0.44	0.60	0.60		0.28		0.42	0.28		0.28
Clearance Time (s)	7.0	7.0	7.0	4.0	7.0		8.0		4.0	8.0		8.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0		3.0
Lane Grp Cap (vph)	64	1527	632	291	2068		466		599	459		412
v/s Ratio Prot		0.43		c0.14	0.56				0.04			
v/s Ratio Perm	0.10		0.12	c0.46			0.11		0.08	c0.12		0.01
v/c Ratio	0.23	0.99	0.27	1.00	0.94		0.38		0.30	0.42		0.02
Uniform Delay, d1	19.5	30.7	19.8	35.6	20.1		31.7		21.2	32.2		28.5
Progression Factor	0.82	0.78	0.76	1.00	1.00		1.00		1.00	1.00		1.00
Incremental Delay, d2	6.2	17.3	0.8	51.5	9.7		0.5		0.3	0.6		0.0
Delay (s)	22.1	41.2	15.9	87.1	29.8		32.2		21.5	32.9		28.6
Level of Service	C	D	B	F	C		C		C	C		C
Approach Delay (s)		37.7			37.3			26.5			32.3	
Approach LOS		D			D			C			C	

Intersection Summary

HCM 2000 Control Delay

36.3

HCM 2000 Level of Service

D

HCM 2000 Volume to Capacity ratio

0.84

Actuated Cycle Length (s)

110.0

Sum of lost time (s)

17.0

Intersection Capacity Utilization

110.4%

ICU Level of Service

H

Analysis Period (min)

15

c Critical Lane Group

Block 7

BA Group - TCS

Synchro 10 Report

FB_PM.syn

Queues

4: Leslie Street & Sheppard Avenue East

Future Background PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↩	↩↩↩	↩	↩	↩↩↩	↩	↩↩	↩	↩	↩↩↩
Traffic Volume (vph)	300	1375	615	230	1325	625	1230	455	110	895
Future Volume (vph)	300	1375	615	230	1325	625	1230	455	110	895
Lane Group Flow (vph)	300	1375	615	230	1475	625	1230	455	110	1170
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	Prot	NA	Perm	pm+pt	NA
Protected Phases	5	2	7	1	6	7	4		3	8
Permitted Phases	2		2	6				4	8	
Detector Phase	5	2	7	1	6	7	4	4	3	8
Switch Phase										
Minimum Initial (s)	6.0	38.0	6.0	6.0	38.0	6.0	38.0	38.0	6.0	38.0
Minimum Split (s)	10.0	45.0	12.0	10.0	45.0	12.0	45.0	45.0	10.0	45.0
Total Split (s)	18.0	49.0	29.0	17.0	48.0	29.0	64.0	64.0	10.0	45.0
Total Split (%)	12.9%	35.0%	20.7%	12.1%	34.3%	20.7%	45.7%	45.7%	7.1%	32.1%
Yellow Time (s)	3.0	4.0	3.0	3.0	4.0	3.0	4.0	4.0	3.0	4.0
All-Red Time (s)	1.0	3.0	3.0	1.0	3.0	3.0	3.0	3.0	1.0	3.0
Lost Time Adjust (s)	-3.0	-1.0	-3.0	-2.0	-1.0	-3.0	-1.0	-1.0	-2.0	-1.0
Total Lost Time (s)	1.0	6.0	3.0	2.0	6.0	3.0	6.0	6.0	2.0	6.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min	None	None	Min	None	C-Min	C-Min	None	C-Min
v/c Ratio	1.12	0.88	0.73	0.95	0.99	0.98	0.84	0.69	0.69	0.86
Control Delay	126.7	53.9	20.0	84.9	69.6	85.4	39.6	24.2	48.4	52.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	126.7	53.9	20.0	84.9	69.6	85.4	39.6	24.2	48.4	52.8
Queue Length 50th (m)	~83.6	139.7	73.4	50.9	156.0	82.8	177.2	62.6	16.2	113.9
Queue Length 95th (m)	#144.9	160.1	117.6	#105.3	#192.4	#131.7	215.6	139.9	#40.1	133.4
Internal Link Dist (m)		434.4			1078.4		224.4			40.9
Turn Bay Length (m)	170.0		130.0	200.0		175.0				
Base Capacity (vph)	269	1559	838	241	1487	638	1464	659	159	1368
Starvation Cap Reductn	0	0	0	0	0	0	5	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.12	0.88	0.73	0.95	0.99	0.98	0.84	0.69	0.69	0.86

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 4:NBT and 8:SBTL, Start of Green

Natural Cycle: 135

Control Type: Actuated-Coordinated

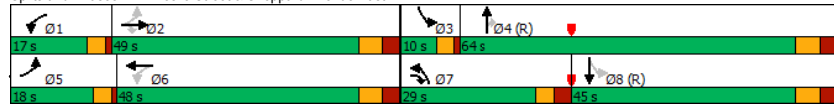
Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 4: Leslie Street & Sheppard Avenue East



BA Group - TCS

FB_PM.syn

HCM Signalized Intersection Capacity Analysis

4: Leslie Street & Sheppard Avenue East

Future Background PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↩	↩↩↩	↩	↩	↩↩↩		↩	↩↩	↩	↩	↩↩↩	
Traffic Volume (vph)	300	1375	615	230	1325	150	625	1230	455	110	895	275
Future Volume (vph)	300	1375	615	230	1325	150	625	1230	455	110	895	275
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.5	3.0	3.5	3.0	3.0	3.5	3.5
Total Lost time (s)	1.0	6.0	3.0	2.0	6.0		3.0	6.0	6.0	2.0	6.0	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		0.97	0.95	1.00	1.00	0.91	
Frpb, ped/bikes	1.00	1.00	0.92	1.00	0.99		1.00	1.00	0.92	1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	0.96	
Flt Protected	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Satd. Flow (prot)	1773	5079	1387	1755	4925		3440	3535	1375	1772	4768	
Flt Permitted	0.09	1.00	1.00	0.09	1.00		1.00	1.00	1.00	0.11	1.00	
Satd. Flow (perm)	158	5079	1387	163	4925		3440	3535	1375	191	4768	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	300	1375	615	230	1325	150	625	1230	455	110	895	275
RTOR Reduction (vph)	0	0	127	0	10	0	0	0	90	0	40	0
Lane Group Flow (vph)	300	1375	488	230	1465	0	625	1230	365	110	1130	0
Confl. Peds. (#/hr)	80		105	105		80	65		60	60		65
Heavy Vehicles (%)	0%	1%	0%	1%	1%	1%	0%	1%	0%	0%	1%	2%
Bus Blockages (#/hr)	0	0	0	0	4	4	0	0	3	0	4	4
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		Prot	NA	Perm	pm+pt	NA	
Protected Phases	5	2	7	1	6		7	4		3	8	
Permitted Phases	2		2	6					4	8		
Actuated Green, G (s)	56.0	42.0	65.0	54.0	41.0		23.0	57.0	57.0	44.0	38.0	
Effective Green, g (s)	62.0	43.0	71.0	58.0	42.0		26.0	58.0	58.0	48.0	39.0	
Actuated g/C Ratio	0.44	0.31	0.51	0.41	0.30		0.19	0.41	0.41	0.34	0.28	
Clearance Time (s)	4.0	7.0	6.0	4.0	7.0		6.0	7.0	7.0	4.0	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	
Lane Grp Cap (vph)	266	1559	703	238	1477		638	1464	569	155	1328	
v/s Ratio Prot	c0.14	0.27	0.13	0.10	c0.30		c0.18	c0.35		0.04	0.24	
v/s Ratio Perm	0.36		0.22	0.30					0.27	0.20		
v/c Ratio	1.13	0.88	0.69	0.97	0.99		0.98	0.84	0.64	0.71	0.85	
Uniform Delay, d1	44.3	46.1	26.2	41.4	48.8		56.7	36.8	32.7	34.4	47.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.03	0.93	0.88	1.00	1.00	
Incremental Delay, d2	94.0	6.2	3.0	48.4	21.4		26.7	4.9	4.5	13.9	7.0	
Delay (s)	138.3	52.3	29.2	89.8	70.2		85.2	39.1	33.2	48.3	54.8	
Level of Service	F	D	C	F	E		F	D	C	D	D	
Approach Delay (s)		57.4			72.9			50.4			54.2	
Approach LOS		E			E			D			D	

Intersection Summary

HCM 2000 Control Delay	58.2	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	114.5%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Block 7
BA Group - TCSSynchro 10 Report
FB_PM.syn

HCM Unsignalized Intersection Capacity Analysis

5: McMahon Drive/CTC South Access & Esther Shiner Boulevard

Future Background PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	5	5	0	295	0	285	0	5	150	320	25	0
Future Volume (vph)	5	5	0	295	0	285	0	5	150	320	25	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	5	5	0	314	0	303	0	5	160	340	27	0
Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2							
Volume Total (vph)	10	617	165	367	0							
Volume Left (vph)	5	314	0	340	0							
Volume Right (vph)	0	303	160	0	0							
Hadj (s)	0.10	-0.19	-0.58	0.48	0.00							
Departure Headway (s)	7.2	5.6	6.2	7.2	6.7							
Degree Utilization, x	0.02	0.95	0.28	0.74	0.00							
Capacity (veh/h)	451	640	562	492	538							
Control Delay (s)	10.4	48.1	11.7	26.6	8.5							
Approach Delay (s)	10.4	48.1	11.7	26.6								
Approach LOS	B	E	B	D								
Intersection Summary												
Delay				35.8								
Level of Service				E								
Intersection Capacity Utilization	82.2%			ICU Level of Service					E			
Analysis Period (min)	15											

Queues

6: Esther Shiner Boulevard & Provost Drive

Future Background PM Peak Hour

										
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	75	390	10	470	70	15	95	260	55	95
Future Volume (vph)	75	390	10	470	70	15	95	260	55	95
Lane Group Flow (vph)	0	485	10	480	71	0	173	265	56	97
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	pm+pt	NA	Perm
Protected Phases		2		6			4	3	8	
Permitted Phases		2		6		4		8		8
Detector Phase	2	2	6	6	6	4	4	3	8	8
Switch Phase										
Minimum Initial (s)	26.0	26.0	26.0	26.0	26.0	7.0	7.0	6.0	7.0	7.0
Minimum Split (s)	33.0	33.0	33.0	33.0	33.0	34.0	34.0	10.0	34.0	34.0
Total Split (s)	39.0	39.0	39.0	39.0	39.0	34.0	34.0	10.0	44.0	44.0
Total Split (%)	47.0%	47.0%	47.0%	47.0%	47.0%	41.0%	41.0%	12.0%	53.0%	53.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	1.0	3.0	3.0
Lost Time Adjust (s)		-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)		6.0	6.0	6.0	6.0		6.0	3.0	6.0	6.0
Lead/Lag						Lag	Lag	Lead		
Lead-Lag Optimize?						Yes	Yes	Yes		
Recall Mode	Min	Min	Min	Min	Min	None	None	None	None	None
v/c Ratio		0.69	0.04	0.54	0.10		0.49	0.61	0.09	0.17
Control Delay		22.5	13.4	17.0	1.9		23.3	21.8	14.8	4.1
Queue Delay		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Total Delay		22.5	13.4	17.0	1.9		23.3	21.8	14.8	4.1
Queue Length 50th (m)		44.6	0.6	40.1	0.0		16.3	25.2	5.0	0.0
Queue Length 95th (m)		#126.3	4.3	96.7	4.1		32.1	41.6	11.5	8.0
Internal Link Dist (m)		80.2		216.2			86.8		118.2	
Turn Bay Length (m)			105.0					75.0		
Base Capacity (vph)		708	238	893	739		685	433	971	841
Starvation Cap Reductn		0	0	0	0		0	0	0	0
Spillback Cap Reductn		0	0	0	0		0	0	0	0
Storage Cap Reductn		0	0	0	0		0	0	0	0
Reduced v/c Ratio		0.69	0.04	0.54	0.10		0.25	0.61	0.06	0.12

Intersection Summary

Cycle Length: 83

Actuated Cycle Length: 69.4

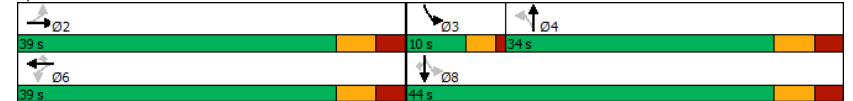
Natural Cycle: 80

Control Type: Semi Act-Uncoord

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

Queue shown is maximum after two cycles.

Splits and Phases: 6: Esther Shiner Boulevard & Provost Drive



HCM Signalized Intersection Capacity Analysis 6: Esther Shiner Boulevard & Provost Drive

Future Background PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔	↔		↔		↔	↔	↔
Traffic Volume (vph)	75	390	10	10	470	70	15	95	60	260	55	95
Future Volume (vph)	75	390	10	10	470	70	15	95	60	260	55	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.0	3.5	3.0	3.5	3.5	3.0	3.5	3.5	3.0
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	0.96	0.99	1.00	0.96	0.99	1.00	1.00	0.96	0.99
Flpb, ped/bikes	1.00	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr t	1.00	1.00	1.00	0.85	0.95	1.00	0.85	0.95	1.00	1.00	0.85	0.95
Flt Protected	0.99	0.95	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1827	1044	1860	1434	1677	1678	1756	1449				
Flt Permitted	0.80	0.45	1.00	1.00	0.97	0.52	1.00	1.00				
Satd. Flow (perm)	1473	497	1860	1434	1632	918	1756	1449				
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	77	398	10	10	480	71	15	97	61	265	56	97
RTOR Reduction (vph)	0	1	0	0	37	0	29	0	0	0	63	0
Lane Group Flow (vph)	0	484	0	10	480	34	0	144	0	265	56	34
Confl. Peds. (#/hr)	35	15	15	35	15	15	15	15	15	15	15	15
Heavy Vehicles (%)	4%	1%	0%	60%	1%	6%	4%	7%	0%	7%	0%	0%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA	pm+pt	NA	Perm	Perm
Protected Phases	2	2		6	6	4	4	3	8	8	8	8
Permitted Phases	2			6	6	4	4	8				
Actuated Green, G (s)	32.3	32.3	32.3	32.3	12.8	22.9	22.9	22.9				
Effective Green, g (s)	33.3	33.3	33.3	33.3	13.8	23.9	23.9	23.9				
Actuated g/C Ratio	0.48	0.48	0.48	0.48	0.20	0.35	0.35	0.35				
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0	4.0	7.0	7.0				
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0				
Lane Grp Cap (vph)	708	239	895	690	325	395	606	500				
v/s Ratio Prot			0.26									
v/s Ratio Perm	c0.33	0.02		0.02	0.09	c0.16	0.02					
v/c Ratio	0.68	0.04	0.54	0.05	0.44	0.67	0.09	0.07				
Uniform Delay, d1	13.9	9.5	12.6	9.5	24.3	18.9	15.3	15.2				
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Incremental Delay, d2	2.7	0.1	0.6	0.0	1.0	4.4	0.1	0.1				
Delay (s)	16.6	9.6	13.2	9.6	25.3	23.3	15.4	15.2				
Level of Service	B	A	B	A	C	C	B	B				
Approach Delay (s)	16.6	12.7	25.3	20.4								
Approach LOS	B	B	C	C								

Intersection Summary

HCM 2000 Control Delay	17.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	69.2	Sum of lost time (s)	15.0
Intersection Capacity Utilization	102.6%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Queues

7: Esther Shiner Boulevard & Old Leslie Street

Future Background PM Peak Hour

Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	40	760	655	5	0	395	0
Future Volume (vph)	40	760	655	5	0	395	0
Lane Group Flow (vph)	42	797	812	5	5	411	78
Turn Type	Perm	NA	NA	Perm	NA	Perm	NA
Protected Phases	2	6	4	4	8	8	
Permitted Phases	2						
Detector Phase	2	2	6	4	4	8	8
Switch Phase							
Minimum Initial (s)	28.0	28.0	28.0	7.0	7.0	7.0	7.0
Minimum Split (s)	35.0	35.0	35.0	37.0	37.0	37.0	37.0
Total Split (s)	42.0	42.0	42.0	37.0	37.0	37.0	37.0
Total Split (%)	53.2%	53.2%	53.2%	46.8%	46.8%	46.8%	46.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	Min	Min	Min	None	None	None	None
v/c Ratio	0.20	0.52	0.55	0.01	0.01	0.81	0.12
Control Delay	17.1	16.4	16.1	12.0	0.0	32.8	1.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.1	16.4	16.1	12.0	0.0	32.8	1.1
Queue Length 50th (m)	3.6	41.7	41.0	0.4	0.0	46.8	0.0
Queue Length 95th (m)	11.1	61.3	61.2	2.3	0.0	#91.3	2.2
Internal Link Dist (m)		106.6	130.2		43.8		121.9
Turn Bay Length (m)	40.0			10.0		40.0	
Base Capacity (vph)	255	1896	1839	548	775	602	726
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.42	0.44	0.01	0.01	0.68	0.11

Intersection Summary

Cycle Length: 79	
Actuated Cycle Length: 67.4	
Natural Cycle: 75	
Control Type: Semi Act-Uncoord	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Splits and Phases: 7: Esther Shiner Boulevard & Old Leslie Street

→ Ø2	↑ Ø4
42 s	37 s
← Ø6	↓ Ø8
42 s	37 s

HCM Signalized Intersection Capacity Analysis 7: Esther Shiner Boulevard & Old Leslie Street

Future Background PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰		↰	↰		↰	↰		↰	↰	
Traffic Volume (vph)	40	760	5	0	655	125	5	0	5	395	0	75
Future Volume (vph)	40	760	5	0	655	125	5	0	5	395	0	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.5	3.0	3.5	3.5	3.0	3.5	3.5	3.0	3.5	3.5
Total Lost time (s)	6.0	6.0			6.0	6.0	6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95			0.95	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00			0.99	1.00	0.98	1.00		0.94	0.94	
Flpb, ped/bikes	0.99	1.00			1.00	0.95	1.00	0.99		1.00	1.00	
Flt Protected	1.00	1.00			0.98	1.00	0.85	1.00		0.85	0.85	
Satd. Flow (prot)	1640	3530			3393	1608	1567	1641		1427	1427	
Flt Permitted	0.28	1.00			1.00	0.71	1.00	0.75		1.00	1.00	
Satd. Flow (perm)	476	3530			3393	1196	1567	1303		1427	1427	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	42	792	5	0	682	130	5	0	5	411	0	78
RTOR Reduction (vph)	0	1	0	0	21	0	0	3	0	0	48	0
Lane Group Flow (vph)	42	796	0	0	791	0	5	2	0	411	30	0
Conf. Peds. (#/hr)	20		20	20		20	75		10	10		75
Heavy Vehicles (%)	2%	1%	0%	0%	1%	7%	0%	0%	0%	2%	0%	5%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	28.2	28.2			28.2		25.2	25.2		25.2	25.2	
Effective Green, g (s)	29.2	29.2			29.2		26.2	26.2		26.2	26.2	
Actuated g/C Ratio	0.43	0.43			0.43		0.39	0.39		0.39	0.39	
Clearance Time (s)	7.0	7.0			7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	206	1529			1469		464	609		506	554	
v/s Ratio Prot		0.23			c0.23			0.00			0.02	
v/s Ratio Perm	0.09						0.00			c0.32		
v/c Ratio	0.20	0.52			0.54		0.01	0.00		0.81	0.05	
Uniform Delay, d1	11.9	14.0			14.1		12.6	12.6		18.4	12.9	
Progression Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	0.3			0.4		0.0	0.0		9.6	0.0	
Delay (s)	12.4	14.3			14.5		12.7	12.6		28.0	12.9	
Level of Service	B	B			B		B	B		C	B	
Approach Delay (s)	14.2				14.5		12.6			25.6		
Approach LOS	B				B		B			C		

Intersection Summary

HCM 2000 Control Delay	16.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	67.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	71.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Block 7
BA Group - TCS

Synchro 10 Report
FB_PM.syn

Queues

8: Leslie Street & Esther Shiner Boulevard

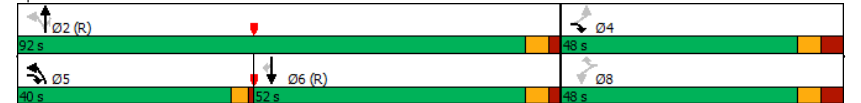
Future Background PM Peak Hour

Lane Group	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBT	SBR
Lane Configurations	↰	↰	↰	↰	↰	↰	↰	↰	↰
Traffic Volume (vph)	200	915	150	70	530	2005	135	1705	190
Future Volume (vph)	200	915	150	70	530	2005	135	1705	190
Lane Group Flow (vph)	200	915	150	70	530	2005	135	1705	190
Turn Type	Perm	pt+ov	Perm	Perm	pm+pt	NA	Perm	NA	Perm
Protected Phases		4 5			5	2		6	
Permitted Phases	4		8	8	2		2		6
Detector Phase	4	4 5	8	8	5	2	2	6	6
Switch Phase									
Minimum Initial (s)	7.0		7.0	7.0	6.0	25.0	25.0	25.0	25.0
Minimum Split (s)	46.0		46.0	46.0	10.0	31.0	31.0	31.0	31.0
Total Split (s)	48.0		48.0	48.0	40.0	92.0	92.0	52.0	52.0
Total Split (%)	34.3%		34.3%	34.3%	28.6%	65.7%	65.7%	37.1%	37.1%
Yellow Time (s)	4.0		4.0	4.0	3.0	4.0	4.0	4.0	4.0
All-Red Time (s)	4.0		4.0	4.0	1.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-2.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	7.0		7.0	7.0	2.0	5.0	5.0	5.0	5.0
Lead/Lag					Lead		Lag	Lag	
Lead-Lag Optimize?					Yes		Yes	Yes	
Recall Mode	None		None	None	None	C-Min	C-Min	C-Min	C-Min
v/c Ratio	0.44	0.93	0.31	0.16	1.01	0.64	0.16	1.00	0.31
Control Delay	43.9	36.5	40.7	13.3	76.2	19.0	4.5	53.4	4.2
Queue Delay	0.0	45.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0
Total Delay	43.9	81.5	40.7	13.3	76.2	19.2	4.5	53.4	4.2
Queue Length 50th (m)	47.4	188.3	34.1	3.1	~149.3	123.8	2.9	~131.4	0.6
Queue Length 95th (m)	72.4	#305.2	54.4	15.5 m#163.2	m140.4	m4.5 m#213.7	m3.8		
Internal Link Dist (m)					231.2		224.4		
Turn Bay Length (m)					150.0		170.0		175.0
Base Capacity (vph)	456	980	483	451	523	3156	858	1705	608
Starvation Cap Reductn	0	161	0	0	0	412	0	0	0
Spillback Cap Reductn	0	0	0	0	0	1	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.44	1.12	0.31	0.16	1.01	0.73	0.16	1.00	0.31

Intersection Summary

Cycle Length: 140
Actuated Cycle Length: 140
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 140
Control Type: Actuated-Coordinated
- Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 8: Leslie Street & Esther Shiner Boulevard



HCM Signalized Intersection Capacity Analysis 8: Leslie Street & Esther Shiner Boulevard

Future Background PM Peak Hour

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations								  			  		
Traffic Volume (vph)	200	0	915	150	0	70	530	2005	135	0	1705	190	
Future Volume (vph)	200	0	915	150	0	70	530	2005	135	0	1705	190	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.5	3.5	3.0	
Total Lost time (s)	7.0		7.0	7.0		7.0	2.0	5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00		1.00	1.00		1.00	1.00	0.91	1.00		0.91	1.00	
Frpb, ped/bikes	1.00		1.00	1.00		0.93	1.00	1.00	0.93		1.00	0.96	
Flpb, ped/bikes	0.94		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00		0.85	1.00		0.85	1.00	1.00	0.85		1.00	0.85	
Flt Protected	0.95		1.00	0.95		1.00	1.00	1.00	1.00		1.00	1.00	
Satd. Flow (prot)	1560		1507	1652		1408	1739	5079	1300		5079	1438	
Flt Permitted	0.95		1.00	0.95		1.00	0.08	1.00	1.00		1.00	1.00	
Satd. Flow (perm)	1560		1507	1652		1408	139	5079	1300		5079	1438	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	200	0	915	150	0	70	530	2005	135	0	1705	190	
RTOR Reduction (vph)	0	0	101	0	0	39	0	0	51	0	0	126	
Lane Group Flow (vph)	200	0	814	150	0	31	530	2005	84	0	1705	64	
Confl. Peds. (#/hr)	50					50	15		20	20		15	
Heavy Vehicles (%)	2%	0%	0%	2%	0%	0%	2%	1%	6%	0%	1%	1%	
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	3	0	0	0	
Turn Type	Perm		pt+ov	Perm		Perm	pm+pt	NA	Perm		NA	Perm	
Protected Phases			4 5				5	2			6		
Permitted Phases	4			8		8	2		2			6	
Actuated Green, G (s)	40.0		84.0	40.0		40.0	86.0	86.0	86.0		46.0	46.0	
Effective Green, g (s)	41.0		85.0	41.0		41.0	88.0	87.0	87.0		47.0	47.0	
Actuated g/C Ratio	0.29		0.61	0.29		0.29	0.63	0.62	0.62		0.34	0.34	
Clearance Time (s)	8.0			8.0		8.0	4.0	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0			3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	456		914	483		412	521	3156	807		1705	482	
v/s Ratio Prot			c0.54				c0.28	0.39			c0.34		
v/s Ratio Perm	0.13			0.09		0.02	0.36		0.06			0.04	
v/c Ratio	0.44		0.89	0.31		0.08	1.02	0.64	0.10		1.00	0.13	
Uniform Delay, d1	40.2		23.5	38.5		35.8	44.0	16.6	10.7		46.5	32.3	
Progression Factor	1.00		1.00	1.00		1.00	1.26	1.11	2.62		0.77	0.76	
Incremental Delay, d2	0.7		10.8	0.4		0.1	26.8	0.3	0.1		17.3	0.4	
Delay (s)	40.8		34.3	38.9		35.9	82.4	18.8	28.2		53.0	24.9	
Level of Service	D		C	D		D	F	B	C		D	C	
Approach Delay (s)		35.5			37.9			31.9			50.2		
Approach LOS		D			D			C			D		
Intersection Summary													
HCM 2000 Control Delay	38.7			HCM 2000 Level of Service						D			
HCM 2000 Volume to Capacity ratio	1.01												
Actuated Cycle Length (s)	140.0			Sum of lost time (s)						16.0			
Intersection Capacity Utilization	113.7%			ICU Level of Service						H			
Analysis Period (min)	15												
c Critical Lane Group													

Block 7
BA Group - TCS

Synchro 10 Report
FB_PM.syn

Queues

9: Leslie Street & Oriole GO Station Access/Hwy 401 WB Off-Ramp

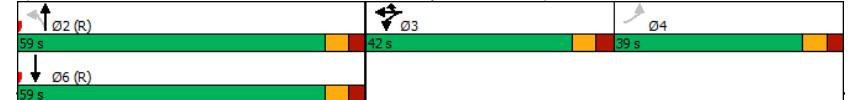
Future Background PM Peak Hour

Lane Group	EBL	EBR	WBL	WBT	WBR	NBL	NBT	SBT
Lane Configurations	↰	↱	↰	→	↱	↰	↱	↱
Traffic Volume (vph)	105	145	715	15	1040	15	1525	2095
Future Volume (vph)	105	145	715	15	1040	15	1525	2095
Lane Group Flow (vph)	105	145	715	525	530	15	1525	2115
Turn Type	Perm	Free	Split	NA	Prot	Perm	NA	NA
Protected Phases			3	3	3		2	6
Permitted Phases	4	Free				2		
Detector Phase	4		3	3	3	2	2	6
Switch Phase								
Minimum Initial (s)	7.0		7.0	7.0	7.0	27.0	27.0	27.0
Minimum Split (s)	39.0		14.0	14.0	14.0	34.0	34.0	34.0
Total Split (s)	39.0		42.0	42.0	42.0	59.0	59.0	59.0
Total Split (%)	27.9%		30.0%	30.0%	30.0%	42.1%	42.1%	42.1%
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lag		Lead	Lead	Lead			
Lead-Lag Optimize?	Yes		Yes	Yes	Yes			
Recall Mode	None		None	None	None	C-Min	C-Min	C-Min
v/c Ratio	0.77	0.10	0.82	0.94	0.97	0.31	0.97	0.93
Control Delay	87.1	0.1	58.2	54.5	61.1	54.2	53.3	33.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	87.1	0.1	58.2	54.5	61.1	54.2	53.3	33.9
Queue Length 50th (m)	29.4	0.0	101.8	97.1	101.3	2.9	177.8	125.7
Queue Length 95th (m)	48.8	0.0	126.3	#175.7	#183.7	m4.9	#315.2 m#259.7	
Internal Link Dist (m)				220.4			38.0	231.2
Turn Bay Length (m)					150.0	35.0		
Base Capacity (vph)	189	1507	867	556	544	49	1567	2272
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.56	0.10	0.82	0.94	0.97	0.31	0.97	0.93

Intersection Summary

Cycle Length: 140
Actuated Cycle Length: 140
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 9: Leslie Street & Oriole GO Station Access/Hwy 401 WB Off-Ramp



Block 7
BA Group - TCS

Synchro 10 Report
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HCM Signalized Intersection Capacity Analysis

9: Leslie Street & Oriole GO Station Access/Hwy 401 WB Off-Ramp

Future Background PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	→	↱	↰	→	↱	↰	→	↱	↰	→	↱
Traffic Volume (vph)	105	0	145	715	15	1040	15	1525	0	0	2095	20
Future Volume (vph)	105	0	145	715	15	1040	15	1525	0	0	2095	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.0		3.0	6.0	6.0	6.0	6.0	6.0			6.0	
Lane Util. Factor	1.00		1.00	0.97	0.95	0.95	1.00	0.95			0.91	
Frpb, ped/bikes	1.00		1.00	1.00	0.97	1.00	1.00	1.00			1.00	
Flpb, ped/bikes	0.99		1.00	1.00	1.00	1.00	1.00	1.00			1.00	
Frt	1.00		0.85	1.00	0.85	0.85	1.00	1.00			1.00	
Flt Protected	0.95		1.00	1.00	1.00	1.00	0.95	1.00			1.00	
Satd. Flow (prot)	1669		1507	3373	1482	1432	1685	3535			5121	
Flt Permitted	0.46		1.00	1.00	1.00	1.00	0.06	1.00			1.00	
Satd. Flow (perm)	803		1507	3373	1482	1432	114	3535			5121	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	105	0	145	715	15	1040	15	1525	0	0	2095	20
RTOR Reduction (vph)	0	0	0	0	176	176	0	0	0	0	1	0
Lane Group Flow (vph)	105	0	145	715	349	354	15	1525	0	0	2114	0
Confl. Peds. (#/hr)	15					15	5		10	10		5
Heavy Vehicles (%)	0%	0%	0%	2%	0%	0%	0%	1%	0%	0%	0%	0%
Turn Type	Perm		Free	Split	NA	Prot	Perm	NA			NA	
Protected Phases				3	3	3		2			6	
Permitted Phases	4		Free				2					
Actuated Green, G (s)	22.9		140.0	35.0	35.0	35.0	61.1	61.1			61.1	
Effective Green, g (s)	23.9		140.0	36.0	36.0	36.0	62.1	62.1			62.1	
Actuated g/C Ratio	0.17		1.00	0.26	0.26	0.26	0.44	0.44			0.44	
Clearance Time (s)	7.0			7.0	7.0	7.0	7.0	7.0			7.0	
Vehicle Extension (s)	3.0			3.0	3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)	137		1507	867	381	368	50	1568			2271	
v/s Ratio Prot				0.21	0.24	c0.25		c0.43			0.41	
v/s Ratio Perm	c0.13		0.10				0.13					
v/c Ratio	0.77		0.10	0.82	0.92	0.96	0.30	0.97			0.93	
Uniform Delay, d1	55.4		0.0	49.0	50.5	51.3	25.0	38.1			36.9	
Progression Factor	1.00		1.00	1.00	1.00	1.00	1.25	1.03			0.80	
Incremental Delay, d2	22.2		0.1	6.4	26.1	36.7	10.6	13.7			3.3	
Delay (s)	77.6		0.1	55.5	76.6	88.1	41.8	53.1			32.7	
Level of Service	E		A	E	E	F	D	D			C	
Approach Delay (s)	32.7				71.5			53.0			32.7	
Approach LOS	C				E			D			C	

Intersection Summary

HCM 2000 Control Delay	50.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	105.7%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Block 7
BA Group - TCS

Synchro 10 Report
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Queues

10: Leslie Street & Hwy 401 EB Off-Ramp/Lesmill Road

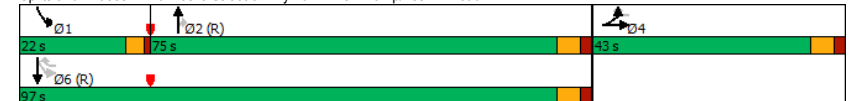
Future Background PM Peak Hour

Lane Group	EBL	EBT	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰	↱	↱	↱	↱	↰	↱
Traffic Volume (vph)	495	125	880	2195	110	240	1495
Future Volume (vph)	495	125	880	2195	110	240	1495
Lane Group Flow (vph)	247	373	880	2195	110	240	1495
Turn Type	Split	NA	Perm	NA	Perm	pm+pt	NA
Protected Phases	4	4		2		1	6
Permitted Phases			4 6		2	6	
Detector Phase	4	4	4 6	2	2	1	6
Switch Phase							
Minimum Initial (s)	7.0	7.0		20.0	20.0	6.0	20.0
Minimum Split (s)	43.0	43.0		26.0	26.0	10.0	26.0
Total Split (s)	43.0	43.0		75.0	75.0	22.0	97.0
Total Split (%)	30.7%	30.7%		53.6%	53.6%	15.7%	69.3%
Yellow Time (s)	4.0	4.0		4.0	4.0	3.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	1.0	2.0
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-3.0	-1.0
Total Lost Time (s)	5.0	5.0		5.0	5.0	1.0	5.0
Lead/Lag				Lag	Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	Yes	
Recall Mode	None	None		C-Min	C-Min	None	C-Min
v/c Ratio	0.70	0.52	0.58	0.78	0.14	0.76	0.59
Control Delay	60.3	49.6	1.6	28.3	9.6	50.2	13.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.3	49.6	1.6	28.3	9.6	50.2	13.6
Queue Length 50th (m)	72.7	52.4	0.0	186.4	7.5	62.6	95.9
Queue Length 95th (m)	101.3	66.1	0.0	225.6	19.0	m73.7	m117.2
Internal Link Dist (m)		272.4		188.8			87.0
Turn Bay Length (m)	130.0				30.0	80.0	
Base Capacity (vph)	433	886	1512	2805	797	336	2524
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.57	0.42	0.58	0.78	0.14	0.71	0.59

Intersection Summary

Cycle Length: 140
Actuated Cycle Length: 140
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 10: Leslie Street & Hwy 401 EB Off-Ramp/Lesmill Road



Block 7
BA Group - TCS

Synchro 10 Report
FB_PM.syn

HCM Signalized Intersection Capacity Analysis

10: Leslie Street & Hwy 401 EB Off-Ramp/Lesmill Road

Future Background PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↱				↱		↰↱	↱	↰	↰↱	
Traffic Volume (vph)	495	125	0	0	0	880	0	2195	110	240	1495	0
Future Volume (vph)	495	125	0	0	0	880	0	2195	110	240	1495	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900
Lane Width	3.0	3.5	3.5	3.5	3.5	3.0	3.5	3.0	3.0	3.0	3.5	3.5
Total Lost time (s)	5.0	5.0				5.0	5.0	5.0	1.0	5.0		
Lane Util. Factor	0.91	0.91				1.00	0.91	1.00	1.00	0.95		
Frpb, ped/bikes	1.00	1.00				1.00	1.00	0.97	1.00	1.00		
Flpb, ped/bikes	1.00	1.00				1.00	1.00	1.00	1.00	1.00		
Frft	1.00	1.00				0.86	1.00	0.85	1.00	1.00		
Flt Protected	1.00	0.97				1.00	1.00	1.00	1.00	1.00		
Satd. Flow (prot)	1598	3266				1519	5029	1385	1848	3570		
Flt Permitted	1.00	0.97				1.00	1.00	1.00	0.05	1.00		
Satd. Flow (perm)	1598	3266				1519	5029	1385	91	3570		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	495	125	0	0	0	880	0	2195	110	240	1495	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	24	0	0	0
Lane Group Flow (vph)	247	373	0	0	0	880	0	2195	86	240	1495	0
Confl. Peds. (#/hr)			5	5			5		10	10		5
Heavy Vehicles (%)	1%	2%	3%	0%	0%	1%	0%	2%	4%	1%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	3	0	0	0
Turn Type	Split	NA				Perm	NA	Perm	pm+pt	NA		
Protected Phases	4	4					2		1	6		
Permitted Phases						4 6		2	6			
Actuated Green, G (s)	30.0	30.0				140.0	77.1	77.1	98.0	98.0		
Effective Green, g (s)	31.0	31.0				140.0	78.1	78.1	101.0	99.0		
Actuated g/C Ratio	0.22	0.22				1.00	0.56	0.56	0.72	0.71		
Clearance Time (s)	6.0	6.0					6.0	6.0	4.0	6.0		
Vehicle Extension (s)	3.0	3.0					3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	353	723				1519	2805	772	315	2524		
v/s Ratio Prot	c0.15	0.11					c0.44		c0.11	0.42		
v/s Ratio Perm						0.58		0.06	0.44			
v/c Ratio	0.70	0.52				0.58	0.78	0.11	0.76	0.59		
Uniform Delay, d1	50.2	47.9				0.0	24.3	14.6	43.3	10.3		
Progression Factor	1.00	1.00				1.00	1.00	1.00	1.11	1.16		
Incremental Delay, d2	6.0	0.6				0.5	2.3	0.3	5.2	0.5		
Delay (s)	56.2	48.5				0.5	26.5	14.9	53.2	12.4		
Level of Service	E	D				A	C	B	D	B		
Approach Delay (s)		51.6			0.5		26.0			18.1		
Approach LOS		D			A		C			B		
Intersection Summary												
HCM 2000 Control Delay		22.3				HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio		0.75										
Actuated Cycle Length (s)		140.0				Sum of lost time (s)			11.0			
Intersection Capacity Utilization		125.7%				ICU Level of Service			H			
Analysis Period (min)		15										
c Critical Lane Group												

Block 7
BA Group - TCS

Synchro 10 Report
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HCM Unsignalized Intersection Capacity Analysis

11: CTC North Access & Sheppard Avenue East

Future Background PM Peak Hour

							
Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations							
Traffic Volume (veh/h)	1715	35	30	1960	15	40	
Future Volume (Veh/h)	1715	35	30	1960	15	40	
Sign Control	Free			Free	Stop		
Grade	0%			0%	0%		
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	
Hourly flow rate (vph)	1750	36	31	2000	15	41	
Pedestrians					50		
Lane Width (m)					3.0		
Walking Speed (m/s)					1.2		
Percent Blockage					3		
Right turn flare (veh)							
Median type	None			None			
Median storage (veh)							
Upstream signal (m)	144			105			
pX, platoon unblocked			0.70		0.62	0.70	
vC, conflicting volume			1836		2880	943	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol			1341		626	68	
tC, single (s)			4.1		6.8	6.9	
tC, 2 stage (s)							
tF (s)			2.2		3.5	3.3	
p0 queue free %			91		93	94	
cM capacity (veh/h)			353		228	666	
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	1167	619	31	1000	1000	15	41
Volume Left	0	0	31	0	0	15	0
Volume Right	0	36	0	0	0	0	41
cSH	1700	1700	353	1700	1700	228	666
Volume to Capacity	0.69	0.36	0.09	0.59	0.59	0.07	0.06
Queue Length 95th (m)	0.0	0.0	2.3	0.0	0.0	1.7	1.6
Control Delay (s)	0.0	0.0	16.2	0.0	0.0	21.9	10.8
Lane LOS			C			C	B
Approach Delay (s)	0.0		0.2			13.7	
Approach LOS						B	
Intersection Summary							
Average Delay			0.3				
Intersection Capacity Utilization			64.2%		ICU Level of Service		C
Analysis Period (min)			15				

Block 7
BA Group - TCS

Synchro 10 Report
FB_PM.syn

HCM Unsignalized Intersection Capacity Analysis
12: Provost Drive & CTC East Access/Singer Court

Future Background PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	0	5	60	0	110	25	160	55	120	345	55
Future Volume (Veh/h)	60	0	5	60	0	110	25	160	55	120	345	55
Sign Control	Stop				Stop				Free			
Grade	0%				0%				0%			
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	64	0	5	64	0	117	27	170	59	128	367	59
Pedestrians	20				70				25			
Lane Width (m)	3.5				3.5				3.3			
Walking Speed (m/s)	1.2				1.2				1.2			
Percent Blockage	2				6				2			
Right turn flare (veh)												
Median type	None								None			
Median storage (veh)												
Upstream signal (m)	142								103			
pX, platoon unblocked												
vC, conflicting volume	948	1026	258	793	1026	204	446	299				
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	948	1026	258	793	1026	204	446	299				
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1	4.1				
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2	2.2				
p0 queue free %	58	100	99	71	100	84	98	89				
cM capacity (veh/h)	152	192	721	222	192	751	1107	1201				
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3				
Volume Total	69	181	27	113	116	128	245	181				
Volume Left	64	64	27	0	0	128	0	0				
Volume Right	5	117	0	0	59	0	0	59				
cSH	161	407	1107	1700	1700	1201	1700	1700				
Volume to Capacity	0.43	0.44	0.02	0.07	0.07	0.11	0.14	0.11				
Queue Length 95th (m)	15.4	17.8	0.6	0.0	0.0	2.9	0.0	0.0				
Control Delay (s)	43.0	20.7	8.3	0.0	0.0	8.4	0.0	0.0				
Lane LOS	E	C	A			A						
Approach Delay (s)	43.0	20.7	0.9			1.9						
Approach LOS	E	C										
Intersection Summary												
Average Delay	7.6											
Intersection Capacity Utilization	41.3%			ICU Level of Service					A			
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis
13: IKEA Driveway & Esther Shiner Boulevard

Future Background PM Peak Hour

							
Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations	 			 			
Traffic Volume (veh/h)	605	105	185	550	0	200	
Future Volume (Veh/h)	605	105	185	550	0	200	
Sign Control	Free			Free	Stop		
Grade	0%			0%	0%		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	
Hourly flow rate (vph)	644	112	197	585	0	213	
Pedestrians					45		
Lane Width (m)					3.0		
Walking Speed (m/s)					1.2		
Percent Blockage					3		
Right turn flare (veh)							
Median type	None			None			
Median storage (veh)							
Upstream signal (m)	240			130			
pX, platoon unblocked					0.94		
vC, conflicting volume			689		1376	367	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol			689		1270	367	
tC, single (s)			4.1		6.8	6.9	
tC, 2 stage (s)							
tF (s)			2.2		3.5	3.3	
p0 queue free %			78		100	65	
cM capacity (veh/h)			886		115	616	
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1
Volume Total	322	322	112	197	292	292	213
Volume Left	0	0	0	197	0	0	0
Volume Right	0	0	112	0	0	0	213
cSH	1700	1700	1700	886	1700	1700	616
Volume to Capacity	0.19	0.19	0.07	0.22	0.17	0.17	0.35
Queue Length 95th (m)	0.0	0.0	0.0	6.8	0.0	0.0	12.3
Control Delay (s)	0.0	0.0	0.0	10.2	0.0	0.0	13.9
Lane LOS				B			B
Approach Delay (s)	0.0			2.6			13.9
Approach LOS							B
Intersection Summary							
Average Delay	2.8						
Intersection Capacity Utilization	35.8%			ICU Level of Service			A
Analysis Period (min)	15						

Queues

1: Bessarion Road/Burbank Drive & Sheppard Avenue East

Future Total AM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↖	↖↗	↖	↖↗	↖	↖	↖	↖
Traffic Volume (vph)	25	1570	15	1395	15	20	275	15
Future Volume (vph)	25	1570	15	1395	15	20	275	15
Lane Group Flow (vph)	28	1755	17	1672	17	55	306	84
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		2		6		4		8
Permitted Phases	2		6		4		8	
Detector Phase	2	2	6	6	4	4	8	8
Switch Phase								
Minimum Initial (s)	24.0	24.0	24.0	24.0	7.0	7.0	7.0	7.0
Minimum Split (s)	30.0	30.0	30.0	30.0	35.0	35.0	35.0	35.0
Total Split (s)	66.0	66.0	66.0	66.0	39.0	39.0	39.0	39.0
Total Split (%)	62.9%	62.9%	62.9%	62.9%	37.1%	37.1%	37.1%	37.1%
Yellow Time (s)	4.0	4.0	4.0	4.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	4.0	4.0	4.0	4.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	6.0	6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	C-Min	C-Min	C-Min	C-Min	None	None	None	None
v/c Ratio	0.40	0.83	0.29	0.80	0.05	0.11	0.87	0.19
Control Delay	33.1	21.4	26.7	19.8	25.9	21.7	59.7	20.4
Queue Delay	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0
Total Delay	33.1	21.4	26.7	20.9	25.9	21.7	59.7	20.4
Queue Length 50th (m)	3.1	156.2	1.7	142.2	2.6	6.4	59.9	9.1
Queue Length 95th (m)	#16.8	197.1	9.0	179.4	7.8	15.6	#103.8	20.9
Internal Link Dist (m)		449.7		65.9		131.2		187.8
Turn Bay Length (m)	30.0		30.0		15.0		40.0	
Base Capacity (vph)	70	2115	59	2098	385	531	391	487
Starvation Cap Reductn	0	0	0	204	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.83	0.29	0.88	0.04	0.10	0.78	0.17

Intersection Summary

Cycle Length: 105

Actuated Cycle Length: 105

Offset: 55 (52%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

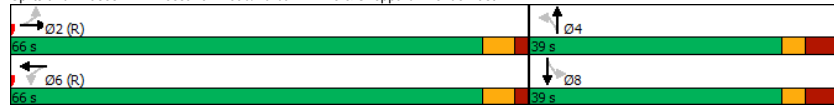
Natural Cycle: 80

Control Type: Actuated-Coordinated

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

Queue shown is maximum after two cycles.

Splits and Phases: 1: Bessarion Road/Burbank Drive & Sheppard Avenue East

Block 7
BA Group - TCSSynchro 10 Report
FT_AM.syn

HCM Signalized Intersection Capacity Analysis

1: Bessarion Road/Burbank Drive & Sheppard Avenue East

Future Total AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↗		↖	↖↗		↖	↖		↖	↖	
Traffic Volume (vph)	25	1570	10	15	1395	110	15	20	30	275	15	60
Future Volume (vph)	25	1570	10	15	1395	110	15	20	30	275	15	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.5	3.0	3.5	3.5	3.0	3.5	3.5	3.0	3.5	3.5
Total Lost time (s)	5.0	5.0		5.0	5.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	0.99		1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.98	1.00		0.99	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.91		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1620	3460		1504	3423		1659	1662		1643	1497	
Flt Permitted	0.07	1.00		0.06	1.00		0.70	1.00		0.72	1.00	
Satd. Flow (perm)	117	3460		99	3423		1227	1662		1247	1497	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	28	1744	11	17	1550	122	17	22	33	306	17	67
RTOR Reduction (vph)	0	0	0	0	5	0	0	9	0	0	18	0
Lane Group Flow (vph)	28	1755	0	17	1667	0	17	46	0	306	66	0
Confl. Peds. (#/hr)	30		70	70		30	15		5	5		15
Heavy Vehicles (%)	4%	3%	0%	12%	2%	9%	0%	0%	3%	2%	12%	7%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	63.2	63.2		63.2	63.2		28.8	28.8		28.8	28.8	
Effective Green, g (s)	64.2	64.2		64.2	64.2		29.8	29.8		29.8	29.8	
Actuated g/C Ratio	0.61	0.61		0.61	0.61		0.28	0.28		0.28	0.28	
Clearance Time (s)	6.0	6.0		6.0	6.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	71	2115		60	2092		348	471		353	424	
v/s Ratio Prot		c0.51			0.49			0.03			0.04	
v/s Ratio Perm	0.24			0.17			0.01			c0.25		
v/c Ratio	0.39	0.83		0.28	0.80		0.05	0.10		0.87	0.16	
Uniform Delay, d1	10.4	16.1		9.6	15.5		27.3	27.7		35.7	28.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	15.6	3.9		11.5	3.3		0.1	0.1		19.4	0.2	
Delay (s)	26.1	20.0		21.0	18.7		27.4	27.8		55.2	28.3	
Level of Service	C	C		C	B		C	C		E	C	
Approach Delay (s)	20.1			18.7			27.7			49.4		
Approach LOS	C			B			C			D		

Intersection Summary

HCM 2000 Control Delay

HCM 2000 Level of Service

C

HCM 2000 Volume to Capacity ratio

0.84

Actuated Cycle Length (s)

105.0

Sum of lost time (s)

11.0

Intersection Capacity Utilization

75.4%

ICU Level of Service

D

Analysis Period (min)

15

c Critical Lane Group

Block 7
BA Group - TCSSynchro 10 Report
FT_AM.syn

Queues

2: Billes Heights/Blue Ridge Road & Sheppard Avenue East

Future Total AM Peak Hour

	↖	→	↗	↖	←	↖	↗	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBR	SBL	SBR
Lane Configurations	↖	↖↖	↖	↖	↖↖	↖	↖	↖	↖
Traffic Volume (vph)	15	1680	200	5	1435	100	10	55	20
Future Volume (vph)	15	1680	200	5	1435	100	10	55	20
Lane Group Flow (vph)	17	1867	222	6	1622	111	11	61	22
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	Perm	Perm
Protected Phases	2		6		4		8		8
Permitted Phases	2		2	6		4	4	8	8
Detector Phase	2	2	2	6	6	4	4	8	8
Switch Phase									
Minimum Initial (s)	27.0	27.0	27.0	27.0	27.0	7.0	7.0	7.0	7.0
Minimum Split (s)	33.0	33.0	33.0	33.0	33.0	36.0	36.0	36.0	36.0
Total Split (s)	73.0	73.0	73.0	73.0	73.0	37.0	37.0	37.0	37.0
Total Split (%)	66.4%	66.4%	66.4%	66.4%	66.4%	33.6%	33.6%	33.6%	33.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	C-Min	C-Min	C-Min	C-Min	C-Min	None	None	None	None
v/c Ratio	0.12	0.71	0.23	0.05	0.62	0.45	0.04	0.25	0.09
Control Delay	8.3	10.6	4.0	5.4	5.7	46.7	2.4	41.0	8.9
Queue Delay	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.3	11.5	4.0	5.4	5.7	46.7	2.4	41.0	8.9
Queue Length 50th (m)	0.7	85.0	6.3	0.2	48.6	23.9	0.0	12.7	0.0
Queue Length 95th (m)	5.3	207.9	24.4	m0.7	66.6	34.6	1.3	21.2	4.8
Internal Link Dist (m)	32.6		120.2		30.0				
Turn Bay Length (m)	30.0	25.0		35.0	30.0				
Base Capacity (vph)	141	2617	983	110	2607	484	459	480	449
Starvation Cap Reductn	0	441	0	0	54	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.86	0.23	0.05	0.64	0.23	0.02	0.13	0.05

Intersection Summary

Cycle Length: 110

Actuated Cycle Length: 110

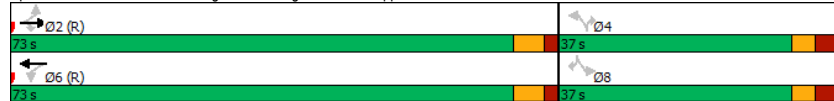
Offset: 56 (51%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

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

Splits and Phases: 2: Billes Heights/Blue Ridge Road & Sheppard Avenue East

Block 7
BA Group - TCSSynchro 10 Report
FT_AM.syn

HCM Signalized Intersection Capacity Analysis

2: Billes Heights/Blue Ridge Road & Sheppard Avenue East

Future Total AM Peak Hour

																		
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR						
Lane Configurations		 			 													
Traffic Volume (vph)	15	1680	200	5	1435	25	100	0	10	55	0	20						
Future Volume (vph)	15	1680	200	5	1435	25	100	0	10	55	0	20						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900						
Lane Width	3.0	3.5	3.0	3.0	3.5	3.5	3.0	3.5	3.0	3.0	3.5	3.0						
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0		5.0		5.0	5.0		5.0						
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00		1.00	1.00		1.00						
Frpb, ped/bikes	1.00	1.00	0.87	1.00	1.00		1.00		1.00	1.00		1.00						
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.99		1.00	1.00		1.00						
Frt	1.00	1.00	0.85	1.00	1.00		1.00		0.85	1.00		0.85						
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95		1.00	0.95		1.00						
Satd. Flow (prot)	1475	3433	1265	1677	3421		1666		1507	1652		1473						
Flt Permitted	0.12	1.00	1.00	0.08	1.00		0.95		1.00	0.95		1.00						
Satd. Flow (perm)	185	3433	1265	144	3421		1666		1507	1652		1473						
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90						
Adj. Flow (vph)	17	1867	222	6	1594	28	111	0	11	61	0	22						
RTOR Reduction (vph)	0	0	19	0	1	0	0	0	9	0	0	19						
Lane Group Flow (vph)	17	1867	203	6	1621	0	111	0	2	61	0	3						
Confl. Peds. (#/hr)	15		55	55		15	10					10						
Heavy Vehicles (%)	14%	4%	2%	0%	4%	4%	0%	0%	0%	2%	0%	0%						
Bus Blockages (#/hr)	0	0	4	0	0	0	0	0	0	0	0	0						
Turn Type	Perm	NA	Perm	Perm	NA		Perm		Perm	Perm		Perm						
Protected Phases	2		6		6		4		4		8							
Permitted Phases	2		2	6			4		4	8		8						
Actuated Green, G (s)	82.9	82.9	82.9	82.9	82.9		15.1		15.1	15.1		15.1						
Effective Green, g (s)	83.9	83.9	83.9	83.9	83.9		16.1		16.1	16.1		16.1						
Actuated g/C Ratio	0.76	0.76	0.76	0.76	0.76		0.15		0.15	0.15		0.15						
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		6.0		6.0	6.0		6.0						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0		3.0						
Lane Grp Cap (vph)	141	2618	964	109	2609		243		220	241		215						
v/s Ratio Prot	c0.54		0.47															
v/s Ratio Perm	0.09		0.16	0.04			c0.07		0.00	0.04		0.00						
v/c Ratio	0.12	0.71	0.21	0.06	0.62		0.46		0.01	0.25		0.01						
Uniform Delay, d1	3.4	6.8	3.7	3.2	5.9		42.9		40.1	41.6		40.2						
Progression Factor	1.00	1.00	1.00	0.72	0.63		1.00		1.00	1.00		1.00						
Incremental Delay, d2	1.7	1.7	0.5	0.8	0.9		1.4		0.0	0.6		0.0						
Delay (s)	5.2	8.5	4.2	3.1	4.6		44.3		40.1	42.2		40.2						
Level of Service	A	A	A	A	A		D		D	D		D						
Approach Delay (s)	8.0		4.6		43.9		41.7											
Approach LOS	A		A		D		D											

Intersection Summary

HCM 2000 Control Delay	8.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	70.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Block 7
BA Group - TCSSynchro 10 Report
FT_AM.syn

Queues

3: Provost Drive/Ambrose Road & Sheppard Avenue East

Future Total AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	NBL	NBR	SBL	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBR	SBL	SBR
Lane Configurations	↩	↩↩	↩	↩	↩↩	↩	↩	↩	↩
Traffic Volume (vph)	40	1585	135	265	1230	235	190	200	25
Future Volume (vph)	40	1585	135	265	1230	235	190	200	25
Lane Group Flow (vph)	40	1585	135	265	1355	235	190	200	25
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+ov	Perm	Perm
Protected Phases		2		1	6		1		
Permitted Phases	2		2	6		4		8	8
Detector Phase	2	2	2	1	6	4	1	8	8
Switch Phase									
Minimum Initial (s)	30.0	30.0	30.0	6.0	30.0	30.0	6.0	30.0	30.0
Minimum Split (s)	37.0	37.0	37.0	10.0	37.0	38.0	10.0	38.0	38.0
Total Split (s)	56.0	56.0	56.0	16.0	72.0	38.0	16.0	38.0	38.0
Total Split (%)	50.9%	50.9%	50.9%	14.5%	65.5%	34.5%	14.5%	34.5%	34.5%
Yellow Time (s)	4.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	1.0	3.0	4.0	1.0	4.0	4.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	6.0	6.0	6.0	3.0	6.0	7.0	3.0	7.0	7.0
Lead/Lag	Lag	Lag	Lag	Lead		Lead			
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		Yes			
Recall Mode	C-Min	C-Min	C-Min	None	C-Min	None	None	None	None
v/c Ratio	0.30	1.02	0.19	1.02	0.67	0.52	0.30	0.44	0.05
Control Delay	21.5	52.9	6.8	92.3	16.6	38.0	15.6	36.2	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.5	52.9	6.8	92.3	16.6	38.0	15.6	36.2	0.2
Queue Length 50th (m)	5.7	~193.2	9.3	~47.9	99.5	44.6	19.7	37.1	0.0
Queue Length 95th (m)	m5.2	#240.6	m8.9	#101.2	123.6	70.1	35.6	59.8	0.0
Internal Link Dist (m)		81.5			111.0				
Turn Bay Length (m)	40.0		40.0	165.0					
Base Capacity (vph)	132	1560	694	259	2018	455	643	452	471
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	1.02	0.19	1.02	0.67	0.52	0.30	0.44	0.05

Intersection Summary

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 69 (63%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 105

Control Type: Actuated-Coordinated

- Volume exceeds capacity, queue is theoretically infinite.

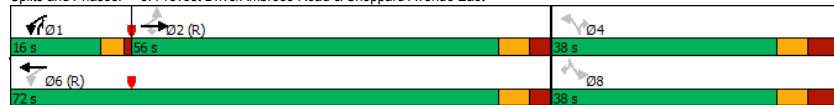
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 3: Provost Drive/Ambrose Road & Sheppard Avenue East



HCM Signalized Intersection Capacity Analysis

3: Provost Drive/Ambrose Road & Sheppard Avenue East

Future Total AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↩	↩↩	↩	↩	↩↩	↩	↩	↩	↩	↩	↩	↩
Traffic Volume (vph)	40	1585	135	265	1230	125	235	0	190	200	0	25
Future Volume (vph)	40	1585	135	265	1230	125	235	0	190	200	0	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.5	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	6.0	6.0	6.0	3.0	6.0		7.0		3.0	7.0		7.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00		1.00	1.00		1.00
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00		1.00		0.96	1.00		0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.99		1.00	0.96		1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00		0.85	1.00		0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95		1.00	0.95		1.00
Satd. Flow (prot)	1598	3433	1420	1636	3352		1618		1426	1604		1473
Flt Permitted	0.17	1.00	1.00	0.08	1.00		0.95		1.00	0.95		1.00
Satd. Flow (perm)	291	3433	1420	130	3352		1618		1426	1604		1473
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	40	1585	135	265	1230	125	235	0	190	200	0	25
RTOR Reduction (vph)	0	0	49	0	7	0	0	0	24	0	0	18
Lane Group Flow (vph)	40	1585	86	265	1348	0	235	0	166	200	0	7
Confl. Peds. (#/hr)	15		25	25		15	10		35	35		10
Heavy Vehicles (%)	5%	4%	2%	3%	4%	1%	3%	0%	2%	1%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	4	4	0	0	0	0	0	0
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm		pm+ov	Perm		Perm
Protected Phases		2		1	6				1			
Permitted Phases	2		2	6			4		4	8		8
Actuated Green, G (s)	49.0	49.0	49.0	65.0	65.0		30.0		42.0	30.0		30.0
Effective Green, g (s)	50.0	50.0	50.0	66.0	66.0		31.0		44.0	31.0		31.0
Actuated g/C Ratio	0.45	0.45	0.45	0.60	0.60		0.28		0.40	0.28		0.28
Clearance Time (s)	7.0	7.0	7.0	4.0	7.0		8.0		4.0	8.0		8.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0		3.0
Lane Grp Cap (vph)	132	1560	645	255	2011		455		570	452		415
v/s Ratio Prot		0.46		c0.12	0.40				0.03			
v/s Ratio Perm	0.14		0.06	c0.50			c0.15		0.08	0.12		0.00
v/c Ratio	0.30	1.02	0.13	1.04	0.67		0.52		0.29	0.44		0.02
Uniform Delay, d1	19.0	30.0	17.4	35.6	14.7		33.2		22.4	32.4		28.5
Progression Factor	0.82	0.96	0.90	1.00	1.00		1.00		1.00	1.00		1.00
Incremental Delay, d2	4.3	23.7	0.3	67.0	1.8		1.0		0.3	0.7		0.0
Delay (s)	19.8	52.3	15.9	102.5	16.5		34.2		22.7	33.1		28.5
Level of Service	B	D	B	F	B		C		C	C		C
Approach Delay (s)		48.8			30.6		29.1			32.6		
Approach LOS		D			C		C			C		

Intersection Summary

HCM 2000 Control Delay	38.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	96.1%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Block 7
BA Group - TCSSynchro 10 Report
FT_AM.syn

Queues

4: Leslie Street & Sheppard Avenue East

Future Total AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↩	↩↩↩	↩	↩	↩↩↩	↩	↩↩↩	↩	↩↩↩	↩
Traffic Volume (vph)	210	895	835	260	1180	425	635	335	100	1225
Future Volume (vph)	210	895	835	260	1180	425	635	335	100	1225
Lane Group Flow (vph)	210	895	835	260	1260	425	635	335	100	1510
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	Prot	NA	Perm	Perm	NA
Protected Phases	5	2	7	1	6	7	4			8
Permitted Phases	2		2	6				4	8	
Detector Phase	5	2	7	1	6	7	4	4	8	8
Switch Phase										
Minimum Initial (s)	6.0	38.0	6.0	6.0	38.0	6.0	38.0	38.0	38.0	38.0
Minimum Split (s)	10.0	45.0	12.0	10.0	45.0	12.0	45.0	45.0	45.0	45.0
Total Split (s)	15.0	47.0	27.0	13.0	45.0	27.0	75.0	75.0	48.0	48.0
Total Split (%)	11.1%	34.8%	20.0%	9.6%	33.3%	20.0%	55.6%	55.6%	35.6%	35.6%
Yellow Time (s)	3.0	4.0	3.0	3.0	4.0	3.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	3.0	3.0	1.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-2.0	-1.0	-3.0	-3.0	-1.0	-3.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	2.0	6.0	3.0	1.0	6.0	3.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	Min	None	None	Min	None	C-Min	C-Min	C-Min	C-Min
v/c Ratio	0.95	0.59	1.02	0.97	0.89	0.73	0.37	0.43	0.46	0.99
Control Delay	84.5	41.8	57.1	76.7	54.7	43.6	15.7	10.7	45.5	66.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	84.5	41.8	57.1	76.7	54.7	43.6	15.7	10.7	45.5	66.8
Queue Length 50th (m)	43.1	78.1	~157.8	47.6	123.6	61.0	76.4	59.5	22.5	151.5
Queue Length 95th (m)	#95.0	93.4	#203.9	#95.9	143.8	79.6	103.1	96.6	42.4	#188.6
Internal Link Dist (m)		434.4			1078.4		224.4			40.9
Turn Bay Length (m)	170.0		130.0	200.0		175.0				
Base Capacity (vph)	220	1512	820	269	1414	582	1705	771	219	1518
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.95	0.59	1.02	0.97	0.89	0.73	0.37	0.43	0.46	0.99

Intersection Summary

Cycle Length: 135

Actuated Cycle Length: 135

Offset: 0 (0%), Referenced to phase 4:NBT and 8:SBTL, Start of Green

Natural Cycle: 125

Control Type: Actuated-Coordinated

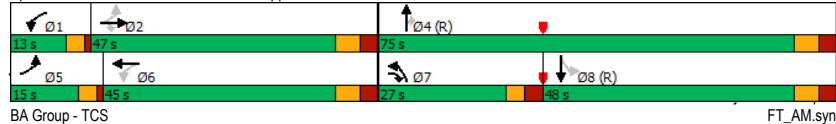
Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 4: Leslie Street & Sheppard Avenue East



HCM Signalized Intersection Capacity Analysis

4: Leslie Street & Sheppard Avenue East

Future Total AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↩	↩↩↩	↩	↩	↩↩↩		↩	↩↩↩	↩	↩↩↩	↩	
Traffic Volume (vph)	210	895	835	260	1180	80	425	635	335	100	1225	285
Future Volume (vph)	210	895	835	260	1180	80	425	635	335	100	1225	285
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.5	3.0	3.5	3.0	3.0	3.5	3.5
Total Lost time (s)	2.0	6.0	3.0	1.0	6.0		3.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		0.97	0.95	1.00	1.00	0.91	
Frpb, ped/bikes	1.00	1.00	0.91	1.00	1.00		1.00	1.00	0.93	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00		1.00	1.00	1.00	0.98	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.97	
Flt Protected	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1721	4980	1317	1729	4877		3276	3336	1302	1628	4788	
Flt Permitted	0.10	1.00	1.00	0.21	1.00		1.00	1.00	1.00	0.41	1.00	
Satd. Flow (perm)	164	4980	1317	362	4877		3276	3336	1302	704	4788	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	210	895	835	260	1180	80	425	635	335	100	1225	285
RTOR Reduction (vph)	0	0	160	0	6	0	0	0	106	0	28	0
Lane Group Flow (vph)	210	895	675	260	1254	0	425	635	229	100	1482	0
Confl. Peds. (#/hr)	40		125	125		40	55		55	55		55
Heavy Vehicles (%)	3%	3%	4%	2%	3%	7%	5%	7%	6%	1%	2%	3%
Bus Blockages (#/hr)	0	0	0	0	4	4	0	0	4	0	4	4
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		Prot	NA	Perm	Perm	NA	
Protected Phases	5	2	7	1	6		7	4			8	
Permitted Phases	2		2	6					4	8		
Actuated Green, G (s)	51.0	40.0	61.0	47.0	38.0		21.0	68.0	68.0	41.0	41.0	
Effective Green, g (s)	55.0	41.0	67.0	53.0	39.0		24.0	69.0	69.0	42.0	42.0	
Actuated g/C Ratio	0.41	0.30	0.50	0.39	0.29		0.18	0.51	0.51	0.31	0.31	
Clearance Time (s)	4.0	7.0	6.0	4.0	7.0		6.0	7.0	7.0	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	
Lane Grp Cap (vph)	216	1512	653	263	1408		582	1705	665	219	1489	
v/s Ratio Prot	c0.09	0.18	c0.18	c0.09	0.26		0.13	0.19			c0.31	
v/s Ratio Perm	0.30		0.33	0.30					0.18	0.14		
v/c Ratio	0.97	0.59	1.03	0.99	0.89		0.73	0.37	0.34	0.46	1.00	
Uniform Delay, d1	38.2	39.9	34.0	33.8	46.0		52.4	19.9	19.6	37.3	46.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.68	0.75	1.32	1.00	1.00	
Incremental Delay, d2	53.0	0.6	44.1	51.8	7.5		4.5	0.6	1.3	6.7	22.2	
Delay (s)	91.2	40.5	78.1	85.6	53.4		40.3	15.6	27.1	44.1	68.6	
Level of Service	F	D	E	F	D		D	B	C	D	E	
Approach Delay (s)		62.2			58.9			25.9			67.1	
Approach LOS		E			E			C			E	

Intersection Summary

HCM 2000 Control Delay	54.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	127.7%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Block 7
BA Group - TCSSynchro 10 Report
FT_AM.syn

HCM Unsignalized Intersection Capacity Analysis

5: McMahon Drive/CTC South Access & Esther Shiner Boulevard

Future Total AM Peak Hour

																			
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR							
Lane Configurations																			
Sign Control		Stop			Stop			Stop			Stop								
Traffic Volume (vph)	5	35	0	90	20	135	0	15	320	340	10	5							
Future Volume (vph)	5	35	0	90	20	135	0	15	320	340	10	5							
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91							
Hourly flow rate (vph)	5	38	0	99	22	148	0	16	352	374	11	5							
Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2														
Volume Total (vph)	43	269	368	385	5														
Volume Left (vph)	5	99	0	374	0														
Volume Right (vph)	0	148	352	0	5														
Hadj (s)	0.02	-0.06	-0.44	0.53	-0.70														
Departure Headway (s)	6.8	6.1	5.3	6.6	5.3														
Degree Utilization, x	0.08	0.46	0.55	0.70	0.01														
Capacity (veh/h)	415	541	638	524	650														
Control Delay (s)	10.5	14.1	14.6	22.3	7.2														
Approach Delay (s)	10.5	14.1	14.6	22.1															
Approach LOS	B	B	B	C															
Intersection Summary																			
Delay			17.0																
Level of Service			C																
Intersection Capacity Utilization			72.4%		ICU Level of Service		C												
Analysis Period (min)			15																

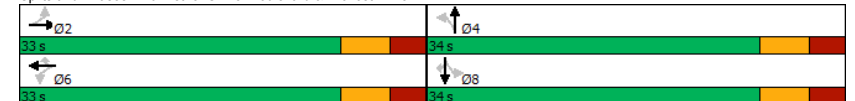
Queues

6: Esther Shiner Boulevard & Provost Drive

Future Total AM Peak Hour

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	90	620	20	180	195	5	35	115	25	60
Future Volume (vph)	90	620	20	180	195	5	35	115	25	60
Lane Group Flow (vph)	0	777	22	196	212	0	108	125	27	65
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases		2		6			4		8	
Permitted Phases	2		6		6	4		8		8
Detector Phase	2	2	6	6	6	4	4	8	8	8
Switch Phase										
Minimum Initial (s)	26.0	26.0	26.0	26.0	26.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	33.0	33.0	33.0	33.0	33.0	34.0	34.0	34.0	34.0	34.0
Total Split (s)	33.0	33.0	33.0	33.0	33.0	34.0	34.0	34.0	34.0	34.0
Total Split (%)	49.3%	49.3%	49.3%	49.3%	49.3%	50.7%	50.7%	50.7%	50.7%	50.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)		-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)		6.0	6.0	6.0	6.0		6.0	6.0	6.0	6.0
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	Min	Min	Min	Min	Min	None	None	None	None	None
v/c Ratio		0.76	0.06	0.18	0.22		0.31	0.42	0.06	0.17
Control Delay		21.1	10.2	9.3	2.7		9.6	20.0	13.8	5.3
Queue Delay		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Total Delay		21.1	10.2	9.3	2.7		9.6	20.0	13.8	5.3
Queue Length 50th (m)		55.8	0.9	8.6	0.0		3.3	10.2	2.0	0.0
Queue Length 95th (m)		#187.7	6.1	30.5	11.5		12.1	21.4	6.2	6.4
Internal Link Dist (m)		80.2		216.2			86.8		118.2	
Turn Bay Length (m)			105.0					75.0		
Base Capacity (vph)		1020	348	1066	951		671	632	935	715
Starvation Cap Reductn		0	0	0	0		0	0	0	0
Spillback Cap Reductn		0	0	0	0		0	0	0	0
Storage Cap Reductn		0	0	0	0		0	0	0	0
Reduced v/c Ratio		0.76	0.06	0.18	0.22		0.16	0.20	0.03	0.09
Intersection Summary										
Cycle Length: 67										
Actuated Cycle Length: 53.3										
Natural Cycle: 80										
Control Type: Semi Act-Uncoord										
# 95th percentile volume exceeds capacity, queue may be longer.										
Queue shown is maximum after two cycles.										

Splits and Phases: 6: Esther Shiner Boulevard & Provost Drive



HCM Signalized Intersection Capacity Analysis 6: Esther Shiner Boulevard & Provost Drive

Future Total AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	90	620	5	20	180	195	5	35	60	115	25	60
Future Volume (vph)	90	620	5	20	180	195	5	35	60	115	25	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.0	3.5	3.0	3.5	3.5	3.0	3.5	3.5	3.0
Total Lost time (s)		6.0		6.0	6.0	6.0		6.0		6.0	6.0	6.0
Lane Util. Factor		1.00		1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frpb, ped/bikes		1.00		1.00	1.00	0.97		0.99		1.00	1.00	0.96
Flpb, ped/bikes		1.00		0.99	1.00	1.00		1.00		0.99	1.00	1.00
Frt		1.00		1.00	1.00	0.85		0.92		1.00	1.00	0.85
Flt Protected		0.99		0.95	1.00	1.00		1.00		0.95	1.00	1.00
Satd. Flow (prot)		1813		1536	1773	1447		1217		1643	1756	1292
Flt Permitted		0.93		0.36	1.00	1.00		0.99		0.69	1.00	1.00
Satd. Flow (perm)		1696		580	1773	1447		1203		1189	1756	1292
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	98	674	5	22	196	212	5	38	65	125	27	65
RTOR Reduction (vph)	0	0	0	0	0	93	0	51	0	0	0	51
Lane Group Flow (vph)	0	777	0	22	196	119	0	57	0	125	27	14
Confl. Peds. (#/hr)	30		20	20		30	20		10	10		20
Heavy Vehicles (%)	13%	1%	29%	9%	6%	1%	0%	33%	47%	2%	7%	12%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases		2			6			4			8	
Permitted Phases	2			6		6	4			8		8
Actuated Green, G (s)		29.7		29.7	29.7	29.7		10.9		10.9	10.9	10.9
Effective Green, g (s)		30.7		30.7	30.7	30.7		11.9		11.9	11.9	11.9
Actuated g/C Ratio		0.56		0.56	0.56	0.56		0.22		0.22	0.22	0.22
Clearance Time (s)		7.0		7.0	7.0	7.0		7.0		7.0	7.0	7.0
Vehicle Extension (s)		3.0		3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)		953		326	996	813		262		259	382	281
v/s Ratio Prot					0.11						0.02	
v/s Ratio Perm		c0.46		0.04		0.08		0.05		c0.11		0.01
v/c Ratio		0.81		0.07	0.20	0.15		0.22		0.48	0.07	0.05
Uniform Delay, d1		9.7		5.4	5.9	5.7		17.5		18.7	17.0	16.9
Progression Factor		1.00		1.00	1.00	1.00		1.00		1.00	1.00	1.00
Incremental Delay, d2		5.4		0.1	0.1	0.1		0.4		1.4	0.1	0.1
Delay (s)		15.1		5.5	6.0	5.8		18.0		20.1	17.0	17.0
Level of Service		B		A	A	A		B		C	B	B
Approach Delay (s)		15.1			5.9			18.0			18.8	
Approach LOS		B			A			B			B	

Intersection Summary

HCM 2000 Control Delay	13.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	54.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	92.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Queues

7: Esther Shiner Boulevard & Old Leslie Street

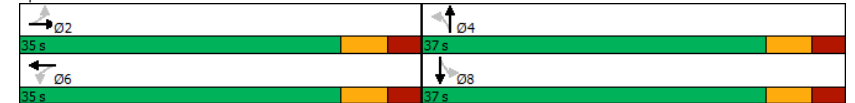
Future Total AM Peak Hour

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	35	790	5	365	5	0	280	5
Future Volume (vph)	35	790	5	365	5	0	280	5
Lane Group Flow (vph)	36	828	5	614	5	10	292	36
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		2		6		4		8
Permitted Phases	2		6		4		8	
Detector Phase	2	2	6	6	4	4	8	8
Switch Phase								
Minimum Initial (s)	28.0	28.0	28.0	28.0	7.0	7.0	7.0	7.0
Minimum Split (s)	35.0	35.0	35.0	35.0	37.0	37.0	37.0	37.0
Total Split (s)	35.0	35.0	35.0	35.0	37.0	37.0	37.0	37.0
Total Split (%)	48.6%	48.6%	48.6%	48.6%	51.4%	51.4%	51.4%	51.4%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	Min	Min	Min	Min	None	None	None	None
v/c Ratio	0.12	0.50	0.03	0.37	0.01	0.02	0.70	0.08
Control Delay	12.8	13.6	12.2	8.0	12.6	0.1	27.3	6.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.8	13.6	12.2	8.0	12.6	0.1	27.3	6.3
Queue Length 50th (m)	2.2	32.3	0.3	13.3	0.4	0.0	29.4	0.4
Queue Length 95th (m)	9.1	64.8	2.5	32.1	2.3	0.0	52.4	5.2
Internal Link Dist (m)		106.6		130.2		43.8		121.9
Turn Bay Length (m)	40.0		70.0		10.0		40.0	
Base Capacity (vph)	312	1656	184	1667	645	703	658	710
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.50	0.03	0.37	0.01	0.01	0.44	0.05

Intersection Summary

Cycle Length: 72
Actuated Cycle Length: 61.3
Natural Cycle: 75
Control Type: Semi Act-Uncoord

Splits and Phases: 7: Esther Shiner Boulevard & Old Leslie Street



HCM Signalized Intersection Capacity Analysis 7: Esther Shiner Boulevard & Old Leslie Street

Future Total AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰		↰	↰		↰	↰		↰	↰	
Traffic Volume (vph)	35	790	5	5	365	225	5	0	10	280	5	30
Future Volume (vph)	35	790	5	5	365	225	5	0	10	280	5	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.5	3.0	3.5	3.5	3.0	3.5	3.5	3.0	3.5	3.5
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.98		1.00	0.99		1.00	0.97	
Flpb, ped/bikes	0.99	1.00		1.00	1.00		0.97	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.94		1.00	0.85		1.00	0.87	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1538	3463		1265	3254		1641	1311		1631	1366	
Flt Permitted	0.41	1.00		0.29	1.00		0.73	1.00		0.75	1.00	
Satd. Flow (perm)	656	3463		388	3254		1267	1311		1289	1366	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	36	823	5	5	380	234	5	0	10	292	5	31
RTOR Reduction (vph)	0	1	0	0	115	0	0	7	0	0	21	0
Lane Group Flow (vph)	36	827	0	5	499	0	5	3	0	292	15	0
Confl. Peds. (#/hr)	30		5	5		30	45		5	5		45
Heavy Vehicles (%)	8%	3%	0%	33%	1%	2%	0%	0%	20%	3%	33%	13%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	28.3	28.3		28.3	28.3		18.9	18.9		18.9	18.9	
Effective Green, g (s)	29.3	29.3		29.3	29.3		19.9	19.9		19.9	19.9	
Actuated g/C Ratio	0.48	0.48		0.48	0.48		0.33	0.33		0.33	0.33	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	314	1657		185	1557		411	426		419	444	
v/s Ratio Prot		c0.24			0.15			0.00			0.01	
v/s Ratio Perm	0.05			0.01			0.00			c0.23		
v/c Ratio	0.11	0.50		0.03	0.32		0.01	0.01		0.70	0.03	
Uniform Delay, d1	8.8	10.9		8.4	9.8		14.0	14.0		18.0	14.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.2		0.1	0.1		0.0	0.0		5.0	0.0	
Delay (s)	9.0	11.2		8.5	9.9		14.0	14.0		23.0	14.1	
Level of Service	A	B		A	A		B	B		C	B	
Approach Delay (s)		11.1			9.9			14.0			22.0	
Approach LOS		B			A			B			C	

Intersection Summary

HCM 2000 Control Delay	12.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	61.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	63.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Block 7
BA Group - TCS

Synchro 10 Report
FT_AM.syn

Queues

8: Leslie Street & Esther Shiner Boulevard

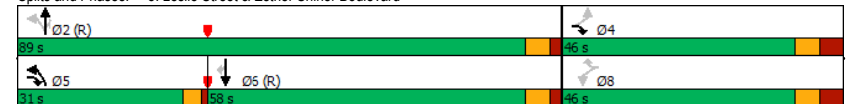
Future Total AM Peak Hour

Lane Group	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBT	SBR
Lane Configurations	↰	↰	↰	↰	↰	↰	↰	↰	↰
Traffic Volume (vph)	90	890	95	35	440	1210	375	2230	200
Future Volume (vph)	90	890	95	35	440	1210	375	2230	200
Lane Group Flow (vph)	90	890	95	35	440	1210	375	2230	200
Turn Type	Perm	pt+ov	Perm	Perm	pm+pt	NA	Perm	NA	Perm
Protected Phases		4 5			5	2		6	
Permitted Phases	4		8	8	2		2		6
Detector Phase	4	4 5	8	8	5	2	2	6	6
Switch Phase									
Minimum Initial (s)	7.0		7.0	7.0	6.0	25.0	25.0	25.0	25.0
Minimum Split (s)	46.0		46.0	46.0	10.0	31.0	31.0	31.0	31.0
Total Split (s)	46.0		46.0	46.0	31.0	89.0	89.0	58.0	58.0
Total Split (%)	34.1%		34.1%	34.1%	23.0%	65.9%	65.9%	43.0%	43.0%
Yellow Time (s)	4.0		4.0	4.0	3.0	4.0	4.0	4.0	4.0
All-Red Time (s)	4.0		4.0	4.0	1.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-2.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	7.0		7.0	7.0	2.0	5.0	5.0	5.0	5.0
Lead/Lag					Lead		Lag	Lag	
Lead-Lag Optimize?					Yes		Yes	Yes	
Recall Mode	None		None	None	None	C-Min	C-Min	C-Min	C-Min
v/c Ratio	0.22	1.02	0.21	0.08	1.03	0.39	0.38	1.13	0.29
Control Delay	38.4	60.1	38.0	3.6	84.9	20.8	8.8	110.8	13.7
Queue Delay	0.0	30.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.4	90.2	38.0	3.6	84.9	20.8	8.8	110.8	13.7
Queue Length 50th (m)	19.3	~231.9	20.2	0.0	~117.0	89.5	36.3	~263.2	12.6
Queue Length 95th (m)	34.7	#314.0	35.7	4.1	#185.3	109.7	72.0	m#264.7	m13.2
Internal Link Dist (m)						231.2		224.4	
Turn Bay Length (m)					150.0		170.0		175.0
Base Capacity (vph)	401	873	446	445	426	3068	976	1974	685
Starvation Cap Reductn	0	119	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	1.18	0.21	0.08	1.03	0.39	0.38	1.13	0.29

Intersection Summary

Cycle Length: 135
Actuated Cycle Length: 135
Offset: 103 (76%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 140
Control Type: Actuated-Coordinated
- Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 8: Leslie Street & Esther Shiner Boulevard



HCM Signalized Intersection Capacity Analysis 8: Leslie Street & Esther Shiner Boulevard

Future Total AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	→	↱	↰	→	↱	↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	90	0	890	95	0	35	440	1210	375	0	2230	200
Future Volume (vph)	90	0	890	95	0	35	440	1210	375	0	2230	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.5	3.5	3.0
Total Lost time (s)	7.0		7.0	7.0		7.0	2.0	5.0	5.0		5.0	5.0
Lane Util. Factor	1.00		1.00	1.00		1.00	1.00	0.91	1.00		0.91	1.00
Frpb, ped/bikes	1.00		1.00	1.00		0.93	1.00	1.00	0.94		1.00	0.97
Flpb, ped/bikes	0.94		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00
Frft	1.00		0.85	1.00		0.85	1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95		1.00	0.95		1.00	1.00	1.00	1.00		1.00	1.00
Satd. Flow (prot)	1391		1478	1546		1403	1739	4932	1341		5029	1437
Flt Permitted	0.95		1.00	0.95		1.00	0.07	1.00	1.00		1.00	1.00
Satd. Flow (perm)	1391		1478	1546		1403	124	4932	1341		5029	1437
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	90	0	890	95	0	35	440	1210	375	0	2230	200
RTOR Reduction (vph)	0	0	101	0	0	25	0	0	142	0	0	121
Lane Group Flow (vph)	90	0	789	95	0	10	440	1210	233	0	2230	79
Confl. Peds. (#/hr)	55					55	10		15	15		10
Heavy Vehicles (%)	14%	0%	2%	9%	0%	0%	2%	4%	4%	0%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	4	0	0	0
Turn Type	Perm		pt+ov	Perm		Perm	pm+pt	NA	Perm		NA	Perm
Protected Phases			4 5				5	2			6	
Permitted Phases	4			8		8	2		2			6
Actuated Green, G (s)	38.0		73.0	38.0		38.0	83.0	83.0	83.0		52.0	52.0
Effective Green, g (s)	39.0		74.0	39.0		39.0	85.0	84.0	84.0		53.0	53.0
Actuated g/C Ratio	0.29		0.55	0.29		0.29	0.63	0.62	0.62		0.39	0.39
Clearance Time (s)	8.0			8.0		8.0	4.0	6.0	6.0		6.0	6.0
Vehicle Extension (s)	3.0			3.0		3.0	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	401		810	446		405	425	3068	834		1974	564
v/s Ratio Prot			c0.53				0.22	0.25			c0.44	
v/s Ratio Perm	0.06			0.06		0.01	0.43		0.17			0.05
v/c Ratio	0.22		0.97	0.21		0.02	1.04	0.39	0.28		1.13	0.14
Uniform Delay, d1	36.5		29.6	36.4		34.4	44.9	12.8	11.7		41.0	26.3
Progression Factor	1.00		1.00	1.00		1.00	0.94	1.59	7.67		1.37	3.82
Incremental Delay, d2	0.3		25.2	0.2		0.0	47.1	0.3	0.6		60.8	0.2
Delay (s)	36.8		54.8	36.6		34.4	89.2	20.6	90.0		117.1	100.8
Level of Service	D		D	D		C	F	C	F		F	F
Approach Delay (s)		53.2			36.0			48.4			115.7	
Approach LOS		D			D			D			F	

Intersection Summary			
HCM 2000 Control Delay	78.3	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	119.9%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Queues

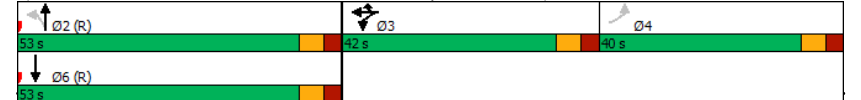
9: Leslie Street & Oriole GO Station Access/Hwy 401 WB Off-Ramp

Future Total AM Peak Hour

Lane Group	EBL	EBR	WBL	WBT	WBR	NBL	NBT	SBT
Lane Configurations	↰	↱	↰	→	↱	↰	↱	↱
Traffic Volume (vph)	25	50	850	65	765	40	1235	2115
Future Volume (vph)	25	50	850	65	765	40	1235	2115
Lane Group Flow (vph)	25	50	850	417	413	40	1235	2160
Turn Type	Perm	Free	Split	NA	Prot	Perm	NA	NA
Protected Phases			3	3	3		2	6
Permitted Phases	4	Free				2		
Detector Phase	4		3	3	3	2	2	6
Switch Phase								
Minimum Initial (s)	7.0		7.0	7.0	7.0	27.0	27.0	27.0
Minimum Split (s)	39.0		14.0	14.0	14.0	34.0	34.0	34.0
Total Split (s)	40.0		42.0	42.0	42.0	53.0	53.0	53.0
Total Split (%)	29.6%		31.1%	31.1%	31.1%	39.3%	39.3%	39.3%
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lag		Lead	Lead	Lead			
Lead-Lag Optimize?	Yes		Yes	Yes	Yes			
Recall Mode	None		None	None	None	C-Min	C-Min	C-Min
v/c Ratio	0.28	0.03	0.95	0.76	0.61	0.73	0.66	0.77
Control Delay	59.2	0.0	68.0	33.7	8.4	83.3	33.0	19.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.2	0.0	68.0	33.7	8.4	83.3	33.0	19.3
Queue Length 50th (m)	6.8	0.0	121.0	62.4	1.7	11.2	168.1	203.0
Queue Length 95th (m)	13.8	0.0	#161.5	108.0	33.2	m#20.0 m#228.6 m#217.8		
Internal Link Dist (m)				220.4			38.0	231.2
Turn Bay Length (m)					150.0	35.0		
Base Capacity (vph)	207	1507	899	546	675	55	1873	2797
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.03	0.95	0.76	0.61	0.73	0.66	0.77

Intersection Summary	
Cycle Length:	135
Actuated Cycle Length:	135
Offset: 20 (15%), Referenced to phase 2:NBTL and 6:SBT, Start of Green	
Natural Cycle: 140	
Control Type: Actuated-Coordinated	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 9: Leslie Street & Oriole GO Station Access/Hwy 401 WB Off-Ramp



HCM Signalized Intersection Capacity Analysis

9: Leslie Street & Oriole GO Station Access/Hwy 401 WB Off-Ramp

Future Total AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	→	↱	↰	→	↱	↰	→	↱	↰	→	↱
Traffic Volume (vph)	25	0	50	850	65	765	40	1235	0	0	2115	45
Future Volume (vph)	25	0	50	850	65	765	40	1235	0	0	2115	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.0		3.0	6.0	6.0	6.0	6.0	6.0			6.0	
Lane Util. Factor	1.00		1.00	0.97	0.95	0.95	1.00	*0.97			*0.95	
Frpb, ped/bikes	1.00		1.00	1.00	0.98	1.00	1.00	1.00			1.00	
Flpb, ped/bikes	0.99		1.00	1.00	1.00	1.00	1.00	1.00			1.00	
Frt	1.00		0.85	1.00	0.87	0.85	1.00	1.00			1.00	
Flt Protected	0.95		1.00	1.00	1.00	1.00	0.95	1.00			1.00	
Satd. Flow (prot)	1543		1507	3373	1509	1418	1685	3505			5231	
Flt Permitted	0.51		1.00	1.00	1.00	1.00	0.06	1.00			1.00	
Satd. Flow (perm)	825		1507	3373	1509	1418	102	3505			5231	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	25	0	50	850	65	765	40	1235	0	0	2115	45
RTOR Reduction (vph)	0	0	0	0	144	297	0	0	0	0	1	0
Lane Group Flow (vph)	25	0	50	850	273	116	40	1235	0	0	2159	0
Confl. Peds. (#/hr)	15					15	10		20	20		10
Heavy Vehicles (%)	8%	0%	0%	2%	0%	1%	0%	4%	0%	0%	2%	0%
Turn Type	Perm		Free	Split	NA	Prot	Perm	NA			NA	
Protected Phases				3	3	3		2			6	
Permitted Phases	4		Free				2					
Actuated Green, G (s)	10.6		135.0	35.0	35.0	35.0	68.4	68.4			68.4	
Effective Green, g (s)	11.6		135.0	36.0	36.0	36.0	69.4	69.4			69.4	
Actuated g/C Ratio	0.09		1.00	0.27	0.27	0.27	0.51	0.51			0.51	
Clearance Time (s)	7.0			7.0	7.0	7.0	7.0	7.0			7.0	
Vehicle Extension (s)	3.0			3.0	3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)	70		1507	899	402	378	52	1801			2689	
v/s Ratio Prot				c0.25	0.18	0.08		0.35			c0.41	
v/s Ratio Perm	c0.03		0.03				0.39					
v/c Ratio	0.36		0.03	0.95	0.68	0.31	0.77	0.69			0.80	
Uniform Delay, d1	58.2		0.0	48.5	44.3	39.5	26.4	24.6			27.1	
Progression Factor	1.00		1.00	1.00	1.00	1.00	1.27	1.27			0.66	
Incremental Delay, d2	3.1		0.0	18.1	4.5	0.5	46.7	1.3			0.2	
Delay (s)	61.3		0.0	66.6	48.8	40.0	80.2	32.4			18.2	
Level of Service	E		A	E	D	D	F	C			B	
Approach Delay (s)		20.5			55.7			33.9			18.2	
Approach LOS		C			E			C			B	

Intersection Summary

HCM 2000 Control Delay	34.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	83.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Block 7
BA Group - TCS

Synchro 10 Report
FT_AM.syn

Queues

10: Leslie Street & Hwy 401 EB Off-Ramp/Lesmill Road

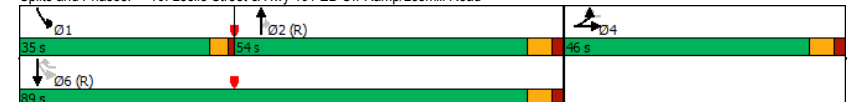
Future Total AM Peak Hour

Lane Group	EBL	EBT	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰	↱	↱	↱	↱	↱	↱
Traffic Volume (vph)	535	855	530	1580	105	525	1485
Future Volume (vph)	535	855	530	1580	105	525	1485
Lane Group Flow (vph)	449	941	530	1580	105	525	1485
Turn Type	Split	NA	Perm	NA	Perm	pm+pt	NA
Protected Phases	4	4		2		1	6
Permitted Phases			4 6		2	6	
Detector Phase	4	4	4 6	2	2	1	6
Switch Phase							
Minimum Initial (s)	7.0	7.0		20.0	20.0	6.0	20.0
Minimum Split (s)	43.0	43.0		26.0	26.0	10.0	26.0
Total Split (s)	46.0	46.0		54.0	54.0	35.0	89.0
Total Split (%)	34.1%	34.1%		40.0%	40.0%	25.9%	65.9%
Yellow Time (s)	4.0	4.0		4.0	4.0	3.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	1.0	2.0
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-3.0	-1.0
Total Lost Time (s)	5.0	5.0		5.0	5.0	1.0	5.0
Lead/Lag				Lag	Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	Yes	
Recall Mode	None	None		C-Min	C-Min	None	C-Min
v/c Ratio	0.96	0.91	0.35	0.90	0.19	1.00	0.69
Control Delay	78.4	58.6	0.6	48.6	15.2	72.6	16.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	78.4	58.6	0.6	48.6	15.2	72.6	16.9
Queue Length 50th (m)	136.9	140.6	0.0	151.4	8.9	~119.4	115.8
Queue Length 95th (m)	#214.3	#183.2	0.0	172.8	22.6 m#188.7	m68.4	
Internal Link Dist (m)		272.4		188.8			87.0
Turn Bay Length (m)	130.0				30.0	80.0	
Base Capacity (vph)	469	1033	1499	1790	552	524	2156
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.96	0.91	0.35	0.88	0.19	1.00	0.69

Intersection Summary

Cycle Length: 135
Actuated Cycle Length: 135
Offset: 57 (42%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
- Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 10: Leslie Street & Hwy 401 EB Off-Ramp/Lesmill Road



HCM Signalized Intersection Capacity Analysis

10: Leslie Street & Hwy 401 EB Off-Ramp/Lesmill Road

Future Total AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↱				↱		↰↱↰	↱	↰	↰↱	
Traffic Volume (vph)	535	855	0	0	0	530	0	1580	105	525	1485	0
Future Volume (vph)	535	855	0	0	0	530	0	1580	105	525	1485	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900
Lane Width	3.0	3.5	3.5	3.5	3.5	3.0	3.5	3.0	3.0	3.0	3.5	3.5
Total Lost time (s)	5.0	5.0				5.0	5.0	5.0	1.0	5.0		
Lane Util. Factor	0.91	0.91				1.00	0.91	1.00	1.00	0.95		
Frpb, ped/bikes	1.00	1.00				1.00	1.00	0.98	1.00	1.00		
Flpb, ped/bikes	1.00	1.00				1.00	1.00	1.00	1.00	1.00		
Flt Protected	1.00	1.00				1.00	1.00	1.00	1.00	1.00		
Satd. Flow (prot)	1522	3355				1504	4932	1422	1848	3466		
Flt Permitted	1.00	1.00				1.00	1.00	1.00	0.08	1.00		
Satd. Flow (perm)	1522	3355				1504	4932	1422	144	3466		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	535	855	0	0	0	530	0	1580	105	525	1485	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	37	0	0	0
Lane Group Flow (vph)	449	941	0	0	0	530	0	1580	68	525	1485	0
Confl. Peds. (#/hr)			20	20			10		5	5		10
Heavy Vehicles (%)	6%	1%	4%	0%	0%	2%	0%	4%	2%	1%	3%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	4	0	0	0
Turn Type	Split	NA				Perm	NA	Perm	pm+pt	NA		
Protected Phases	4	4					2		1	6		
Permitted Phases						4 6		2	6			
Actuated Green, G (s)	40.6	40.6				135.0	47.3	47.3	82.4	82.4		
Effective Green, g (s)	41.6	41.6				135.0	48.3	48.3	85.4	83.4		
Actuated g/C Ratio	0.31	0.31				1.00	0.36	0.36	0.63	0.62		
Clearance Time (s)	6.0	6.0					6.0	6.0	4.0	6.0		
Vehicle Extension (s)	3.0	3.0					3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	469	1033				1504	1764	508	521	2141		
v/s Ratio Prot	c0.29	0.28					c0.32		c0.25	0.43		
v/s Ratio Perm						0.35		0.05	0.38			
v/c Ratio	0.96	0.91				0.35	0.90	0.13	1.01	0.69		
Uniform Delay, d1	45.8	44.9				0.0	41.0	29.2	42.7	17.3		
Progression Factor	1.00	1.00				1.00	1.00	1.00	1.06	0.90		
Incremental Delay, d2	30.6	11.8				0.1	7.5	0.6	31.4	1.1		
Delay (s)	76.4	56.7				0.1	48.5	29.8	76.8	16.7		
Level of Service	E	E				A	D	C	E	B		
Approach Delay (s)		63.1			0.1		47.4			32.4		
Approach LOS		E			A		D			C		
Intersection Summary												
HCM 2000 Control Delay		41.4										
HCM 2000 Volume to Capacity ratio		0.93										
Actuated Cycle Length (s)		135.0							11.0			
Intersection Capacity Utilization		104.3%							G			
Analysis Period (min)		15										
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

11: CTC North Access & Sheppard Avenue East

Future Total AM Peak Hour

Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations	↕↕		↕	↕↕	↕	↕	
Traffic Volume (veh/h)	1695	50	35	1455	10	65	
Future Volume (Veh/h)	1695	50	35	1455	10	65	
Sign Control	Free			Free	Stop		
Grade	0%			0%	0%		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	
Hourly flow rate (vph)	1784	53	37	1532	11	68	
Pedestrians					35		
Lane Width (m)					3.0		
Walking Speed (m/s)					1.2		
Percent Blockage					2		
Right turn flare (veh)							
Median type	None		None				
Median storage (veh)							
Upstream signal (m)	144		105				
pX, platoon unblocked			0.69		0.82	0.69	
vC, conflicting volume			1872		2686	954	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol			1368		1173	39	
tC, single (s)			4.2		6.8	7.0	
tC, 2 stage (s)							
tF (s)			2.2		3.5	3.3	
p0 queue free %			89		92	90	
cM capacity (veh/h)			329		134	684	
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	1189	648	37	766	766	11	68
Volume Left	0	0	37	0	0	11	0
Volume Right	0	53	0	0	0	0	68
cSH	1700	1700	329	1700	1700	134	684
Volume to Capacity	0.70	0.38	0.11	0.45	0.45	0.08	0.10
Queue Length 95th (m)	0.0	0.0	3.0	0.0	0.0	2.1	2.6
Control Delay (s)	0.0	0.0	17.3	0.0	0.0	34.3	10.8
Lane LOS			C			D	B
Approach Delay (s)	0.0		0.4			14.1	
Approach LOS						B	
Intersection Summary							
Average Delay			0.5				
Intersection Capacity Utilization			59.2%	ICU Level of Service		B	
Analysis Period (min)			15				

HCM Unsignalized Intersection Capacity Analysis
12: Provost Drive & CTC East Access/Singer Court

Future Total AM Peak Hour

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (veh/h)	10	0	15	70	0	85	15	260	45	170	115	30	
Future Volume (Veh/h)	10	0	15	70	0	85	15	260	45	170	115	30	
Sign Control		Stop			Stop			Free			Free		
Grade		0%			0%			0%			0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	11	0	16	76	0	92	16	283	49	185	125	33	
Pedestrians		15			70			10			5		
Lane Width (m)		3.5			3.5			3.3			3.3		
Walking Speed (m/s)		1.2			1.2			1.2			1.2		
Percent Blockage		1			6			1			0		
Right turn flare (veh)													
Median type								None			None		
Median storage (veh)													
Upstream signal (m)								142			103		
pX, platoon unblocked													
vC, conflicting volume	797	960	104	868	952	241	173			402			
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	797	960	104	868	952	241	173			402			
tC, single (s)	7.5	6.5	6.9	7.6	6.5	6.9	4.1			4.2			
tC, 2 stage (s)													
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2			
p0 queue free %	94	100	98	58	100	87	99			83			
cM capacity (veh/h)	197	197	919	182	199	714	1399			1068			
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3					
Volume Total	27	168	16	189	143	185	83	75					
Volume Left	11	76	16	0	0	185	0	0					
Volume Right	16	92	0	0	49	0	0	33					
cSH	368	308	1399	1700	1700	1068	1700	1700					
Volume to Capacity	0.07	0.55	0.01	0.11	0.08	0.17	0.05	0.04					
Queue Length 95th (m)	1.9	24.5	0.3	0.0	0.0	5.0	0.0	0.0					
Control Delay (s)	15.6	29.9	7.6	0.0	0.0	9.1	0.0	0.0					
Lane LOS	C	D	A			A							
Approach Delay (s)	15.6	29.9	0.3			4.9							
Approach LOS	C	D											
Intersection Summary													
Average Delay	8.2												
Intersection Capacity Utilization	45.1%			ICU Level of Service			A						
Analysis Period (min)	15												

HCM Unsignalized Intersection Capacity Analysis
13: IKEA Driveway & Esther Shiner Boulevard

Future Total AM Peak Hour

Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations	↔↔	↗	↖	↔↔		↗	
Traffic Volume (veh/h)	795	0	5	395	0	35	
Future Volume (Veh/h)	795	0	5	395	0	35	
Sign Control	Free			Free	Stop		
Grade	0%			0%	0%		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	
Hourly flow rate (vph)	846	0	5	420	0	37	
Pedestrians					5		
Lane Width (m)					3.0		
Walking Speed (m/s)					1.2		
Percent Blockage					0		
Right turn flare (veh)							
Median type	None			None			
Median storage (veh)							
Upstream signal (m)	240			130			
pX, platoon unblocked							
vC, conflicting volume			851		1071	428	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol			851		1071	428	
tC, single (s)			4.1		6.8	6.9	
tC, 2 stage (s)							
tF (s)			2.2		3.5	3.3	
p0 queue free %			99		100	94	
cM capacity (veh/h)			793		217	579	
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1
Volume Total	423	423	0	5	210	210	37
Volume Left	0	0	0	5	0	0	0
Volume Right	0	0	0	0	0	0	37
cSH	1700	1700	1700	793	1700	1700	579
Volume to Capacity	0.25	0.25	0.00	0.01	0.12	0.12	0.06
Queue Length 95th (m)	0.0	0.0	0.0	0.2	0.0	0.0	1.6
Control Delay (s)	0.0	0.0	0.0	9.6	0.0	0.0	11.6
Lane LOS				A			B
Approach Delay (s)	0.0			0.1			11.6
Approach LOS							B
Intersection Summary							
Average Delay			0.4				
Intersection Capacity Utilization			32.0%		ICU Level of Service		A
Analysis Period (min)			15				

HCM Unsignalized Intersection Capacity Analysis

24: Billes Heights & Site Access

Future Total AM Peak Hour

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			W	W	
Traffic Volume (veh/h)	15	35	10	95	200	5
Future Volume (Veh/h)	15	35	10	95	200	5
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	17	39	11	106	222	6
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)					55	
pX, platoon unblocked						
vC, conflicting volume	353	225	228			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	353	225	228			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	95	99			
cM capacity (veh/h)	643	819	1352			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	56	117	228			
Volume Left	17	11	0			
Volume Right	39	0	6			
cSH	757	1352	1700			
Volume to Capacity	0.07	0.01	0.13			
Queue Length 95th (m)	1.9	0.2	0.0			
Control Delay (s)	10.1	0.8	0.0			
Lane LOS	B	A				
Approach Delay (s)	10.1	0.8	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay		1.6				
Intersection Capacity Utilization		23.3%		ICU Level of Service	A	
Analysis Period (min)		15				

Block 7
BA Group - TCS

Synchro 10 Report
FT_AM.syn

Queues

1: Bessarion Road/Burbank Drive & Sheppard Avenue East

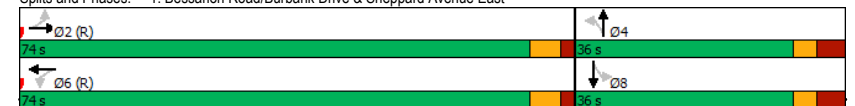
Future Total PM Peak Hour

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	W	W	W	W	W	W	W	W
Traffic Volume (vph)	40	1780	30	1815	10	5	220	20
Future Volume (vph)	40	1780	30	1815	10	5	220	20
Lane Group Flow (vph)	41	1826	31	2041	10	25	224	61
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		2		6		4		8
Permitted Phases	2		6		4		8	
Detector Phase	2	2	6	6	4	4	8	8
Switch Phase								
Minimum Initial (s)	24.0	24.0	24.0	24.0	7.0	7.0	7.0	7.0
Minimum Split (s)	30.0	30.0	30.0	30.0	35.0	35.0	35.0	35.0
Total Split (s)	74.0	74.0	74.0	74.0	36.0	36.0	36.0	36.0
Total Split (%)	67.3%	67.3%	67.3%	67.3%	32.7%	32.7%	32.7%	32.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	4.0	4.0	4.0	4.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	6.0	6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	C-Min	C-Min	C-Min	C-Min	None	None	None	None
v/c Ratio	0.63	0.76	0.40	0.87	0.04	0.07	0.79	0.16
Control Delay	60.7	15.6	18.5	14.4	30.8	17.8	59.4	25.4
Queue Delay	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0
Total Delay	60.7	15.6	18.5	14.7	30.8	17.8	59.4	25.4
Queue Length 50th (m)	4.9	134.8	1.6	50.0	1.8	1.6	47.4	7.9
Queue Length 95th (m)	#28.7	190.2	m2.5	#77.2	6.1	8.3	72.9	18.3
Internal Link Dist (m)		449.7		65.9		131.2		187.8
Turn Bay Length (m)	30.0		30.0		15.0		40.0	
Base Capacity (vph)	65	2391	77	2349	345	452	348	452
Starvation Cap Reductn	0	0	0	49	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.76	0.40	0.89	0.03	0.06	0.64	0.13

Intersection Summary

Cycle Length: 110
 Actuated Cycle Length: 110
 Offset: 57 (52%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Bessarion Road/Burbank Drive & Sheppard Avenue East



Block 7
BA Group - TCS

Synchro 10 Report
FT_PM.syn

HCM Signalized Intersection Capacity Analysis

1: Bessarion Road/Burbank Drive & Sheppard Avenue East

Future Total PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰
Traffic Volume (vph)	40	1780	10	30	1815	185	10	5	20	220	20	40
Future Volume (vph)	40	1780	10	30	1815	185	10	5	20	220	20	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.5	3.0	3.5	3.5	3.0	3.5	3.5	3.0	3.5	3.5
Total Lost time (s)	5.0	5.0		5.0	5.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	0.98		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00		0.98	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.88		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1685	3529		1685	3458		1676	1615		1640	1616	
Flt Permitted	0.05	1.00		0.07	1.00		0.72	1.00		0.74	1.00	
Satd. Flow (perm)	95	3529		115	3458		1265	1615		1279	1616	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	41	1816	10	31	1852	189	10	5	20	224	20	41
RTOR Reduction (vph)	0	0	0	0	6	0	0	12	0	0	13	0
Lane Group Flow (vph)	41	1826	0	31	2035	0	10	13	0	224	48	0
Confl. Peds. (#/hr)	25		55	55		25	5		15	15		5
Heavy Vehicles (%)	0%	1%	0%	0%	1%	2%	0%	0%	0%	1%	6%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	73.6	73.6		73.6	73.6		23.4	23.4		23.4	23.4	
Effective Green, g (s)	74.6	74.6		74.6	74.6		24.4	24.4		24.4	24.4	
Actuated g/C Ratio	0.68	0.68		0.68	0.68		0.22	0.22		0.22	0.22	
Clearance Time (s)	6.0	6.0		6.0	6.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	64	2393		77	2345		280	358		283	358	
v/s Ratio Prot		0.52			c0.59			0.01			0.03	
v/s Ratio Perm	0.43			0.27			0.01			c0.18		
v/c Ratio	0.64	0.76		0.40	0.87		0.04	0.04		0.79	0.13	
Uniform Delay, d1	10.1	11.8		7.8	13.8		33.6	33.6		40.4	34.3	
Progression Factor	1.00	1.00		0.61	0.70		1.00	1.00		1.00	1.00	
Incremental Delay, d2	40.2	2.4		9.8	3.1		0.1	0.0		14.0	0.2	
Delay (s)	50.2	14.2		14.5	12.8		33.6	33.6		54.4	34.5	
Level of Service	D	B		B	B		C	C		D	C	
Approach Delay (s)		15.0			12.8			33.6			50.1	
Approach LOS		B			B			C			D	

Intersection Summary

HCM 2000 Control Delay	16.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	85.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Queues

2: Billes Heights/Blue Ridge Road & Sheppard Avenue East

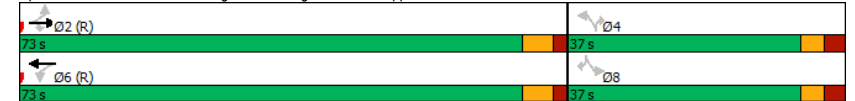
Future Total PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBR	SBL	SBR
Lane Configurations	↰	↰	↰	↰	↰	↰	↰	↰	↰
Traffic Volume (vph)	15	1710	250	25	1900	145	25	20	10
Future Volume (vph)	15	1710	250	25	1900	145	25	20	10
Lane Group Flow (vph)	16	1800	263	26	2058	153	26	21	11
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	Perm	Perm
Protected Phases		2			6				
Permitted Phases	2		2	6		4	4	8	8
Detector Phase	2	2	2	6	6	4	4	8	8
Switch Phase									
Minimum Initial (s)	27.0	27.0	27.0	27.0	27.0	7.0	7.0	7.0	7.0
Minimum Split (s)	33.0	33.0	33.0	33.0	33.0	36.0	36.0	36.0	36.0
Total Split (s)	73.0	73.0	73.0	73.0	73.0	37.0	37.0	37.0	37.0
Total Split (%)	66.4%	66.4%	66.4%	66.4%	66.4%	33.6%	33.6%	33.6%	33.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	C-Min	C-Min	C-Min	C-Min	C-Min	None	None	None	None
v/c Ratio	0.23	0.69	0.27	0.23	0.79	0.56	0.10	0.08	0.04
Control Delay	11.7	6.4	3.3	9.6	10.7	48.5	10.5	35.2	2.4
Queue Delay	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Total Delay	11.7	6.6	3.3	9.6	10.8	48.5	10.5	35.2	2.4
Queue Length 50th (m)	0.7	49.9	5.9	1.4	83.2	32.8	0.0	4.1	0.0
Queue Length 95th (m)	m1.5	80.1	m13.6	m2.3	m84.6	46.0	6.2	9.8	1.3
Internal Link Dist (m)		32.6			120.2				
Turn Bay Length (m)	30.0		25.0	35.0		30.0			
Base Capacity (vph)	69	2603	964	114	2615	482	449	484	452
Starvation Cap Reductn	0	121	0	0	60	0	0	0	0
Spillback Cap Reductn	0	0	0	0	62	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.73	0.27	0.23	0.81	0.32	0.06	0.04	0.02

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 56 (51%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Billes Heights/Blue Ridge Road & Sheppard Avenue East



HCM Signalized Intersection Capacity Analysis

2: Billes Heights/Blue Ridge Road & Sheppard Avenue East

Future Total PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	15	1710	250	25	1900	55	145	0	25	20	0	10
Future Volume (vph)	15	1710	250	25	1900	55	145	0	25	20	0	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.5	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.86	1.00	1.00	1.00	0.98	1.00	0.98	1.00	0.98	1.00
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00	0.99	1.00	0.99	1.00	0.99	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	1.00	0.85	1.00	0.85	1.00	0.85	1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1685	3500	1263	1676	3515	1659	1473	1666	1481	1685	3500	1263
Flt Permitted	0.05	1.00	1.00	0.09	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (perm)	94	3500	1263	153	3515	1659	1473	1666	1481	94	3500	1263
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	16	1800	263	26	2000	58	153	0	26	21	0	11
RTOR Reduction (vph)	0	0	25	0	1	0	0	0	22	0	0	9
Lane Group Flow (vph)	16	1800	238	26	2057	0	153	0	4	21	0	2
Confl. Peds. (#/hr)	20	60	60	20	60	20	60	10	10	20	60	60
Heavy Vehicles (%)	0%	2%	1%	0%	1%	0%	1%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	4	0	0	0	0	0	0	0	0	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	Perm	Perm	Perm	Perm	Perm
Protected Phases	2	2	6	6	4	4	8	8	8	8	8	8
Actuated Green, G (s)	80.8	80.8	80.8	80.8	80.8	17.2	17.2	17.2	17.2	17.2	17.2	17.2
Effective Green, g (s)	81.8	81.8	81.8	81.8	81.8	18.2	18.2	18.2	18.2	18.2	18.2	18.2
Actuated g/C Ratio	0.74	0.74	0.74	0.74	0.74	0.17	0.17	0.17	0.17	0.17	0.17	0.17
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	69	2602	939	113	2613	274	243	275	245	69	2602	939
v/s Ratio Prot	0.51			c0.59								
v/s Ratio Perm	0.17	0.19	0.17		c0.09	0.00	0.01	0.00				
v/c Ratio	0.23	0.69	0.25	0.23	0.79	0.56	0.02	0.08	0.01			
Uniform Delay, d1	4.4	7.4	4.5	4.4	8.7	42.2	38.4	38.8	38.4			
Progression Factor	0.70	0.60	0.75	0.87	0.84	1.00	1.00	1.00	1.00			
Incremental Delay, d2	5.1	1.0	0.4	2.5	1.3	2.5	0.0	0.1	0.0			
Delay (s)	8.1	5.5	3.8	6.3	8.7	44.7	38.4	38.9	38.4			
Level of Service	A	A	A	A	A	D	D	D	D			
Approach Delay (s)	5.3			8.7		43.8		38.7				
Approach LOS	A			A		D		D				

Intersection Summary

HCM 2000 Control Delay	8.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	83.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Block 7
BA Group - TCS

Synchro 10 Report
FT_PM.syn

Queues

3: Provost Drive/Ambrose Road & Sheppard Avenue East

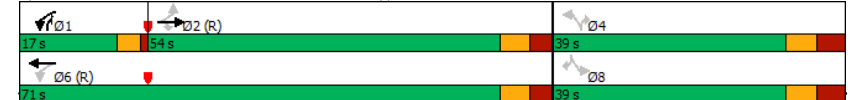
Future Total PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBR	SBL	SBR
Lane Configurations	↰	↱	↱	↰	↱	↰	↱	↰	↱
Traffic Volume (vph)	15	1515	230	290	1790	175	200	195	30
Future Volume (vph)	15	1515	230	290	1790	175	200	195	30
Lane Group Flow (vph)	15	1515	230	290	1950	175	200	195	30
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+ov	Perm	Perm
Protected Phases	2	2	1	6	4	1	8	8	8
Permitted Phases	2	2	2	6	4	4	1	8	8
Detector Phase	2	2	2	1	6	4	1	8	8
Switch Phase									
Minimum Initial (s)	30.0	30.0	30.0	6.0	30.0	30.0	6.0	30.0	30.0
Minimum Split (s)	37.0	37.0	37.0	10.0	37.0	38.0	10.0	38.0	38.0
Total Split (s)	54.0	54.0	54.0	17.0	71.0	39.0	17.0	39.0	39.0
Total Split (%)	49.1%	49.1%	49.1%	15.5%	64.5%	35.5%	15.5%	35.5%	35.5%
Yellow Time (s)	4.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	1.0	3.0	4.0	1.0	4.0	4.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	6.0	6.0	6.0	3.0	6.0	7.0	3.0	7.0	7.0
Lead/Lag	Lag	Lag	Lag	Lead			Lead		
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes		
Recall Mode	C-Min	C-Min	C-Min	None	C-Min	None	None	None	None
v/c Ratio	0.23	0.99	0.33	0.99	0.94	0.38	0.30	0.42	0.06
Control Delay	24.4	43.2	9.5	80.1	30.7	34.6	14.9	35.7	0.3
Queue Delay	0.0	0.0	0.0	0.0	2.2	0.0	0.0	0.0	0.0
Total Delay	24.4	43.2	9.5	80.1	32.9	34.6	14.9	35.7	0.3
Queue Length 50th (m)	1.6	128.9	12.2	49.5	197.7	31.8	20.4	36.0	0.0
Queue Length 95th (m)	m1.8	#226.8	m17.9	#106.0	#270.2	52.2	36.3	58.0	0.0
Internal Link Dist (m)		81.5		111.0					
Turn Bay Length (m)	40.0		40.0	165.0					
Base Capacity (vph)	64	1527	689	294	2074	482	672	473	482
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	60	0	0	0	1
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.99	0.33	0.99	0.97	0.36	0.30	0.41	0.06

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 72 (65%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 105
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Provost Drive/Ambrose Road & Sheppard Avenue East



Block 7
BA Group - TCS

Synchro 10 Report
FT_PM.syn

HCM Signalized Intersection Capacity Analysis

3: Provost Drive/Ambrose Road & Sheppard Avenue East

Future Total PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰
Traffic Volume (vph)	15	1515	230	290	1790	160	175	0	200	195	0	30
Future Volume (vph)	15	1515	230	290	1790	160	175	0	200	195	0	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.5	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	6.0	6.0	6.0	3.0	6.0		7.0		3.0	7.0		7.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00		1.00	1.00		1.00
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00		1.00		0.97	1.00		0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.98		1.00	0.97		1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00		0.85	1.00		0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95		1.00	0.95		1.00
Satd. Flow (prot)	1685	3500	1449	1668	3447		1657		1434	1629		1465
Flt Permitted	0.08	1.00	1.00	0.08	1.00		0.95		1.00	0.95		1.00
Satd. Flow (perm)	148	3500	1449	138	3447		1657		1434	1629		1465
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	15	1515	230	290	1790	160	175	0	200	195	0	30
RTOR Reduction (vph)	0	0	57	0	6	0	0	0	23	0	0	22
Lane Group Flow (vph)	15	1515	173	290	1944	0	175	0	177	195	0	8
Confl. Peds. (#/hr)	20		25	25		20	15		30	30		15
Heavy Vehicles (%)	0%	2%	0%	1%	1%	1%	0%	0%	2%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	4	4	0	0	0	0	0	0
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	pm+ov	Perm	Perm		Perm
Protected Phases	2	2		1	6			1				
Permitted Phases	2		2	6			4		4	8		8
Actuated Green, G (s)	47.0	47.0	47.0	65.0	65.0		30.0		44.0	30.0		30.0
Effective Green, g (s)	48.0	48.0	48.0	66.0	66.0		31.0		46.0	31.0		31.0
Actuated g/C Ratio	0.44	0.44	0.44	0.60	0.60		0.28		0.42	0.28		0.28
Clearance Time (s)	7.0	7.0	7.0	4.0	7.0		8.0		4.0	8.0		8.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0		3.0
Lane Grp Cap (vph)	64	1527	632	291	2068		466		599	459		412
v/s Ratio Prot		0.43		c0.14	0.56				0.04			
v/s Ratio Perm	0.10		0.12	c0.46			0.11		0.08	c0.12		0.01
v/c Ratio	0.23	0.99	0.27	1.00	0.94		0.38		0.30	0.42		0.02
Uniform Delay, d1	19.5	30.8	19.8	35.6	20.2		31.7		21.2	32.2		28.5
Progression Factor	0.80	0.78	0.76	1.00	1.00		1.00		1.00	1.00		1.00
Incremental Delay, d2	6.3	18.1	0.8	51.5	10.0		0.5		0.3	0.6		0.0
Delay (s)	21.9	42.1	15.8	87.1	30.1		32.2		21.5	32.9		28.6
Level of Service	C	D	B	F	C		C		C	C		C
Approach Delay (s)		38.5			37.5		26.5			32.3		
Approach LOS		D			D		C			C		

Intersection Summary

HCM 2000 Control Delay	36.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	110.5%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Block 7
BA Group - TCS

Synchro 10 Report
FT_PM.syn

Queues

4: Leslie Street & Sheppard Avenue East

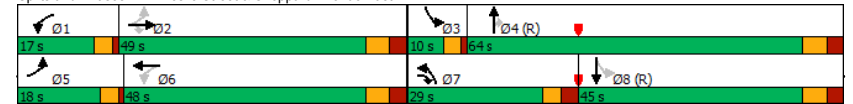
Future Total PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰
Traffic Volume (vph)	300	1380	615	230	1330	625	1230	455	110	895
Future Volume (vph)	300	1380	615	230	1330	625	1230	455	110	895
Lane Group Flow (vph)	300	1380	615	230	1480	625	1230	455	110	1170
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	Prot	NA	Perm	pm+pt	NA
Protected Phases	5	2	7	1	6	7	4		3	8
Permitted Phases	2		2	6				4	8	
Detector Phase	5	2	7	1	6	7	4	4	3	8
Switch Phase										
Minimum Initial (s)	6.0	38.0	6.0	6.0	38.0	6.0	38.0	38.0	6.0	38.0
Minimum Split (s)	10.0	45.0	12.0	10.0	45.0	12.0	45.0	45.0	10.0	45.0
Total Split (s)	18.0	49.0	29.0	17.0	48.0	29.0	64.0	64.0	10.0	45.0
Total Split (%)	12.9%	35.0%	20.7%	12.1%	34.3%	20.7%	45.7%	45.7%	7.1%	32.1%
Yellow Time (s)	3.0	4.0	3.0	3.0	4.0	3.0	4.0	4.0	3.0	4.0
All-Red Time (s)	1.0	3.0	3.0	1.0	3.0	3.0	3.0	3.0	1.0	3.0
Lost Time Adjust (s)	-3.0	-1.0	-3.0	-2.0	-1.0	-3.0	-1.0	-1.0	-2.0	-1.0
Total Lost Time (s)	1.0	6.0	3.0	2.0	6.0	3.0	6.0	6.0	2.0	6.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min	None	None	Min	None	C-Min	C-Min	None	C-Min
v/c Ratio	1.12	0.89	0.73	0.95	1.00	0.98	0.84	0.69	0.69	0.86
Control Delay	126.7	54.1	20.0	84.9	70.4	85.4	39.5	24.1	48.4	52.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	126.7	54.1	20.0	84.9	70.4	85.4	39.5	24.1	48.4	52.8
Queue Length 50th (m)	~83.6	140.3	73.4	50.9	156.7	82.6	177.6	60.6	16.2	113.9
Queue Length 95th (m)	#144.9	160.7	117.6	#105.3	#193.5	#131.6	215.6	139.9	#40.1	133.4
Internal Link Dist (m)		434.4			1078.4		224.4			40.9
Turn Bay Length (m)	170.0		130.0	200.0		175.0				
Base Capacity (vph)	269	1559	838	241	1487	638	1464	659	159	1368
Starvation Cap Reductn	0	0	0	0	0	0	5	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.12	0.89	0.73	0.95	1.00	0.98	0.84	0.69	0.69	0.86

Intersection Summary

Cycle Length: 140
Actuated Cycle Length: 140
Offset: 0 (0%), Referenced to phase 4:NBT and 8:SBTL, Start of Green
Natural Cycle: 135
Control Type: Actuated-Coordinated
- Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Leslie Street & Sheppard Avenue East



BA Group - TCS

FT_PM.syn

HCM Signalized Intersection Capacity Analysis

4: Leslie Street & Sheppard Avenue East

Future Total PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↰↰	↰	↰	↰↰↰		↰↰	↰↰	↰	↰↰	↰↰	↰
Traffic Volume (vph)	300	1380	615	230	1330	150	625	1230	455	110	895	275
Future Volume (vph)	300	1380	615	230	1330	150	625	1230	455	110	895	275
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.5	3.0	3.5	3.0	3.0	3.5	3.5
Total Lost time (s)	1.0	6.0	3.0	2.0	6.0		3.0	6.0	6.0	2.0	6.0	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		0.97	0.95	1.00	1.00	0.91	
Frpb, ped/bikes	1.00	1.00	0.92	1.00	0.99		1.00	1.00	0.92	1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frft	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	0.96	
Flt Protected	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Satd. Flow (prot)	1773	5079	1387	1755	4925		3440	3535	1375	1772	4768	
Flt Permitted	0.09	1.00	1.00	0.09	1.00		1.00	1.00	1.00	0.11	1.00	
Satd. Flow (perm)	158	5079	1387	163	4925		3440	3535	1375	191	4768	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	300	1380	615	230	1330	150	625	1230	455	110	895	275
RTOR Reduction (vph)	0	0	127	0	10	0	0	0	90	0	40	0
Lane Group Flow (vph)	300	1380	488	230	1470	0	625	1230	365	110	1130	0
Confl. Peds. (#/hr)	80		105	105		80	65		60	60		65
Heavy Vehicles (%)	0%	1%	0%	1%	1%	1%	0%	1%	0%	0%	1%	2%
Bus Blockages (#/hr)	0	0	0	0	4	4	0	0	3	0	4	4
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		Prot	NA	Perm	pm+pt	NA	
Protected Phases	5	2	7	1	6		7	4		3	8	
Permitted Phases	2		2	6					4	8		
Actuated Green, G (s)	56.0	42.0	65.0	54.0	41.0		23.0	57.0	57.0	44.0	38.0	
Effective Green, g (s)	62.0	43.0	71.0	58.0	42.0		26.0	58.0	58.0	48.0	39.0	
Actuated g/C Ratio	0.44	0.31	0.51	0.41	0.30		0.19	0.41	0.41	0.34	0.28	
Clearance Time (s)	4.0	7.0	6.0	4.0	7.0		6.0	7.0	7.0	4.0	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	
Lane Grp Cap (vph)	266	1559	703	238	1477		638	1464	569	155	1328	
v/s Ratio Prot	c0.14	0.27	0.13	0.10	c0.30		c0.18	c0.35		0.04	0.24	
v/s Ratio Perm	0.36		0.22	0.30					0.27	0.20		
v/c Ratio	1.13	0.89	0.69	0.97	1.00		0.98	0.84	0.64	0.71	0.85	
Uniform Delay, d1	44.3	46.2	26.2	41.4	48.9		56.7	36.8	32.7	34.4	47.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.03	0.93	0.88	1.00	1.00	
Incremental Delay, d2	94.0	6.4	3.0	48.4	22.2		26.7	4.9	4.5	13.9	7.0	
Delay (s)	138.3	52.6	29.2	89.8	71.1		85.2	39.1	33.1	48.3	54.8	
Level of Service	F	D	C	F	E		F	D	C	D	D	
Approach Delay (s)		57.5			73.6			50.4			54.2	
Approach LOS		E			E			D			D	
Intersection Summary												
HCM 2000 Control Delay			58.4									E
HCM 2000 Volume to Capacity ratio			0.97									
Actuated Cycle Length (s)			140.0							17.0		
Intersection Capacity Utilization			114.5%									H
Analysis Period (min)			15									
c Critical Lane Group												

Block 7
BA Group - TCS

Synchro 10 Report
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HCM Unsignalized Intersection Capacity Analysis

5: McMahon Drive/CTC South Access & Esther Shiner Boulevard

Future Total PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰			↰			↰			↰	↰
Sign Control		Stop			Stop			Stop			Stop	Stop
Traffic Volume (vph)	5	20	0	295	25	285	0	5	150	320	25	0
Future Volume (vph)	5	20	0	295	25	285	0	5	150	320	25	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	5	21	0	314	27	303	0	5	160	340	27	0
Direction, Lane #												
Volume Total (vph)	26	644	165	367	0							
Volume Left (vph)	5	314	0	340	0							
Volume Right (vph)	0	303	160	0	0							
Hadj (s)	0.04	-0.18	-0.58	0.48	0.00							
Departure Headway (s)	7.2	5.7	6.3	7.3	6.8							
Degree Utilization, x	0.05	1.01	0.29	0.74	0.00							
Capacity (veh/h)	455	633	553	489	534							
Control Delay (s)	10.6	62.8	11.9	27.2	8.6							
Approach Delay (s)	10.6	62.8	11.9	27.2								
Approach LOS	B	F	B	D								
Intersection Summary												
Delay				43.8								
Level of Service				E								
Intersection Capacity Utilization			83.5%								E	
Analysis Period (min)			15									

Block 7
BA Group - TCS

Synchro 10 Report
FT_PM.syn

Queues

6: Esther Shiner Boulevard & Provost Drive

Future Total PM Peak Hour

											
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	
Lane Configurations											
Traffic Volume (vph)	75	405	10	495	70	15	95	260	55	95	
Future Volume (vph)	75	405	10	495	70	15	95	260	55	95	
Lane Group Flow (vph)	0	500	10	505	71	0	173	265	56	97	
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	pm+pt	NA	Perm	
Protected Phases	2		6				4		3		
Permitted Phases	2		6		6	4		8		8	
Detector Phase	2	2	6	6	6	4	4	3	8	8	
Switch Phase											
Minimum Initial (s)	26.0	26.0	26.0	26.0	26.0	7.0	7.0	6.0	7.0	7.0	
Minimum Split (s)	33.0	33.0	33.0	33.0	33.0	34.0	34.0	10.0	34.0	34.0	
Total Split (s)	39.0	39.0	39.0	39.0	39.0	34.0	34.0	10.0	44.0	44.0	
Total Split (%)	47.0%	47.0%	47.0%	47.0%	47.0%	41.0%	41.0%	12.0%	53.0%	53.0%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0	
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	1.0	3.0	3.0	
Lost Time Adjust (s)		-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)		6.0	6.0	6.0	6.0		6.0	3.0	6.0	6.0	
Lead/Lag						Lag	Lag	Lead			
Lead-Lag Optimize?						Yes	Yes	Yes			
Recall Mode	Min	Min	Min	Min	Min	None	None	None	None	None	
v/c Ratio	0.73	0.04	0.57	0.10		0.49	0.61	0.09	0.17		
Control Delay	24.7	13.5	17.6	1.9		23.3	21.8	14.8	4.1		
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		
Total Delay	24.7	13.5	17.6	1.9		23.3	21.8	14.8	4.1		
Queue Length 50th (m)	47.7	0.6	43.0	0.0		16.3	25.2	5.0	0.0		
Queue Length 95th (m)	#135.7	4.3	103.1	4.1		32.1	41.6	11.5	8.0		
Internal Link Dist (m)	80.2		216.2			86.8		118.2			
Turn Bay Length (m)		105.0					75.0				
Base Capacity (vph)	685	234	893	739		685	433	971	841		
Starvation Cap Reductn	0	0	0	0		0	0	0	0		
Spillback Cap Reductn	0	0	0	0		0	0	0	0		
Storage Cap Reductn	0	0	0	0		0	0	0	0		
Reduced v/c Ratio	0.73	0.04	0.57	0.10		0.25	0.61	0.06	0.12		

Intersection Summary

Cycle Length: 83

Actuated Cycle Length: 69.4

Natural Cycle: 90

Control Type: Semi Act-Uncoord

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

Queue shown is maximum after two cycles.

Splits and Phases: 6: Esther Shiner Boulevard & Provost Drive

→ Ø2	↖ Ø3	↗ Ø4
39 s	10 s	24 s
↖ Ø6	↗ Ø8	
39 s	44 s	

Block 7
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HCM Signalized Intersection Capacity Analysis

6: Esther Shiner Boulevard & Provost Drive

Future Total PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	405	10	10	495	70	15	95	60	260	55	95
Future Volume (vph)	75	405	10	10	495	70	15	95	60	260	55	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.0	3.5	3.0	3.5	3.5	3.5	3.0	3.5	3.0
Total Lost time (s)	6.0		6.0		6.0		6.0		3.0		6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00		1.00	1.00	0.96		0.99		1.00	1.00	0.96	
Flpb, ped/bikes	1.00		0.99	1.00	1.00		1.00		1.00	1.00	1.00	
Frt	1.00		1.00	1.00	0.85		0.95		1.00	1.00	0.85	
Flt Protected	0.99		0.95	1.00	1.00		1.00		0.95	1.00	1.00	
Satd. Flow (prot)	1828		1044	1860	1434		1677		1678	1756	1449	
Flt Permitted	0.77		0.44	1.00	1.00		0.97		0.52	1.00	1.00	
Satd. Flow (perm)	1427		487	1860	1434		1632		918	1756	1449	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	77	413	10	10	505	71	15	97	61	265	56	97
RTOR Reduction (vph)	0	1	0	0	0	37	0	29	0	0	0	63
Lane Group Flow (vph)	0	499	0	10	505	34	0	144	0	265	56	34
Confl. Peds. (#/hr)	35		15	15		35	15		15	15		15
Heavy Vehicles (%)	4%	1%	0%	60%	1%	1%	6%	4%	7%	0%	7%	0%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm
Protected Phases	2		6		6		4		3		8	
Permitted Phases	2		6		6		4		8		8	
Actuated Green, G (s)	32.3		32.3	32.3	32.3		12.8		22.9	22.9	22.9	
Effective Green, g (s)	33.3		33.3	33.3	33.3		13.8		23.9	23.9	23.9	
Actuated g/C Ratio	0.48		0.48	0.48	0.48		0.20		0.35	0.35	0.35	
Clearance Time (s)	7.0		7.0	7.0	7.0		7.0		4.0	7.0	7.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	686		234	895	690		325		395	606	500	
v/s Ratio Prot				0.27					c0.07	0.03		
v/s Ratio Perm	c0.35		0.02		0.02		0.09		c0.16		0.02	
v/c Ratio	0.73		0.04	0.56	0.05		0.44		0.67	0.09	0.07	
Uniform Delay, d1	14.3		9.5	12.8	9.5		24.3		18.9	15.3	15.2	
Progression Factor	1.00		1.00	1.00	1.00		1.00		1.00	1.00	1.00	
Incremental Delay, d2	3.9		0.1	0.8	0.0		1.0		4.4	0.1	0.1	
Delay (s)	18.2		9.6	13.6	9.6		25.3		23.3	15.4	15.2	
Level of Service	B		A	B	A		C		C	B	B	
Approach Delay (s)	18.2		13.0				25.3			20.4		
Approach LOS	B		B				C			C		

Intersection Summary

HCM 2000 Control Delay

HCM 2000 Volume to Capacity ratio

Actuated Cycle Length (s)

Intersection Capacity Utilization

Analysis Period (min)

c Critical Lane Group

Block 7
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Queues

7: Esther Shiner Boulevard & Old Leslie Street

Future Total PM Peak Hour

	EBL	EBT	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↩	↩↩	↩↩	↩	↩	↩	↩
Traffic Volume (vph)	40	775	680	5	0	395	0
Future Volume (vph)	40	775	680	5	0	395	0
Lane Group Flow (vph)	42	812	838	5	5	411	78
Turn Type	Perm	NA	NA	Perm	NA	Perm	NA
Protected Phases		2	6		4		8
Permitted Phases		2		4		8	
Detector Phase	2	2	6	4	4	8	8
Switch Phase							
Minimum Initial (s)	28.0	28.0	28.0	7.0	7.0	7.0	7.0
Minimum Split (s)	35.0	35.0	35.0	37.0	37.0	37.0	37.0
Total Split (s)	42.0	42.0	42.0	37.0	37.0	37.0	37.0
Total Split (%)	53.2%	53.2%	53.2%	46.8%	46.8%	46.8%	46.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	Min	Min	Min	None	None	None	None
v/c Ratio	0.21	0.53	0.56	0.01	0.01	0.82	0.13
Control Delay	17.4	16.5	16.3	12.0	0.0	33.1	1.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.4	16.5	16.3	12.0	0.0	33.1	1.5
Queue Length 50th (m)	3.6	42.7	43.0	0.4	0.0	46.8	0.0
Queue Length 95th (m)	11.2	62.7	63.7	2.3	0.0	#92.8	3.1
Internal Link Dist (m)		106.6	130.2		43.8		121.9
Turn Bay Length (m)	40.0			10.0		40.0	
Base Capacity (vph)	243	1893	1837	547	772	600	719
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.43	0.46	0.01	0.01	0.69	0.11

Intersection Summary

Cycle Length: 79

Actuated Cycle Length: 67.6

Natural Cycle: 75

Control Type: Semi Act-Uncoord

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

Queue shown is maximum after two cycles.

Splits and Phases: 7: Esther Shiner Boulevard & Old Leslie Street

→ Ø2	↩ Ø4
42 s	37 s
↩ Ø6	↩ Ø8
42 s	37 s

Block 7
BA Group - TCSSynchro 10 Report
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HCM Signalized Intersection Capacity Analysis

7: Esther Shiner Boulevard & Old Leslie Street

Future Total PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↩	↩↩		↩	↩↩		↩	↩		↩	↩	
Traffic Volume (vph)	40	775	5	0	680	125	5	0	5	395	0	75
Future Volume (vph)	40	775	5	0	680	125	5	0	5	395	0	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.5	3.0	3.5	3.5	3.0	3.5	3.5	3.0	3.5	3.5
Total Lost time (s)	6.0	6.0			6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95			0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00			0.99		1.00	0.98		1.00	0.94	
Flpb, ped/bikes	0.99	1.00			1.00		0.95	1.00		0.99	1.00	
Frt	1.00	1.00			0.98		1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1641	3531			3398		1608	1567		1641	1427	
Flt Permitted	0.26	1.00			1.00		0.71	1.00		0.75	1.00	
Satd. Flow (perm)	454	3531			3398		1196	1567		1303	1427	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	42	807	5	0	708	130	5	0	5	411	0	78
RTOR Reduction (vph)	0	1	0	0	20	0	0	3	0	0	48	0
Lane Group Flow (vph)	42	811	0	0	818	0	5	2	0	411	30	0
Confl. Peds. (#/hr)	20		20	20		20	75		10	10		75
Heavy Vehicles (%)	2%	1%	0%	0%	1%	7%	0%	0%	0%	2%	0%	5%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	28.3	28.3			28.3		25.2	25.2		25.2	25.2	
Effective Green, g (s)	29.3	29.3			29.3		26.2	26.2		26.2	26.2	
Actuated g/C Ratio	0.43	0.43			0.43		0.39	0.39		0.39	0.39	
Clearance Time (s)	7.0	7.0			7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	197	1532			1474		464	608		505	553	
v/s Ratio Prot		0.23			c0.24			0.00			0.02	
v/s Ratio Perm	0.09						0.00			c0.32		
v/c Ratio	0.21	0.53			0.56		0.01	0.00		0.81	0.05	
Uniform Delay, d1	11.9	14.0			14.2		12.7	12.7		18.5	12.9	
Progression Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	0.3			0.5		0.0	0.0		9.7	0.0	
Delay (s)	12.5	14.4			14.7		12.7	12.7		28.2	13.0	
Level of Service	B	B			B		B	B		C	B	
Approach Delay (s)	14.3				14.7		12.7			25.8		
Approach LOS	B				B		B			C		

Intersection Summary

HCM 2000 Control Delay	17.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	67.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	71.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Block 7
BA Group - TCSSynchro 10 Report
FT_PM.syn

Queues

8: Leslie Street & Esther Shiner Boulevard

Future Total PM Peak Hour

										
Lane Group	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBT	SBR	
Lane Configurations						  		  		
Traffic Volume (vph)	200	930	150	70	555	2005	135	1705	190	
Future Volume (vph)	200	930	150	70	555	2005	135	1705	190	
Lane Group Flow (vph)	200	930	150	70	555	2005	135	1705	190	
Turn Type	Perm	pt+ov	Perm	Perm	pm+pt	NA	Perm	NA	Perm	
Protected Phases	4 5				5	2	6			
Permitted Phases	4		8	8	2		2		6	
Detector Phase	4	4 5	8	8	5	2	2	6	6	
Switch Phase										
Minimum Initial (s)	7.0		7.0	7.0	6.0	25.0	25.0	25.0	25.0	
Minimum Split (s)	46.0		46.0	46.0	10.0	31.0	31.0	31.0	31.0	
Total Split (s)	48.0		48.0	48.0	40.0	92.0	92.0	52.0	52.0	
Total Split (%)	34.3%		34.3%	34.3%	28.6%	65.7%	65.7%	37.1%	37.1%	
Yellow Time (s)	4.0		4.0	4.0	3.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	4.0		4.0	4.0	1.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-2.0	-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	7.0		7.0	7.0	2.0	5.0	5.0	5.0	5.0	
Lead/Lag						Lead				Lag
Lead-Lag Optimize?						Yes				Yes
Recall Mode	None		None	None	None	C-Min	C-Min	C-Min	C-Min	
v/c Ratio	0.44	0.95	0.31	0.16	1.06	0.64	0.16	1.00	0.31	
Control Delay	43.9	39.2	40.7	13.3	88.6	19.0	4.5	53.4	4.2	
Queue Delay	0.0	43.6	0.0	0.0	0.0	0.2	0.0	0.0	0.0	
Total Delay	43.9	82.8	40.7	13.3	88.6	19.3	4.5	53.4	4.2	
Queue Length 50th (m)	47.4	198.0	34.1	3.1	~165.0	125.4	2.8	~131.4	0.6	
Queue Length 95th (m)	72.4	#315.0	54.4	15.5	m#175.6	m139.0	m4.4	m#213.7	m3.8	
Internal Link Dist (m)						231.2	224.4			
Turn Bay Length (m)					150.0	170.0			175.0	
Base Capacity (vph)	456	980	483	451	523	3156	858	1705	608	
Starvation Cap Reductn	0	156	0	0	0	418	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	1	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.44	1.13	0.31	0.16	1.06	0.73	0.16	1.00	0.31	

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 140

Control Type: Actuated-Coordinated

- Volume exceeds capacity, queue is theoretically infinite.

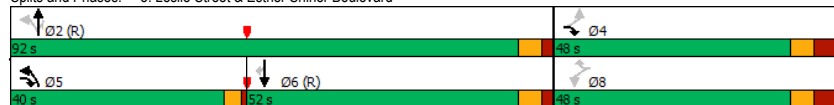
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 8: Leslie Street & Esther Shiner Boulevard



HCM Signalized Intersection Capacity Analysis

8: Leslie Street & Esther Shiner Boulevard

Future Total PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↩		↩	↩		↩	↩	↩	↩		↩	↩
Traffic Volume (vph)	200	0	930	150	0	70	555	2005	135	0	1705	190
Future Volume (vph)	200	0	930	150	0	70	555	2005	135	0	1705	190
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.5	3.5	3.0
Total Lost time (s)	7.0		7.0	7.0		7.0	2.0	5.0	5.0		5.0	5.0
Lane Util. Factor	1.00		1.00	1.00		1.00	1.00	0.91	1.00		0.91	1.00
Frpb, ped/bikes	1.00		1.00	1.00		0.93	1.00	1.00	0.93		1.00	0.96
Flpb, ped/bikes	0.94		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00
Frt	1.00		0.85	1.00		0.85	1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95		1.00	0.95		1.00	1.00	1.00	1.00		1.00	1.00
Satd. Flow (prot)	1560		1507	1652		1408	1739	5079	1300		5079	1438
Flt Permitted	0.95		1.00	0.95		1.00	0.08	1.00	1.00		1.00	1.00
Satd. Flow (perm)	1560		1507	1652		1408	139	5079	1300		5079	1438
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	200	0	930	150	0	70	555	2005	135	0	1705	190
RTOR Reduction (vph)	0	0	101	0	0	39	0	0	51	0	0	126
Lane Group Flow (vph)	200	0	829	150	0	31	555	2005	84	0	1705	64
Confl. Peds. (#/hr)	50					50	15		20		20	15
Heavy Vehicles (%)	2%	0%	0%	2%	0%	0%	2%	1%	6%	0%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	3	0	0	0
Turn Type	Perm		pt+ov	Perm		Perm	pm+pt	NA	Perm		NA	Perm
Protected Phases			4 5				5	2			6	
Permitted Phases	4			8		8	2		2			6
Actuated Green, G (s)	40.0		84.0	40.0		40.0	86.0	86.0	86.0		46.0	46.0
Effective Green, g (s)	41.0		85.0	41.0		41.0	88.0	87.0	87.0		47.0	47.0
Actuated g/C Ratio	0.29		0.61	0.29		0.29	0.63	0.62	0.62		0.34	0.34
Clearance Time (s)	8.0			8.0		8.0	4.0	6.0	6.0		6.0	6.0
Vehicle Extension (s)	3.0			3.0		3.0	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	456		914	483		412	521	3156	807		1705	482
v/s Ratio Prot			c0.55				c0.29	0.39			c0.34	
v/s Ratio Perm	0.13			0.09		0.02	0.38		0.06			0.04
v/c Ratio	0.44		0.91	0.31		0.08	1.07	0.64	0.10		1.00	0.13
Uniform Delay, d1	40.2		24.0	38.5		35.8	44.0	16.6	10.7		46.5	32.3
Progression Factor	1.00		1.00	1.00		1.00	1.26	1.12	2.63		0.77	0.76
Incremental Delay, d2	0.7		12.4	0.4		0.1	41.4	0.3	0.1		17.3	0.4
Delay (s)	40.8		36.4	38.9		35.9	96.9	18.9	28.3		53.0	24.9
Level of Service	D		D	D		D	F	B	C		D	C
Approach Delay (s)		37.2			37.9			35.4			50.2	
Approach LOS		D			D			D			D	

Intersection Summary

HCM 2000 Control Delay	40.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	114.7%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Queues

9: Leslie Street & Oriole GO Station Access/Hwy 401 WB Off-Ramp

Future Total PM Peak Hour

Lane Group	EBL	EBR	WBL	WBT	WBR	NBL	NBT	SBT
Lane Configurations	↰	↰	↰	↰	↰	↰	↰	↰
Traffic Volume (vph)	105	145	715	15	1055	15	1535	2105
Future Volume (vph)	105	145	715	15	1055	15	1535	2105
Lane Group Flow (vph)	105	145	715	532	538	15	1535	2125
Turn Type	Perm	Free	Split	NA	Prot	Perm	NA	NA
Protected Phases			3	3	3		2	6
Permitted Phases	4	Free				2		
Detector Phase	4		3	3	3	2	2	6
Switch Phase								
Minimum Initial (s)	7.0		7.0	7.0	7.0	27.0	27.0	27.0
Minimum Split (s)	39.0		14.0	14.0	14.0	34.0	34.0	34.0
Total Split (s)	39.0		42.0	42.0	42.0	59.0	59.0	59.0
Total Split (%)	27.9%		30.0%	30.0%	30.0%	42.1%	42.1%	42.1%
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lag		Lead	Lead	Lead			
Lead-Lag Optimize?	Yes		Yes	Yes	Yes			
Recall Mode	None		None	None	None	C-Min	C-Min	C-Min
v/c Ratio	0.77	0.10	0.82	0.96	0.99	0.30	0.98	0.94
Control Delay	87.2	0.1	58.2	57.2	64.8	53.3	54.9	34.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	87.2	0.1	58.2	57.2	64.8	53.3	54.9	34.2
Queue Length 50th (m)	29.4	0.0	101.8	100.4	105.2	3.0	184.7	127.0
Queue Length 95th (m)	48.9	0.0	126.3	#181.0	#189.0	m4.9	#318.5 m#260.6	
Internal Link Dist (m)			220.4				38.0	231.2
Turn Bay Length (m)				150.0	35.0			
Base Capacity (vph)	188	1507	867	556	544	50	1565	2269
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.56	0.10	0.82	0.96	0.99	0.30	0.98	0.94

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 150

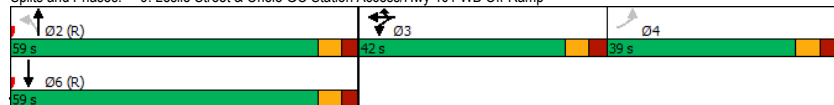
Control Type: Actuated-Coordinated

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 9: Leslie Street & Oriole GO Station Access/Hwy 401 WB Off-Ramp



Block 7

BA Group - TCS

Synchro 10 Report

FT_PM.syn

HCM Signalized Intersection Capacity Analysis

9: Leslie Street & Oriole GO Station Access/Hwy 401 WB Off-Ramp

Future Total PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰		↰	↰	↰	↰	↰	↰			↰	↰
Traffic Volume (vph)	105	0	145	715	15	1055	15	1535	0	0	2105	20
Future Volume (vph)	105	0	145	715	15	1055	15	1535	0	0	2105	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.0		3.0	6.0	6.0	6.0	6.0	6.0			6.0	
Lane Util. Factor	1.00		1.00	0.97	0.95	0.95	1.00	0.95			0.91	
Frpb, ped/bikes	1.00		1.00	1.00	0.97	1.00	1.00	1.00			1.00	
Flpb, ped/bikes	0.99		1.00	1.00	1.00	1.00	1.00	1.00			1.00	
Frt	1.00		0.85	1.00	0.85	0.85	1.00	1.00			1.00	
Flt Protected	0.95		1.00	1.00	1.00	1.00	0.95	1.00			1.00	
Satd. Flow (prot)	1669		1507	3373	1482	1432	1685	3535			5121	
Flt Permitted	0.45		1.00	1.00	1.00	1.00	0.06	1.00			1.00	
Satd. Flow (perm)	798		1507	3373	1482	1432	114	3535			5121	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	105	0	145	715	15	1055	15	1535	0	0	2105	20
RTOR Reduction (vph)	0	0	0	0	176	176	0	0	0	0	1	0
Lane Group Flow (vph)	105	0	145	715	356	362	15	1535	0	0	2124	0
Confl. Peds. (#/hr)	15					15	5		10	10		5
Heavy Vehicles (%)	0%	0%	0%	2%	0%	0%	0%	1%	0%	0%	0%	0%
Turn Type	Perm		Free	Split	NA	Prot	Perm	NA			NA	
Protected Phases				3	3	3		2			6	
Permitted Phases	4		Free				2					
Actuated Green, G (s)	23.0		140.0	35.0	35.0	35.0	61.0	61.0			61.0	
Effective Green, g (s)	24.0		140.0	36.0	36.0	36.0	62.0	62.0			62.0	
Actuated g/C Ratio	0.17		1.00	0.26	0.26	0.26	0.44	0.44			0.44	
Clearance Time (s)	7.0			7.0	7.0	7.0	7.0	7.0			7.0	
Vehicle Extension (s)	3.0			3.0	3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)	136		1507	867	381	368	50	1565			2267	
v/s Ratio Prot				0.21	0.24	c0.25		c0.43			0.41	
v/s Ratio Perm	c0.13		0.10				0.13					
v/c Ratio	0.77		0.10	0.82	0.93	0.98	0.30	0.98			0.94	
Uniform Delay, d1	55.4		0.0	49.0	50.8	51.7	25.1	38.4			37.1	
Progression Factor	1.00		1.00	1.00	1.00	1.00	1.24	1.03			0.80	
Incremental Delay, d2	23.3		0.1	6.4	29.7	42.2	10.5	15.1			3.5	
Delay (s)	78.7		0.1	55.5	80.6	93.9	41.7	54.8			33.1	
Level of Service	E		A	E	F	F	D	D			C	
Approach Delay (s)	33.1				74.5			54.7			33.1	
Approach LOS	C				E			D			C	

Intersection Summary

HCM 2000 Control Delay

HCM 2000 Volume to Capacity ratio

Actuated Cycle Length (s)

Intersection Capacity Utilization

Analysis Period (min)

c Critical Lane Group

HCM 2000 Level of Service

Sum of lost time (s)

ICU Level of Service

G

Block 7

BA Group - TCS

Synchro 10 Report

FT_PM.syn

Queues

10: Leslie Street & Hwy 401 EB Off-Ramp/Lesmill Road

Future Total PM Peak Hour

	↖	→	↗	↑	↘	↙	↓
Lane Group	EBL	EBT	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖	↖↗	↗	↖↗	↖	↖	↖↗
Traffic Volume (vph)	505	125	880	2200	110	240	1495
Future Volume (vph)	505	125	880	2200	110	240	1495
Lane Group Flow (vph)	252	378	880	2200	110	240	1495
Turn Type	Split	NA	Perm	NA	Perm	pm+pt	NA
Protected Phases	4	4		2		1	6
Permitted Phases			4 6		2	6	
Detector Phase	4	4	4 6	2	2	1	6
Switch Phase							
Minimum Initial (s)	7.0	7.0		20.0	20.0	6.0	20.0
Minimum Split (s)	43.0	43.0		26.0	26.0	10.0	26.0
Total Split (s)	43.0	43.0		75.0	75.0	22.0	97.0
Total Split (%)	30.7%	30.7%		53.6%	53.6%	15.7%	69.3%
Yellow Time (s)	4.0	4.0		4.0	4.0	3.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	1.0	2.0
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-3.0	-1.0
Total Lost Time (s)	5.0	5.0		5.0	5.0	1.0	5.0
Lead/Lag				Lag	Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	Yes	
Recall Mode	None	None		C-Min	C-Min	None	C-Min
v/c Ratio	0.71	0.52	0.58	0.79	0.14	0.76	0.59
Control Delay	60.5	49.5	1.6	28.6	9.7	50.6	13.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.5	49.5	1.6	28.6	9.7	50.6	13.7
Queue Length 50th (m)	74.1	52.9	0.0	188.4	7.5	62.8	95.5
Queue Length 95th (m)	103.5	66.9	0.0	226.7	19.0	m73.4	m116.4
Internal Link Dist (m)		272.4		188.8			87.0
Turn Bay Length (m)	130.0				30.0	80.0	
Base Capacity (vph)	433	886	1511	2796	794	335	2516
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.58	0.43	0.58	0.79	0.14	0.72	0.59

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

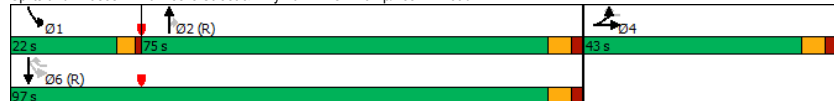
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

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

Splits and Phases: 10: Leslie Street & Hwy 401 EB Off-Ramp/Lesmill Road

Block 7
BA Group - TCSSynchro 10 Report
FT_PM.syn

HCM Signalized Intersection Capacity Analysis

10: Leslie Street & Hwy 401 EB Off-Ramp/Lesmill Road

Future Total PM Peak Hour

	↖	→	↗	↖	↗	↖	↗	↖	↗	↖	↗	↖	↗
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↖	↖↗				↗		↖↗	↖	↖	↖↗		
Traffic Volume (vph)	505	125	0	0	0	880	0	2200	110	240	1495	0	
Future Volume (vph)	505	125	0	0	0	880	0	2200	110	240	1495	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	
Lane Width	3.0	3.5	3.5	3.5	3.5	3.0	3.5	3.5	3.0	3.0	3.5	3.5	
Total Lost time (s)	5.0	5.0				5.0		5.0	5.0	1.0	5.0		
Lane Util. Factor	0.91	0.91				1.00		0.91	1.00	1.00	0.95		
Frpb, ped/bikes	1.00	1.00				1.00		1.00	0.97	1.00	1.00		
Flpb, ped/bikes	1.00	1.00				1.00		1.00	1.00	1.00	1.00		
Frft	1.00	1.00				0.86		1.00	0.85	1.00	1.00		
Flt Protected	1.00	0.97				1.00		1.00	1.00	1.00	1.00		
Satd. Flow (prot)	1598	3265				1519		5029	1385	1848	3570		
Flt Permitted	1.00	0.97				1.00		1.00	1.00	0.05	1.00		
Satd. Flow (perm)	1598	3265				1519		5029	1385	91	3570		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	505	125	0	0	0	880	0	2200	110	240	1495	0	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	24	0	0	0	
Lane Group Flow (vph)	252	378	0	0	0	880	0	2200	86	240	1495	0	
Confl. Peds. (#/hr)			5	5			5		10	10		5	
Heavy Vehicles (%)	1%	2%	3%	0%	0%	1%	0%	2%	4%	1%	0%	0%	
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	3	0	0	0	
Turn Type	Split	NA				Perm		NA	Perm	pm+pt	NA		
Protected Phases	4	4						2		1	6		
Permitted Phases						4 6			2	6			
Actuated Green, G (s)	30.3	30.3				140.0		76.9	76.9	97.7	97.7		
Effective Green, g (s)	31.3	31.3				140.0		77.9	77.9	100.7	98.7		
Actuated g/C Ratio	0.22	0.22				1.00		0.56	0.56	0.72	0.71		
Clearance Time (s)	6.0	6.0						6.0	6.0	4.0	6.0		
Vehicle Extension (s)	3.0	3.0						3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	357	729				1519		2798	770	313	2516		
v/s Ratio Prot	c0.16	0.12						c0.44		c0.11	0.42		
v/s Ratio Perm						0.58			0.06	0.44			
v/c Ratio	0.71	0.52				0.58		0.79	0.11	0.77	0.59		
Uniform Delay, d1	50.1	47.7				0.0		24.5	14.7	43.4	10.5		
Progression Factor	1.00	1.00				1.00		1.00	1.00	1.12	1.16		
Incremental Delay, d2	6.2	0.6				0.5		2.3	0.3	5.3	0.5		
Delay (s)	56.3	48.4				0.5		26.8	15.0	53.7	12.6		
Level of Service	E	D				A		C	B	D	B		
Approach Delay (s)		51.6			0.5			26.2			18.3		
Approach LOS		D			A			C			B		

Intersection Summary

HCM 2000 Control Delay	22.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	126.1%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Block 7
BA Group - TCSSynchro 10 Report
FT_PM.syn

HCM Unsignalized Intersection Capacity Analysis 11: CTC North Access & Sheppard Avenue East

Future Total PM Peak Hour

							
Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations	 			 			
Traffic Volume (veh/h)	1720	35	30	1965	15	40	
Future Volume (Veh/h)	1720	35	30	1965	15	40	
Sign Control	Free			Free	Stop		
Grade	0%			0%	0%		
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	
Hourly flow rate (vph)	1755	36	31	2005	15	41	
Pedestrians					50		
Lane Width (m)					3.0		
Walking Speed (m/s)					1.2		
Percent Blockage					3		
Right turn flare (veh)							
Median type	None			None			
Median storage (veh)							
Upstream signal (m)	144			105			
pX, platoon unblocked			0.70		0.61	0.70	
vC, conflicting volume			1841		2888	946	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol			1345		618	67	
tC, single (s)			4.1		6.8	6.9	
tC, 2 stage (s)							
tF (s)			2.2		3.5	3.3	
p0 queue free %			91		93	94	
cM capacity (veh/h)			351		230	667	
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	1170	621	31	1002	1002	15	41
Volume Left	0	0	31	0	0	15	0
Volume Right	0	36	0	0	0	0	41
cSH	1700	1700	351	1700	1700	230	667
Volume to Capacity	0.69	0.37	0.09	0.59	0.59	0.07	0.06
Queue Length 95th (m)	0.0	0.0	2.3	0.0	0.0	1.7	1.6
Control Delay (s)	0.0	0.0	16.3	0.0	0.0	21.8	10.8
Lane LOS			C			C	B
Approach Delay (s)	0.0		0.2			13.7	
Approach LOS						B	
Intersection Summary							
Average Delay			0.3				
Intersection Capacity Utilization			64.3%		ICU Level of Service		C
Analysis Period (min)			15				

HCM Unsignalized Intersection Capacity Analysis 12: Provost Drive & CTC East Access/Singer Court

Future Total PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	0	5	60	0	110	25	160	55	120	345	55
Future Volume (Veh/h)	60	0	5	60	0	110	25	160	55	120	345	55
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	64	0	5	64	0	117	27	170	59	128	367	59
Pedestrians		20			70			25			20	
Lane Width (m)		3.5			3.5			3.3			3.3	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		2			6			2			2	
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (m)								142			103	
pX, platoon unblocked												
vC, conflicting volume	948	1026	258	793	1026	204	446			299		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	948	1026	258	793	1026	204	446			299		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	58	100	99	71	100	84	98			89		
cM capacity (veh/h)	152	192	721	222	192	751	1107			1201		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3				
Volume Total	69	181	27	113	116	128	245	181				
Volume Left	64	64	27	0	0	128	0	0				
Volume Right	5	117	0	0	59	0	0	59				
cSH	161	407	1107	1700	1700	1201	1700	1700				
Volume to Capacity	0.43	0.44	0.02	0.07	0.07	0.11	0.14	0.11				
Queue Length 95th (m)	15.4	17.8	0.6	0.0	0.0	2.9	0.0	0.0				
Control Delay (s)	43.0	20.7	8.3	0.0	0.0	8.4	0.0	0.0				
Lane LOS	E	C	A			A						
Approach Delay (s)	43.0	20.7	0.9			1.9						
Approach LOS	E	C										
Intersection Summary												
Average Delay			7.6									
Intersection Capacity Utilization			41.3%			ICU Level of Service				A		
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
13: IKEA Driveway & Esther Shiner Boulevard

Future Total PM Peak Hour

							
Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations							
Traffic Volume (veh/h)	620	105	185	575	0	200	
Future Volume (Veh/h)	620	105	185	575	0	200	
Sign Control	Free			Free	Stop		
Grade	0%			0%	0%		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	
Hourly flow rate (vph)	660	112	197	612	0	213	
Pedestrians					45		
Lane Width (m)					3.0		
Walking Speed (m/s)					1.2		
Percent Blockage					3		
Right turn flare (veh)							
Median type	None			None			
Median storage (veh)							
Upstream signal (m)	240			130			
pX, platoon unblocked					0.92		
vC, conflicting volume			705		1405	375	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol			705		1267	375	
tC, single (s)			4.1		6.8	6.9	
tC, 2 stage (s)							
tF (s)			2.2		3.5	3.3	
p0 queue free %			77		100	65	
cM capacity (veh/h)			874		113	609	
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1
Volume Total	330	330	112	197	306	306	213
Volume Left	0	0	0	197	0	0	0
Volume Right	0	0	112	0	0	0	213
cSH	1700	1700	1700	874	1700	1700	609
Volume to Capacity	0.19	0.19	0.07	0.23	0.18	0.18	0.35
Queue Length 95th (m)	0.0	0.0	0.0	6.9	0.0	0.0	12.5
Control Delay (s)	0.0	0.0	0.0	10.3	0.0	0.0	14.1
Lane LOS				B			B
Approach Delay (s)	0.0			2.5			14.1
Approach LOS							B
Intersection Summary							
Average Delay			2.8				
Intersection Capacity Utilization			36.2%	ICU Level of Service		A	
Analysis Period (min)			15				

HCM Unsignalized Intersection Capacity Analysis
24: Billes Heights & Site Access

Future Total PM Peak Hour

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	35	15	25	135	235	40
Future Volume (Veh/h)	35	15	25	135	235	40
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	37	16	26	142	247	42
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage (veh)						
Upstream signal (m)					55	
pX, platoon unblocked						
vC, conflicting volume	462	268	289			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	462	268	289			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	93	98	98			
cM capacity (veh/h)	550	776	1284			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	53	168	289			
Volume Left	37	26	0			
Volume Right	16	0	42			
cSH	603	1284	1700			
Volume to Capacity	0.09	0.02	0.17			
Queue Length 95th (m)	2.3	0.5	0.0			
Control Delay (s)	11.5	1.4	0.0			
Lane LOS	B	A				
Approach Delay (s)	11.5	1.4	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay			1.6			
Intersection Capacity Utilization			36.6%	ICU Level of Service		A
Analysis Period (min)			15			

Queues

1: Bessarion Road/Burbank Drive & Sheppard Avenue East - Background (Sensitivity Analysis) AM Peak Hour

	↖	→	↗	↖	↖	↑	↗	↓
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↖	↖↗	↖	↖↗	↖	↖	↖	↖
Traffic Volume (vph)	25	1310	15	1390	15	20	275	15
Future Volume (vph)	25	1310	15	1390	15	20	275	15
Lane Group Flow (vph)	28	1467	17	1666	17	55	306	84
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases	2		6		4		8	
Permitted Phases	2		6		4		8	
Detector Phase	2	2	6	6	4	4	8	8
Switch Phase								
Minimum Initial (s)	24.0	24.0	24.0	24.0	7.0	7.0	7.0	7.0
Minimum Split (s)	30.0	30.0	30.0	30.0	35.0	35.0	35.0	35.0
Total Split (s)	66.0	66.0	66.0	66.0	39.0	39.0	39.0	39.0
Total Split (%)	62.9%	62.9%	62.9%	62.9%	37.1%	37.1%	37.1%	37.1%
Yellow Time (s)	4.0	4.0	4.0	4.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	4.0	4.0	4.0	4.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	6.0	6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	C-Min	C-Min	C-Min	C-Min	None	None	None	None
v/c Ratio	0.39	0.69	0.16	0.79	0.05	0.11	0.87	0.19
Control Delay	32.1	16.6	14.9	19.7	25.9	16.6	59.7	20.1
Queue Delay	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Total Delay	32.1	16.6	14.9	20.7	25.9	16.6	59.7	20.1
Queue Length 50th (m)	3.1	111.8	1.6	141.1	2.6	4.4	59.9	8.9
Queue Length 95th (m)	#16.5	140.6	6.1	178.2	7.8	13.5	#103.8	20.7
Internal Link Dist (m)		449.7		65.9		131.2		187.8
Turn Bay Length (m)	30.0		30.0		15.0		40.0	
Base Capacity (vph)	72	2115	104	2098	385	540	391	488
Starvation Cap Reductn	0	0	0	204	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.69	0.16	0.88	0.04	0.10	0.78	0.17

Intersection Summary

Cycle Length: 105

Actuated Cycle Length: 105

Offset: 55 (52%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

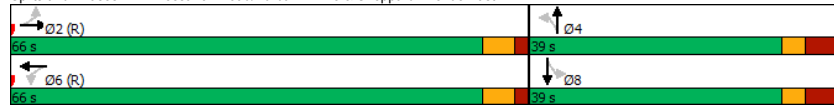
Natural Cycle: 80

Control Type: Actuated-Coordinated

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

Queue shown is maximum after two cycles.

Splits and Phases: 1: Bessarion Road/Burbank Drive & Sheppard Avenue East

Block 7
BA Group - TCSSynchro 10 Report
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HCM Signalized Intersection Capacity Analysis

1: Bessarion Road/Burbank Drive & Sheppard Avenue East - Background (Sensitivity Analysis) AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 			 	
Traffic Volume (vph)	25	1310	10	15	1390	110	15	20	30	275	15	60
Future Volume (vph)	25	1310	10	15	1390	110	15	20	30	275	15	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.5	3.0	3.5	3.5	3.0	3.5	3.5	3.0	3.5	3.5
Total Lost time (s)	5.0	5.0		5.0	5.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	0.99		1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.98	1.00		0.99	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.91		1.00	0.88	
Fit Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1620	3458		1504	3423		1659	1662		1643	1497	
Fit Permitted	0.07	1.00		0.11	1.00		0.70	1.00		0.72	1.00	
Satd. Flow (perm)	118	3458		170	3423		1227	1662		1247	1497	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	28	1456	11	17	1544	122	17	22	33	306	17	67
RTOR Reduction (vph)	0	0	0	0	5	0	0	19	0	0	19	0
Lane Group Flow (vph)	28	1467	0	17	1661	0	17	36	0	306	65	0
Confl. Peds. (#/hr)	30		70	70		30	15		5	5		15
Heavy Vehicles (%)	4%	3%	0%	12%	2%	9%	0%	0%	3%	2%	12%	7%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	2			6			4			8		
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	63.2	63.2		63.2	63.2		28.8	28.8		28.8	28.8	
Effective Green, g (s)	64.2	64.2		64.2	64.2		29.8	29.8		29.8	29.8	
Actuated g/C Ratio	0.61	0.61		0.61	0.61		0.28	0.28		0.28	0.28	
Clearance Time (s)	6.0	6.0		6.0	6.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	72	2114		103	2092		348	471		353	424	
v/s Ratio Prot		0.42			c0.49			0.02			0.04	
v/s Ratio Perm	0.24			0.10			0.01			c0.25		
v/c Ratio	0.39	0.69		0.17	0.79		0.05	0.08		0.87	0.15	
Uniform Delay, d1	10.4	13.8		8.8	15.4		27.3	27.5		35.7	28.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	15.1	1.9		3.4	3.2		0.1	0.1		19.4	0.2	
Delay (s)	25.5	15.7		12.2	18.6		27.4	27.6		55.2	28.3	
Level of Service	C	B		B	B		C	C		E	C	
Approach Delay (s)	15.9			18.5			27.5			49.4		
Approach LOS	B			B			C			D		

Intersection Summary

HCM 2000 Control Delay

HCM 2000 Level of Service

C

HCM 2000 Volume to Capacity ratio

0.82

Actuated Cycle Length (s)

105.0

Sum of lost time (s)

11.0

Intersection Capacity Utilization

73.8%

ICU Level of Service

D

Analysis Period (min)

15

c Critical Lane Group

Block 7
BA Group - TCSSynchro 10 Report
FB_AM.syn

Queues

2: CTC West Access/Blue Ridge Road & Sheppard Avenue East Background (Sensitivity Analysis) AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	NBL	SBL	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	SBL	SBR
Lane Configurations	↩	↩↩	↩	↩	↩↩	↩	↩	↩
Traffic Volume (vph)	15	1425	195	5	1435	95	55	20
Future Volume (vph)	15	1425	195	5	1435	95	55	20
Lane Group Flow (vph)	17	1583	217	6	1622	106	61	22
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	Perm
Protected Phases	2		6		4		8	
Permitted Phases	2		2	6		4	8	8
Detector Phase	2	2	2	6	6	4	8	8
Switch Phase								
Minimum Initial (s)	27.0	27.0	27.0	27.0	27.0	7.0	7.0	7.0
Minimum Split (s)	33.0	33.0	33.0	33.0	33.0	36.0	36.0	36.0
Total Split (s)	73.0	73.0	73.0	73.0	73.0	37.0	37.0	37.0
Total Split (%)	66.4%	66.4%	66.4%	66.4%	66.4%	33.6%	33.6%	33.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	C-Min	C-Min	C-Min	C-Min	C-Min	None	None	None
v/c Ratio	0.12	0.60	0.22	0.03	0.62	0.44	0.26	0.09
Control Delay	8.2	8.3	3.6	5.2	7.7	46.5	41.3	8.9
Queue Delay	0.0	0.5	0.0	0.0	0.1	0.0	0.0	0.0
Total Delay	8.2	8.7	3.6	5.2	7.8	46.5	41.3	8.9
Queue Length 50th (m)	0.7	59.5	5.3	0.3	83.3	22.8	12.8	0.0
Queue Length 95th (m)	5.3	148.2	22.1	m0.5	59.1	33.4	21.2	4.8
Internal Link Dist (m)	32.6		25.0		120.2			
Turn Bay Length (m)	30.0		25.0	35.0				
Base Capacity (vph)	142	2625	988	172	2615	484	480	449
Starvation Cap Reductn	0	529	0	0	174	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.76	0.22	0.03	0.66	0.22	0.13	0.05

Intersection Summary

Cycle Length: 110

Actuated Cycle Length: 110

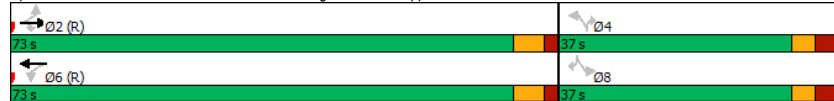
Offset: 56 (51%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

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

Splits and Phases: 2: CTC West Access/Blue Ridge Road & Sheppard Avenue East



Block 7
BA Group - TCS

Synchro 10 Report
FB_AM.syn

HCM Signalized Intersection Capacity Analysis

2: CTC West Access/Blue Ridge Road & Sheppard Avenue East Background (Sensitivity Analysis) AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↩	↩↩	↩	↩	↩↩	↩	↩	↩	↩	↩	↩	↩
Traffic Volume (vph)	15	1425	195	5	1435	25	95	0	0	55	0	20
Future Volume (vph)	15	1425	195	5	1435	25	95	0	0	55	0	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.5	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0		5.0			5.0		5.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00			1.00		1.00
Frpb, ped/bikes	1.00	1.00	0.87	1.00	1.00		1.00			1.00		0.98
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00		0.99			1.00		1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00			1.00		0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95			0.95		1.00
Satd. Flow (prot)	1475	3433	1265	1670	3421		1666			1652		1473
Flt Permitted	0.12	1.00	1.00	0.13	1.00		0.95			0.95		1.00
Satd. Flow (perm)	186	3433	1265	222	3421		1666			1652		1473
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	17	1583	217	6	1594	28	106	0	0	61	0	22
RTOR Reduction (vph)	0	0	22	0	1	0	0	0	0	0	0	19
Lane Group Flow (vph)	17	1583	195	6	1621	0	106	0	0	61	0	3
Confl. Peds. (#/hr)	15		55	55		15	10					10
Heavy Vehicles (%)	14%	4%	2%	0%	4%	4%	0%	0%	0%	2%	0%	0%
Bus Blockages (#/hr)	0	0	4	0	0	0	0	0	0	0	0	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm			Perm		Perm
Protected Phases	2		2		6		4		4		8	
Permitted Phases	2		2	6			4			4	8	8
Actuated Green, G (s)	83.1	83.1	83.1	83.1	83.1		14.9			14.9		14.9
Effective Green, g (s)	84.1	84.1	84.1	84.1	84.1		15.9			15.9		15.9
Actuated g/C Ratio	0.76	0.76	0.76	0.76	0.76		0.14			0.14		0.14
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		6.0			6.0		6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0			3.0		3.0
Lane Grp Cap (vph)	142	2624	967	169	2615		240			238		212
v/s Ratio Prot	0.46		c0.47									
v/s Ratio Perm	0.09		0.15	0.03			c0.06			0.04		0.00
v/c Ratio	0.12	0.60	0.20	0.04	0.62		0.44			0.26		0.01
Uniform Delay, d1	3.4	5.7	3.6	3.1	5.8		43.0			41.8		40.3
Progression Factor	1.00	1.00	1.00	0.80	0.93		1.00			1.00		1.00
Incremental Delay, d2	1.7	1.0	0.5	0.3	0.8		1.3			0.6		0.0
Delay (s)	5.1	6.7	4.1	2.8	6.2		44.3			42.4		40.4
Level of Service	A	A	A	A	A		D			D		D
Approach Delay (s)	6.4		6.2		44.3		41.8					
Approach LOS	A		A		D		D					

Intersection Summary

HCM 2000 Control Delay	8.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	68.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Block 7
BA Group - TCS

Synchro 10 Report
FB_AM.syn

Queues

3: Provost Drive/Ambrose Road & Sheppard Avenue East Future Background (Sensitivity Analysis) AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	NBL	NBR	SBL	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBR	SBL	SBR
Lane Configurations	↩	↩↩	↩	↩	↩↩	↩	↩	↩	↩
Traffic Volume (vph)	40	1320	135	265	1230	235	190	200	25
Future Volume (vph)	40	1320	135	265	1230	235	190	200	25
Lane Group Flow (vph)	44	1467	150	294	1506	261	211	222	28
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+ov	Perm	Perm
Protected Phases		2		1	6		1		
Permitted Phases	2		2	6		4		8	8
Detector Phase	2	2	2	1	6	4	1	8	8
Switch Phase									
Minimum Initial (s)	30.0	30.0	30.0	6.0	30.0	30.0	6.0	30.0	30.0
Minimum Split (s)	37.0	37.0	37.0	10.0	37.0	38.0	10.0	38.0	38.0
Total Split (s)	53.0	53.0	53.0	19.0	72.0	38.0	19.0	38.0	38.0
Total Split (%)	48.2%	48.2%	48.2%	17.3%	65.5%	34.5%	17.3%	34.5%	34.5%
Yellow Time (s)	4.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	1.0	3.0	4.0	1.0	4.0	4.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	6.0	6.0	6.0	3.0	6.0	7.0	3.0	7.0	7.0
Lead/Lag	Lag	Lag	Lag	Lead		Lead			
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		Yes			
Recall Mode	C-Min	C-Min	C-Min	None	C-Min	None	None	None	None
v/c Ratio	0.45	1.00	0.23	0.97	0.75	0.57	0.31	0.49	0.06
Control Delay	34.2	54.1	9.8	74.6	18.7	39.7	14.8	37.4	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.2	54.1	9.8	74.6	18.7	39.7	14.8	37.4	0.2
Queue Length 50th (m)	7.5	~185.1	12.3	50.3	120.0	50.5	21.6	41.8	0.0
Queue Length 95th (m)	m7.7	#221.3	9.7	#106.2	148.7	78.3	37.8	66.4	0.0
Internal Link Dist (m)		81.5			111.0				
Turn Bay Length (m)	40.0		40.0	165.0					
Base Capacity (vph)	98	1466	657	304	2018	455	683	452	471
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.45	1.00	0.23	0.97	0.75	0.57	0.31	0.49	0.06

Intersection Summary

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 69 (63%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 105

Control Type: Actuated-Coordinated

Volume exceeds capacity, queue is theoretically infinite.

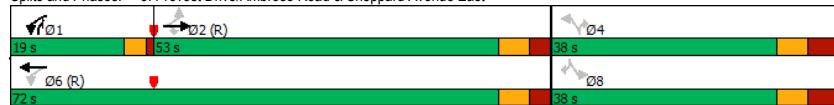
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 3: Provost Drive/Ambrose Road & Sheppard Avenue East



HCM Signalized Intersection Capacity Analysis

3: Provost Drive/Ambrose Road & Sheppard Avenue East Future Background (Sensitivity Analysis) AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↩	↩↩	↩	↩	↩↩	↩	↩	↩	↩	↩	↩	↩
Traffic Volume (vph)	40	1320	135	265	1230	125	235	0	190	200	0	25
Future Volume (vph)	40	1320	135	265	1230	125	235	0	190	200	0	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.5	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	6.0	6.0	6.0	3.0	6.0		7.0		3.0	7.0		7.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00		1.00	1.00		1.00
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00		1.00		0.97	1.00		0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.99		1.00	0.96		1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00		0.85	1.00		0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95		1.00	0.95		1.00
Satd. Flow (prot)	1600	3433	1420	1636	3352		1618		1429	1604		1473
Flt Permitted	0.14	1.00	1.00	0.08	1.00		0.95		1.00	0.95		1.00
Satd. Flow (perm)	231	3433	1420	138	3352		1618		1429	1604		1473
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	44	1467	150	294	1367	139	261	0	211	222	0	28
RTOR Reduction (vph)	0	0	51	0	7	0	0	0	23	0	0	20
Lane Group Flow (vph)	44	1467	99	294	1499	0	261	0	188	222	0	8
Confl. Peds. (#/hr)	15		25	25		15	10		35	35		10
Heavy Vehicles (%)	5%	4%	2%	3%	4%	1%	3%	0%	2%	1%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	4	4	0	0	0	0	0	0
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm		pm+ov	Perm		Perm
Protected Phases		2		1	6				1			
Permitted Phases	2		2	6			4		4	8		8
Actuated Green, G (s)	46.0	46.0	46.0	65.0	65.0		30.0		45.0	30.0		30.0
Effective Green, g (s)	47.0	47.0	47.0	66.0	66.0		31.0		47.0	31.0		31.0
Actuated g/C Ratio	0.43	0.43	0.43	0.60	0.60		0.28		0.43	0.28		0.28
Clearance Time (s)	7.0	7.0	7.0	4.0	7.0		8.0		4.0	8.0		8.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0		3.0
Lane Grp Cap (vph)	98	1466	606	300	2011		455		610	452		415
v/s Ratio Prot		0.43		c0.14	0.45				0.04			
v/s Ratio Perm	0.19		0.07	c0.45			c0.16		0.09	0.14		0.01
v/c Ratio	0.45	1.00	0.16	0.98	0.75		0.57		0.31	0.49		0.02
Uniform Delay, d1	22.3	31.5	19.4	35.2	15.9		33.8		20.8	32.9		28.5
Progression Factor	0.84	1.01	1.03	1.00	1.00		1.00		1.00	1.00		1.00
Incremental Delay, d2	12.2	21.9	0.5	45.9	2.6		1.8		0.3	0.8		0.0
Delay (s)	31.0	53.6	20.5	81.0	18.5		35.6		21.1	33.8		28.5
Level of Service	C	D	C	F	B		D		C	C		C
Approach Delay (s)		50.0			28.7			29.1			33.2	
Approach LOS		D			C			C			C	

Intersection Summary

HCM 2000 Control Delay	37.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	96.1%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Queues

4: Leslie Street & Sheppard Avenue East

Future Background (Sensitivity Analysis) AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↩	↩↩↩	↩	↩	↩↩↩	↩	↩↩↩	↩	↩↩↩	↩
Traffic Volume (vph)	205	660	810	260	1180	425	635	335	100	795
Future Volume (vph)	205	660	810	260	1180	425	635	335	100	795
Lane Group Flow (vph)	211	680	835	268	1298	438	655	345	103	1114
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	Prot	NA	Perm	Perm	NA
Protected Phases	5	2	7	1	6	7	4			8
Permitted Phases	2		2	6				4	8	
Detector Phase	5	2	7	1	6	7	4	4	8	8
Switch Phase										
Minimum Initial (s)	6.0	38.0	6.0	6.0	38.0	6.0	38.0	38.0	38.0	38.0
Minimum Split (s)	10.0	45.0	12.0	10.0	45.0	12.0	45.0	45.0	45.0	45.0
Total Split (s)	16.0	47.0	29.0	14.0	45.0	29.0	74.0	74.0	45.0	45.0
Total Split (%)	11.9%	34.8%	21.5%	10.4%	33.3%	21.5%	54.8%	54.8%	33.3%	33.3%
Yellow Time (s)	3.0	4.0	3.0	3.0	4.0	3.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	3.0	3.0	1.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-2.0	-1.0	-3.0	-3.0	-1.0	-3.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	2.0	6.0	3.0	1.0	6.0	3.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	Min	None	None	Min	None	C-Min	C-Min	C-Min	C-Min
v/c Ratio	0.91	0.45	0.99	0.79	0.92	0.70	0.39	0.45	0.52	0.79
Control Delay	73.8	39.1	49.4	44.6	57.2	39.0	16.7	11.8	51.1	46.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.8	39.1	49.4	44.6	57.2	39.0	16.7	11.8	51.1	46.4
Queue Length 50th (m)	42.9	56.4	139.1	48.6	128.7	62.0	83.2	66.6	24.2	100.1
Queue Length 95th (m)	#91.8	69.4	#191.2	#80.8	#156.5	80.1	106.1	100.7	45.1	118.6
Internal Link Dist (m)		434.4			1078.4		224.4			40.9
Turn Bay Length (m)	170.0		130.0	200.0		175.0				
Base Capacity (vph)	232	1512	841	338	1415	630	1680	761	199	1406
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.91	0.45	0.99	0.79	0.92	0.70	0.39	0.45	0.52	0.79

Intersection Summary

Cycle Length: 135

Actuated Cycle Length: 135

Offset: 0 (0%), Referenced to phase 4:NBT and 8:SBTL, Start of Green

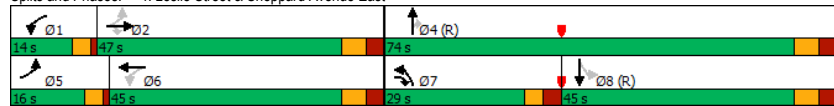
Natural Cycle: 115

Control Type: Actuated-Coordinated

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

Queue shown is maximum after two cycles.

Splits and Phases: 4: Leslie Street & Sheppard Avenue East



Block 7

BA Group - TCS

Synchro 10 Report

FB_AM.syn

HCM Signalized Intersection Capacity Analysis

4: Leslie Street & Sheppard Avenue East

Future Background (Sensitivity Analysis) AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↩	↩↩↩	↩	↩	↩↩↩	↩	↩↩↩	↩↩↩	↩	↩↩↩	↩	↩
Traffic Volume (vph)	205	660	810	260	1180	80	425	635	335	100	795	285
Future Volume (vph)	205	660	810	260	1180	80	425	635	335	100	795	285
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.5	3.0	3.5	3.0	3.0	3.5	3.5
Total Lost time (s)	2.0	6.0	3.0	1.0	6.0		3.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		0.97	0.95	1.00	1.00	0.91	
Frpb, ped/bikes	1.00	1.00	0.91	1.00	1.00		1.00	1.00	0.93	1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00		1.00	1.00	1.00	0.98	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.96	
Flt Protected	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1721	4980	1321	1716	4878		3276	3336	1302	1629	4704	
Flt Permitted	0.10	1.00	1.00	0.32	1.00		1.00	1.00	1.00	0.40	1.00	
Satd. Flow (perm)	164	4980	1321	542	4878		3276	3336	1302	691	4704	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	211	680	835	268	1216	82	438	655	345	103	820	294
RTOR Reduction (vph)	0	0	160	0	6	0	0	0	106	0	48	0
Lane Group Flow (vph)	211	680	675	268	1292	0	438	655	239	103	1066	0
Confl. Peds. (#/hr)	40		125	125		40	55		55	55		55
Heavy Vehicles (%)	3%	3%	4%	2%	3%	7%	5%	7%	6%	1%	2%	3%
Bus Blockages (#/hr)	0	0	0	0	4	4	0	0	4	0	4	4
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		Prot	NA	Perm	Perm	NA	
Protected Phases	5	2	7	1	6		7	4			8	
Permitted Phases	2		2	6					4	8		
Actuated Green, G (s)	52.0	40.0	63.0	48.0	38.0		23.0	67.0	38.0	38.0		
Effective Green, g (s)	56.0	41.0	69.0	54.0	39.0		26.0	68.0	39.0	39.0		
Actuated g/C Ratio	0.41	0.30	0.51	0.40	0.29		0.19	0.50	0.50	0.29	0.29	
Clearance Time (s)	4.0	7.0	6.0	4.0	7.0		6.0	7.0	7.0	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	
Lane Grp Cap (vph)	229	1512	675	329	1409		630	1680	655	199	1358	
v/s Ratio Prot	c0.10	0.14	c0.19	0.08	0.26		0.13	0.20			c0.23	
v/s Ratio Perm	0.29		0.32	0.25					0.18	0.15		
v/c Ratio	0.92	0.45	1.00	0.81	0.92		0.70	0.39	0.37	0.52	0.79	
Uniform Delay, d1	37.8	37.9	33.0	30.3	46.4		50.8	20.7	20.4	40.1	44.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.65	0.77	1.30	1.00	1.00	
Incremental Delay, d2	38.5	0.2	34.7	14.3	9.6		3.1	0.6	1.5	9.3	4.6	
Delay (s)	76.3	38.1	67.7	44.6	56.1		36.0	16.5	28.0	49.4	48.8	
Level of Service	E	D	E	D	E		D	B	C	D	D	
Approach Delay (s)		57.1			54.1			25.2			48.8	
Approach LOS		E			D			C			D	

Intersection Summary

HCM 2000 Control Delay	46.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	127.7%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Block 7

BA Group - TCS

Synchro 10 Report

FB_AM.syn

Queues

8: Leslie Street & Esther Shiner Boulevard

Future Background (Sensitivity Analysis) AM Peak Hour

									
Lane Group	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	90	855	95	35	430	1210	375	1775	200
Future Volume (vph)	90	855	95	35	430	1210	375	1775	200
Lane Group Flow (vph)	95	900	100	37	453	1274	395	1868	211
Turn Type	Perm	pt+ov	Perm	Perm	pm+pt	NA	Perm	NA	Perm
Protected Phases	4 5				5	2	6		
Permitted Phases	4		8	8	2		2		6
Detector Phase	4	4 5	8	8	5	2	2	6	6
Switch Phase									
Minimum Initial (s)	7.0		7.0	7.0	6.0	25.0	25.0	25.0	25.0
Minimum Split (s)	46.0		46.0	46.0	10.0	31.0	31.0	31.0	31.0
Total Split (s)	46.0		46.0	46.0	34.0	89.0	89.0	55.0	55.0
Total Split (%)	34.1%		34.1%	34.1%	25.2%	65.9%	65.9%	40.7%	40.7%
Yellow Time (s)	4.0		4.0	4.0	3.0	4.0	4.0	4.0	4.0
All-Red Time (s)	4.0		4.0	4.0	1.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-2.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	7.0		7.0	7.0	2.0	5.0	5.0	5.0	5.0
Lead/Lag						Lead	Lag		
Lead-Lag Optimize?						Yes	Yes		
Recall Mode	None		None	None	None	C-Min	C-Min	C-Min	C-Min
v/c Ratio	0.24	0.99	0.22	0.08	0.97	0.42	0.40	1.00	0.32
Control Delay	38.6	51.2	38.2	4.1	67.5	21.6	8.9	71.3	12.3
Queue Delay	0.0	37.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.6	88.2	38.2	4.1	67.5	21.6	8.9	71.3	12.3
Queue Length 50th (m)	20.4	203.9	21.4	0.0	111.8	99.7	39.5	~200.8	10.7
Queue Length 95th (m)	36.1	#310.4	37.5	4.7	#182.3	112.5	m76.4	m#224.1	m14.7
Internal Link Dist (m)						231.2	224.4		
Turn Bay Length (m)					150.0	170.0		175.0	
Base Capacity (vph)	401	907	446	445	465	3068	983	1862	665
Starvation Cap Reductn	0	129	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.24	1.16	0.22	0.08	0.97	0.42	0.40	1.00	0.32

Intersection Summary

Cycle Length: 135

Actuated Cycle Length: 135

Offset: 103 (76%), Referenced to phase 2:NBL and 6:SBT, Start of Green

Natural Cycle: 130

Control Type: Actuated-Coordinated

- Volume exceeds capacity, queue is theoretically infinite.

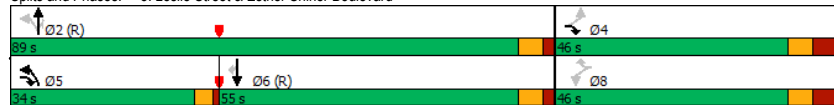
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 8: Leslie Street & Esther Shiner Boulevard



HCM Signalized Intersection Capacity Analysis

8: Leslie Street & Esther Shiner Boulevard

Future Background (Sensitivity Analysis) AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↩		↩	↩		↩	↩	↩	↩	↩	↩	↩
Traffic Volume (vph)	90	0	855	95	0	35	430	1210	375	0	1775	200
Future Volume (vph)	90	0	855	95	0	35	430	1210	375	0	1775	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.5	3.5	3.0
Total Lost time (s)	7.0		7.0		7.0		2.0		5.0		5.0	
Lane Util. Factor	1.00		1.00		1.00		1.00		0.91		0.91	
Frpb, ped/bikes	1.00		1.00		1.00		0.93		1.00		0.94	
Flpb, ped/bikes	0.94		1.00		1.00		1.00		1.00		1.00	
Frt	1.00		0.85		1.00		0.85		1.00		0.85	
Flt Protected	0.95		1.00		0.95		1.00		1.00		1.00	
Satd. Flow (prot)	1391		1478		1546		1403		1739		1341	
Flt Permitted	0.95		1.00		0.95		1.00		0.08		1.00	
Satd. Flow (perm)	1391		1478		1546		1403		131		4932	
Peak-hour factor, PHF	0.95		0.95		0.95		0.95		0.95		0.95	
Adj. Flow (vph)	95		0		900		100		0		37	
RTOR Reduction (vph)	0		0		101		0		0		26	
Lane Group Flow (vph)	95		0		799		100		0		11	
Confl. Peds. (#/hr)	55						55		10		15	
Heavy Vehicles (%)	14%		0%		2%		9%		0%		2%	
Bus Blockages (#/hr)	0		0		0		0		0		4	
Turn Type	Perm		pt+ov		Perm		Perm		pm+pt		NA	
Protected Phases			4 5				5		2		6	
Permitted Phases	4		8		8		2		2		6	
Actuated Green, G (s)	38.0		76.0		38.0		38.0		83.0		83.0	
Effective Green, g (s)	39.0		77.0		39.0		39.0		85.0		84.0	
Actuated g/C Ratio	0.29		0.57		0.29		0.29		0.63		0.62	
Clearance Time (s)	8.0		8.0		8.0		8.0		4.0		6.0	
Vehicle Extension (s)	3.0		3.0		3.0		3.0		3.0		3.0	
Lane Grp Cap (vph)	401		843		446		405		463		3068	
v/s Ratio Prot			c0.54				0.23		0.26		c0.37	
v/s Ratio Perm	0.07		0.06		0.01		0.38		0.18		0.05	
v/c Ratio	0.24		0.95		0.22		0.03		0.98		0.42	
Uniform Delay, d1	36.6		27.1		36.5		34.4		43.4		13.0	
Progression Factor	1.00		1.00		1.00		0.93		1.63		7.79	
Incremental Delay, d2	0.3		19.3		0.3		0.0		29.9		0.3	
Delay (s)	36.9		46.4		36.8		34.4		70.1		21.5	
Level of Service	D		D		D		C		E		F	
Approach Delay (s)	45.5		36.1		45.1		74.2					
Approach LOS	D		D		D		E					

Intersection Summary

HCM 2000 Control Delay	56.3	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	108.9%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Queues

9: Leslie Street & Oriole GO Station Access/Hwy 401 WB Off-Ramp (Sensitivity Analysis) AM Peak Hour

	EBL	EBR	WBL	WBT	WBR	NBL	NBT	SBT
Lane Configurations	↩	↩	↩	↩	↩	↩	↩	↩
Traffic Volume (vph)	25	50	850	65	760	40	1230	1635
Future Volume (vph)	25	50	850	65	760	40	1230	1635
Lane Group Flow (vph)	26	52	885	432	428	42	1281	1750
Turn Type	Perm	Free	Split	NA	Prot	Perm	NA	NA
Protected Phases			3	3	3		2	6
Permitted Phases	4	Free				2		
Detector Phase	4		3	3	3	2	2	6
Switch Phase								
Minimum Initial (s)	7.0		7.0	7.0	7.0	27.0	27.0	27.0
Minimum Split (s)	39.0		14.0	14.0	14.0	34.0	34.0	34.0
Total Split (s)	40.0		42.0	42.0	42.0	53.0	53.0	53.0
Total Split (%)	29.6%		31.1%	31.1%	31.1%	39.3%	39.3%	39.3%
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lag		Lead	Lead	Lead			
Lead-Lag Optimize?	Yes		Yes	Yes	Yes			
Recall Mode	None		None	None	None	C-Min	C-Min	C-Min
v/c Ratio	0.30	0.03	0.98	0.79	0.64	0.56	0.69	0.63
Control Delay	59.7	0.0	75.6	36.5	9.7	54.4	33.4	17.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.7	0.0	75.6	36.5	9.7	54.4	33.4	17.6
Queue Length 50th (m)	7.1	0.0	127.8	68.4	5.5	10.2	177.6	117.7
Queue Length 95th (m)	14.3	0.0	#172.4	#117.5	40.6	m#15.9	m#228.5	m176.8
Internal Link Dist (m)				220.4			38.0	231.2
Turn Bay Length (m)					150.0	35.0		
Base Capacity (vph)	205	1507	899	545	673	75	1870	2790
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.03	0.98	0.79	0.64	0.56	0.69	0.63

Intersection Summary

Cycle Length: 135

Actuated Cycle Length: 135

Offset: 20 (15%), Referenced to phase 2:NBTL and 6:SBT, Start of Green

Natural Cycle: 130

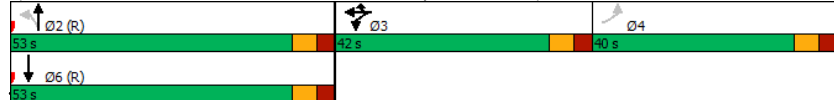
Control Type: Actuated-Coordinated

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 9: Leslie Street & Oriole GO Station Access/Hwy 401 WB Off-Ramp



Block 7

BA Group - TCS

Synchro 10 Report

FB_AM.syn

HCM Signalized Intersection Capacity Analysis

9: Leslie Street & Oriole GO Station Access/Hwy 401 WB Off-Ramp (Sensitivity Analysis) AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↩		↩	↩	↩	↩	↩	↩			↩	↩
Traffic Volume (vph)	25	0	50	850	65	760	40	1230	0	0	1635	45
Future Volume (vph)	25	0	50	850	65	760	40	1230	0	0	1635	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.0		3.0	6.0	6.0	6.0	6.0	6.0			6.0	
Lane Util. Factor	1.00		1.00	0.97	0.95	0.95	1.00	*0.97			*0.95	
Frpb, ped/bikes	1.00		1.00	1.00	0.98	1.00	1.00	1.00			1.00	
Flpb, ped/bikes	0.99		1.00	1.00	1.00	1.00	1.00	1.00			1.00	
Frt	1.00		0.85	1.00	0.87	0.85	1.00	1.00			1.00	
Flt Protected	0.95		1.00	1.00	1.00	1.00	0.95	1.00			1.00	
Satd. Flow (prot)	1544		1507	3373	1509	1418	1685	3505			5225	
Flt Permitted	0.50		1.00	1.00	1.00	1.00	0.08	1.00			1.00	
Satd. Flow (perm)	813		1507	3373	1509	1418	142	3505			5225	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	26	0	52	885	68	792	42	1281	0	0	1703	47
RTOR Reduction (vph)	0	0	0	0	143	296	0	0	0	0	1	0
Lane Group Flow (vph)	26	0	52	885	289	132	42	1281	0	0	1749	0
Confl. Peds. (#/hr)	15						15	10		20	20	10
Heavy Vehicles (%)	8%	0%	0%	2%	0%	1%	0%	4%	0%	0%	2%	0%
Turn Type	Perm		Free	Split	NA	Prot	Perm	NA			NA	
Protected Phases				3	3	3		2			6	
Permitted Phases	4		Free				2					
Actuated Green, G (s)	10.7		135.0	35.0	35.0	35.0	68.3	68.3			68.3	
Effective Green, g (s)	11.7		135.0	36.0	36.0	36.0	69.3	69.3			69.3	
Actuated g/C Ratio	0.09		1.00	0.27	0.27	0.27	0.51	0.51			0.51	
Clearance Time (s)	7.0			7.0	7.0	7.0	7.0	7.0			7.0	
Vehicle Extension (s)	3.0			3.0	3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)	70		1507	899	402	378	72	1799			2682	
v/s Ratio Prot				c0.26	0.19	0.09		c0.37			0.33	
v/s Ratio Perm	c0.03		0.03				0.30					
v/c Ratio	0.37		0.03	0.98	0.72	0.35	0.58	0.71			0.65	
Uniform Delay, d1	58.2		0.0	49.2	44.9	40.0	22.8	25.2			24.0	
Progression Factor	1.00		1.00	1.00	1.00	1.00	1.24	1.26			0.68	
Incremental Delay, d2	3.3		0.0	26.0	6.1	0.6	16.8	1.3			0.4	
Delay (s)	61.5		0.0	75.2	51.0	40.6	45.1	33.1			16.8	
Level of Service	E		A	E	D	D	D	C			B	
Approach Delay (s)	20.5				60.7			33.5			16.8	
Approach LOS	C				E			C			B	

Intersection Summary

HCM 2000 Control Delay

HCM 2000 Level of Service

D

HCM 2000 Volume to Capacity ratio

0.77

Actuated Cycle Length (s)

135.0

Sum of lost time (s)

19.0

Intersection Capacity Utilization

83.5%

ICU Level of Service

E

Analysis Period (min)

15

c Critical Lane Group

Block 7

BA Group - TCS

Synchro 10 Report

FB_AM.syn

Queues

10: Leslie Street & Hwy 401 EB Off-Ramp/Lesmill Road Future Background (Sensitivity Analysis) AM Peak Hour

	EBL	EBT	WBR	NBT	NBR	SBL	SBT
Lane Group	EBL	EBT	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↩	↩↩	↩	↩↩	↩	↩	↩↩
Traffic Volume (vph)	530	855	530	1580	105	500	1025
Future Volume (vph)	530	855	530	1580	105	500	1025
Lane Group Flow (vph)	469	974	552	1646	109	521	1068
Turn Type	Split	NA	Perm	NA	Perm	pm+pt	NA
Protected Phases	4	4		2		1	6
Permitted Phases			4 6		2	6	
Detector Phase	4	4	4 6	2	2	1	6
Switch Phase							
Minimum Initial (s)	7.0	7.0		20.0	20.0	6.0	20.0
Minimum Split (s)	43.0	43.0		26.0	26.0	10.0	26.0
Total Split (s)	47.0	47.0		53.0	53.0	35.0	88.0
Total Split (%)	34.8%	34.8%		39.3%	39.3%	25.9%	65.2%
Yellow Time (s)	4.0	4.0		4.0	4.0	3.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	1.0	2.0
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-3.0	-1.0
Total Lost Time (s)	5.0	5.0		5.0	5.0	1.0	5.0
Lead/Lag				Lag	Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	Yes	
Recall Mode	None	None		C-Min	C-Min	None	C-Min
v/c Ratio	0.99	0.93	0.37	0.94	0.20	1.00	0.50
Control Delay	85.3	60.8	0.7	53.6	16.1	70.0	16.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	85.3	60.8	0.7	53.6	16.1	70.0	16.9
Queue Length 50th (m)	144.0	145.7	0.0	162.8	9.7	108.6	71.8
Queue Length 95th (m)	#224.8	#189.6	0.0	#195.2	24.0 m#179.7	m60.5	
Internal Link Dist (m)		272.4		188.8			87.0
Turn Bay Length (m)	130.0				30.0	80.0	
Base Capacity (vph)	474	1046	1493	1753	542	522	2130
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.99	0.93	0.37	0.94	0.20	1.00	0.50

Intersection Summary

Cycle Length: 135

Actuated Cycle Length: 135

Offset: 57 (42%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Natural Cycle: 110

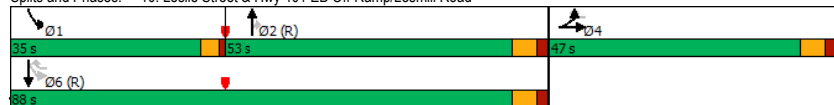
Control Type: Actuated-Coordinated

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 10: Leslie Street & Hwy 401 EB Off-Ramp/Lesmill Road



Block 7

BA Group - TCS

Synchro 10 Report

FB_AM.syn

HCM Signalized Intersection Capacity Analysis

10: Leslie Street & Hwy 401 EB Off-Ramp/Lesmill Road Future Background (Sensitivity Analysis) AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↩	↩↩				↩		↩↩	↩	↩	↩↩	
Traffic Volume (vph)	530	855	0	0	0	530	0	1580	105	500	1025	0
Future Volume (vph)	530	855	0	0	0	530	0	1580	105	500	1025	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900
Lane Width	3.0	3.5	3.5	3.5	3.5	3.0	3.5	3.5	3.0	3.0	3.5	3.5
Total Lost time (s)	5.0	5.0				5.0		5.0	5.0	1.0	5.0	
Lane Util. Factor	0.91	0.91				1.00		0.91	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00				1.00		1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1.00				1.00		1.00	1.00	1.00	1.00	
Frft	1.00	1.00				0.86		1.00	0.85	1.00	1.00	
Flt Protected	1.00	1.00				1.00		1.00	1.00	1.00	1.00	
Satd. Flow (prot)	1522	3357				1504		4932	1422	1848	3466	
Flt Permitted	1.00	1.00				1.00		1.00	1.00	0.08	1.00	
Satd. Flow (perm)	1522	3357				1504		4932	1422	145	3466	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	552	891	0	0	0	552	0	1646	109	521	1068	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	37	0	0	0
Lane Group Flow (vph)	469	974	0	0	0	552	0	1646	72	521	1068	0
Confl. Peds. (#/hr)			20	20			10		5	5		10
Heavy Vehicles (%)	6%	1%	4%	0%	0%	2%	0%	4%	2%	1%	3%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	4	0	0	0
Turn Type	Split	NA				Perm		NA	Perm	pm+pt	NA	
Protected Phases	4	4						2		1	6	
Permitted Phases						4 6			2	6		
Actuated Green, G (s)	41.1	41.1				135.0		46.9	46.9	81.9	81.9	
Effective Green, g (s)	42.1	42.1				135.0		47.9	47.9	84.9	82.9	
Actuated g/C Ratio	0.31	0.31				1.00		0.35	0.35	0.63	0.61	
Clearance Time (s)	6.0	6.0						6.0	6.0	4.0	6.0	
Vehicle Extension (s)	3.0	3.0						3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	474	1046				1504		1749	504	520	2128	
v/s Ratio Prot	c0.31	0.29						c0.33		c0.25	0.31	
v/s Ratio Perm						0.37			0.05	0.38		
v/c Ratio	0.99	0.93				0.37		0.94	0.14	1.00	0.50	
Uniform Delay, d1	46.2	45.0				0.0		42.2	29.6	42.8	14.5	
Progression Factor	1.00	1.00				1.00		1.00	1.00	0.95	1.11	
Incremental Delay, d2	38.2	14.2				0.2		11.5	0.6	32.5	0.6	
Delay (s)	84.4	59.2				0.2		53.7	30.2	73.2	16.7	
Level of Service	F	E				A		D	C	E	B	
Approach Delay (s)		67.4			0.2			52.2			35.2	
Approach LOS		E			A			D			D	

Intersection Summary

HCM 2000 Control Delay	45.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	104.2%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Block 7

BA Group - TCS

Synchro 10 Report

FB_AM.syn

HCM Unsignalized Intersection Capacity Analysis 11: CTC North Access & Sheppard Avenue East

Future Background (Sensitivity Analysis) AM Peak Hour

							
Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations							
Traffic Volume (veh/h)	1430	50	35	1455	10	65	
Future Volume (Veh/h)	1430	50	35	1455	10	65	
Sign Control	Free			Free	Stop		
Grade	0%			0%	0%		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	
Hourly flow rate (vph)	1505	53	37	1532	11	68	
Pedestrians					35		
Lane Width (m)					3.0		
Walking Speed (m/s)					1.2		
Percent Blockage					2		
Right turn flare (veh)							
Median type	None			None			
Median storage (veh)							
Upstream signal (m)	144			105			
pX, platoon unblocked			0.79		0.79	0.79	
vC, conflicting volume			1593		2406	814	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol			1219		1051	233	
tC, single (s)			4.2		6.8	7.0	
tC, 2 stage (s)							
tF (s)			2.2		3.5	3.3	
p0 queue free %			91		93	88	
cM capacity (veh/h)			429		159	586	
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	1003	555	37	766	766	11	68
Volume Left	0	0	37	0	0	11	0
Volume Right	0	53	0	0	0	0	68
cSH	1700	1700	429	1700	1700	159	586
Volume to Capacity	0.59	0.33	0.09	0.45	0.45	0.07	0.12
Queue Length 95th (m)	0.0	0.0	2.3	0.0	0.0	1.8	3.1
Control Delay (s)	0.0	0.0	14.2	0.0	0.0	29.4	11.9
Lane LOS			B			D	B
Approach Delay (s)	0.0		0.3			14.4	
Approach LOS						B	
Intersection Summary							
Average Delay			0.5				
Intersection Capacity Utilization			51.9%		ICU Level of Service		A
Analysis Period (min)			15				

Block 7
BA Group - TCS

Synchro 10 Report
FB_AM.syn

Queues

1: Bessarion Road/Burbank Drive & Sheppard Avenue East Future Background (Sensitivity Analysis) PM Peak Hour

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	40	1690	30	1705	10	5	220	20
Future Volume (vph)	40	1690	30	1705	10	5	220	20
Lane Group Flow (vph)	41	1734	31	1929	10	25	224	61
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		2		6		4		8
Permitted Phases	2		6		4		8	
Detector Phase	2	2	6	6	4	4	8	8
Switch Phase								
Minimum Initial (s)	24.0	24.0	24.0	24.0	7.0	7.0	7.0	7.0
Minimum Split (s)	30.0	30.0	30.0	30.0	35.0	35.0	35.0	35.0
Total Split (s)	74.0	74.0	74.0	74.0	36.0	36.0	36.0	36.0
Total Split (%)	67.3%	67.3%	67.3%	67.3%	32.7%	32.7%	32.7%	32.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	4.0	4.0	4.0	4.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	6.0	6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	C-Min	C-Min	C-Min	C-Min	None	None	None	None
v/c Ratio	0.63	0.73	0.33	0.82	0.04	0.07	0.79	0.16
Control Delay	60.7	14.4	13.5	12.6	30.8	15.1	59.4	22.6
Queue Delay	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0
Total Delay	60.7	14.4	13.5	12.8	30.8	15.1	59.4	22.6
Queue Length 50th (m)	4.9	121.3	1.7	119.9	1.8	0.9	47.4	6.8
Queue Length 95th (m)	#28.7	171.2	m2.6	66.8	6.1	7.6	72.9	17.2
Internal Link Dist (m)		449.7		65.9		131.2		187.8
Turn Bay Length (m)	30.0		30.0		15.0		40.0	
Base Capacity (vph)	65	2391	94	2346	345	455	348	457
Starvation Cap Reductn	0	0	0	49	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.73	0.33	0.84	0.03	0.05	0.64	0.13

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 57 (52%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Bessarion Road/Burbank Drive & Sheppard Avenue East



Block 7
BA Group - TCS

Synchro 10 Report
FB_PM.syn

HCM Signalized Intersection Capacity Analysis

1: Bessarion Road/Burbank Drive & Sheppard Avenue East Future Background (Sensitivity Analysis) PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	40	1690	10	30	1705	185	10	5	20	220	20	40
Future Volume (vph)	40	1690	10	30	1705	185	10	5	20	220	20	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.5	3.0	3.5	3.5	3.0	3.5	3.5	3.0	3.5	3.5
Total Lost time (s)	5.0	5.0		5.0	5.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	0.98		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00		0.98	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.88		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1685	3529		1685	3453		1676	1615		1640	1616	
Flt Permitted	0.05	1.00		0.08	1.00		0.72	1.00		0.74	1.00	
Satd. Flow (perm)	95	3529		140	3453		1265	1615		1279	1616	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	41	1724	10	31	1740	189	10	5	20	224	20	41
RTOR Reduction (vph)	0	0	0	0	6	0	0	16	0	0	18	0
Lane Group Flow (vph)	41	1734	0	31	1923	0	10	9	0	224	43	0
Confl. Peds. (#/hr)	25		55	55		25	5		15	15		5
Heavy Vehicles (%)	0%	1%	0%	0%	1%	2%	0%	0%	0%	1%	6%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	73.6	73.6		73.6	73.6		23.4	23.4		23.4	23.4	
Effective Green, g (s)	74.6	74.6		74.6	74.6		24.4	24.4		24.4	24.4	
Actuated g/C Ratio	0.68	0.68		0.68	0.68		0.22	0.22		0.22	0.22	
Clearance Time (s)	6.0	6.0		6.0	6.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	64	2393		94	2341		280	358		283	358	
v/s Ratio Prot		0.49			0.56			0.01			0.03	
v/s Ratio Perm	0.43			0.22			0.01			0.18		
v/c Ratio	0.64	0.72		0.33	0.82		0.04	0.03		0.79	0.12	
Uniform Delay, d1	10.1	11.2		7.3	12.9		33.6	33.5		40.4	34.2	
Progression Factor	1.00	1.00		0.60	0.70		1.00	1.00		1.00	1.00	
Incremental Delay, d2	40.2	1.9		6.4	2.4		0.1	0.0		14.0	0.2	
Delay (s)	50.2	13.1		10.8	11.3		33.6	33.5		54.4	34.4	
Level of Service	D	B		B	B		C	C		D	C	
Approach Delay (s)		14.0			11.3			33.6			50.1	
Approach LOS		B			B			C			D	

Intersection Summary

HCM 2000 Control Delay	15.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	82.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Block 7
BA Group - TCS

Synchro 10 Report
FB_PM.syn

Queues

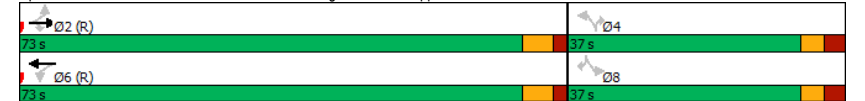
2: CTC West Access/Blue Ridge Road & Sheppard Avenue East Future Background (Sensitivity Analysis) PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	NBL	NBR	SBL	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBR	SBL	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	15	1640	230	5	1805	130	5	20	10
Future Volume (vph)	15	1640	230	5	1805	130	5	20	10
Lane Group Flow (vph)	16	1726	242	5	1958	137	5	21	11
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	Perm	Perm
Protected Phases		2			6		4	4	8
Permitted Phases	2		2	6		4	4	8	8
Detector Phase	2	2	2	6	6	4	4	8	8
Switch Phase									
Minimum Initial (s)	27.0	27.0	27.0	27.0	27.0	7.0	7.0	7.0	7.0
Minimum Split (s)	33.0	33.0	33.0	33.0	33.0	36.0	36.0	36.0	36.0
Total Split (s)	73.0	73.0	73.0	73.0	73.0	37.0	37.0	37.0	37.0
Total Split (%)	66.4%	66.4%	66.4%	66.4%	66.4%	33.6%	33.6%	33.6%	33.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	C-Min	C-Min	C-Min	C-Min	C-Min	None	None	None	None
v/c Ratio	0.18	0.66	0.25	0.04	0.74	0.52	0.02	0.08	0.04
Control Delay	8.7	5.8	2.8	7.0	10.5	47.9	0.2	35.9	2.4
Queue Delay	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Total Delay	8.7	5.8	2.8	7.0	10.6	47.9	0.2	35.9	2.4
Queue Length 50th (m)	0.7	54.1	5.8	0.3	105.4	29.4	0.0	4.2	0.0
Queue Length 95th (m)	m1.3	70.7	m11.5	m0.4	79.2	41.6	0.0	9.8	1.3
Internal Link Dist (m)		32.6			120.2				
Turn Bay Length (m)	30.0		25.0	35.0					
Base Capacity (vph)	89	2628	971	132	2640	482	449	484	452
Starvation Cap Reductn	0	126	0	0	65	0	0	0	0
Spillback Cap Reductn	0	0	0	0	35	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.69	0.25	0.04	0.76	0.28	0.01	0.04	0.02

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 56 (51%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: CTC West Access/Blue Ridge Road & Sheppard Avenue East



Block 7
BA Group - TCS

Synchro 10 Report
FB_PM.syn

HCM Signalized Intersection Capacity Analysis

2: CTC West Access/Blue Ridge Road & Sheppard Avenue East Future Background (Sensitivity Analysis) PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↩	↩↩	↩	↩	↩↩	↩	↩	↩	↩	↩	↩	↩
Traffic Volume (vph)	15	1640	230	5	1805	55	130	0	5	20	0	10
Future Volume (vph)	15	1640	230	5	1805	55	130	0	5	20	0	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.5	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.86	1.00	1.00	1.00	1.00	0.98	1.00	0.98	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00	1.00	0.99	1.00	0.99	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	1.00	1.00	0.85	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1685	3500	1263	1674	3514	1659	1473	1666	1481			
Flt Permitted	0.07	1.00	1.00	0.10	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (perm)	118	3500	1263	175	3514	1659	1473	1666	1481			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	16	1726	242	5	1900	58	137	0	5	21	0	11
RTOR Reduction (vph)	0	0	23	0	1	0	0	0	4	0	0	9
Lane Group Flow (vph)	16	1726	219	5	1957	0	137	0	1	21	0	2
Confl. Peds. (#/hr)	20		60	60		20	5		10	10		5
Heavy Vehicles (%)	0%	2%	1%	0%	1%	0%	1%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	4	0	0	0	0	0	0	0	0	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm		Perm	Perm		Perm
Protected Phases	2		2	6			4		4	8		8
Actuated Green, G (s)	81.6	81.6	81.6	81.6	81.6		16.4		16.4	16.4		16.4
Effective Green, g (s)	82.6	82.6	82.6	82.6	82.6		17.4		17.4	17.4		17.4
Actuated g/C Ratio	0.75	0.75	0.75	0.75	0.75		0.16		0.16	0.16		0.16
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		6.0		6.0	6.0		6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0		3.0
Lane Grp Cap (vph)	88	2628	948	131	2638		262		233	263		234
v/s Ratio Prot		0.49			c0.56							
v/s Ratio Perm	0.14		0.17	0.03			c0.08		0.00	0.01		0.00
v/c Ratio	0.18	0.66	0.23	0.04	0.74		0.52		0.00	0.08		0.01
Uniform Delay, d1	4.0	6.7	4.1	3.5	7.7		42.5		39.0	39.5		39.0
Progression Factor	0.70	0.58	0.69	1.06	0.97		1.00		1.00	1.00		1.00
Incremental Delay, d2	3.1	0.9	0.4	0.3	1.1		1.9		0.0	0.1		0.0
Delay (s)	5.9	4.8	3.2	4.0	8.6		44.4		39.0	39.6		39.0
Level of Service	A	A	A	A	A		D		D	D		D
Approach Delay (s)		4.6			8.6		44.2			39.4		
Approach LOS		A			A		D			D		

Intersection Summary

HCM 2000 Control Delay	8.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	80.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Block 7
BA Group - TCS

Synchro 10 Report
FB_PM.syn

Queues

3: Provost Drive/Ambrose Road & Sheppard Avenue East Future Background (Sensitivity Analysis) PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBR	SBL	SBR
Lane Configurations	↩	↩↩	↩	↩	↩↩	↩	↩	↩	↩
Traffic Volume (vph)	15	1425	230	290	1675	175	200	195	30
Future Volume (vph)	15	1425	230	290	1675	175	200	195	30
Lane Group Flow (vph)	15	1439	232	293	1854	177	202	197	30
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+ov	Perm	Perm
Protected Phases		2		1	6		1		
Permitted Phases	2		2	6		4		8	8
Detector Phase	2	2	2	1	6	4	1	8	8
Switch Phase									
Minimum Initial (s)	30.0	30.0	30.0	6.0	30.0	30.0	6.0	30.0	30.0
Minimum Split (s)	37.0	37.0	37.0	10.0	37.0	38.0	10.0	38.0	38.0
Total Split (s)	53.0	53.0	53.0	18.0	71.0	39.0	18.0	39.0	39.0
Total Split (%)	48.2%	48.2%	48.2%	16.4%	64.5%	35.5%	16.4%	35.5%	35.5%
Yellow Time (s)	4.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	1.0	3.0	4.0	1.0	4.0	4.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	6.0	6.0	6.0	3.0	6.0	7.0	3.0	7.0	7.0
Lead/Lag	Lag	Lag	Lag	Lead			Lead		
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes		
Recall Mode	C-Min	C-Min	C-Min	None	C-Min	None	None	None	None
v/c Ratio	0.23	0.96	0.34	0.95	0.89	0.38	0.29	0.43	0.06
Control Delay	24.7	39.3	10.2	69.1	26.0	34.7	14.5	35.8	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0
Total Delay	24.7	39.3	10.2	69.1	26.3	34.7	14.5	35.8	0.3
Queue Length 50th (m)	1.5	114.2	13.0	49.5	176.6	32.2	20.3	36.4	0.0
Queue Length 95th (m)	m2.0	#212.4	20.3	#104.1	218.7	52.8	35.9	58.7	0.0
Internal Link Dist (m)		81.5			111.0				
Turn Bay Length (m)	40.0		40.0	165.0					
Base Capacity (vph)	64	1495	679	310	2072	482	685	473	482
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	32	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.96	0.34	0.95	0.91	0.37	0.29	0.42	0.06

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 72 (65%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Provost Drive/Ambrose Road & Sheppard Avenue East



Block 7
BA Group - TCS

Synchro 10 Report
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HCM Signalized Intersection Capacity Analysis

3: Provost Drive/Ambrose Road & Sheppard Avenue East Future Background (Sensitivity Analysis) PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰
Traffic Volume (vph)	15	1425	230	290	1675	160	175	0	200	195	0	30
Future Volume (vph)	15	1425	230	290	1675	160	175	0	200	195	0	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.5	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	6.0	6.0	6.0	3.0	6.0		7.0		3.0	7.0		7.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00		1.00	1.00		1.00
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00		1.00		0.97	1.00		0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.98		1.00	0.97		1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00		0.85	1.00		0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95		1.00	0.95		1.00
Satd. Flow (prot)	1682	3500	1449	1668	3443		1657		1435	1629		1465
Flt Permitted	0.09	1.00	1.00	0.08	1.00		0.95		1.00	0.95		1.00
Satd. Flow (perm)	151	3500	1449	140	3443		1657		1435	1629		1465
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	15	1439	232	293	1692	162	177	0	202	197	0	30
RTOR Reduction (vph)	0	0	60	0	6	0	0	0	23	0	0	22
Lane Group Flow (vph)	15	1439	172	293	1848	0	177	0	179	197	0	8
Confl. Peds. (#/hr)	20		25	25		20	15		30	30		15
Heavy Vehicles (%)	0%	2%	0%	1%	1%	1%	0%	0%	2%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	4	4	0	0	0	0	0	0
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm		pm+ov	Perm		Perm
Protected Phases		2		1	6				1			
Permitted Phases	2		2	6			4		4	8		8
Actuated Green, G (s)	46.0	46.0	46.0	65.0	65.0		30.0		45.0	30.0		30.0
Effective Green, g (s)	47.0	47.0	47.0	66.0	66.0		31.0		47.0	31.0		31.0
Actuated g/C Ratio	0.43	0.43	0.43	0.60	0.60		0.28		0.43	0.28		0.28
Clearance Time (s)	7.0	7.0	7.0	4.0	7.0		8.0		4.0	8.0		8.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0		3.0
Lane Grp Cap (vph)	64	1495	619	306	2065		466		613	459		412
v/s Ratio Prot		0.41		c0.14	0.54				0.04			
v/s Ratio Perm	0.10		0.12	c0.43			0.11		0.08	c0.12		0.01
v/c Ratio	0.23	0.96	0.28	0.96	0.89		0.38		0.29	0.43		0.02
Uniform Delay, d1	20.0	30.6	20.5	34.5	19.0		31.8		20.6	32.3		28.5
Progression Factor	0.79	0.82	0.80	1.00	1.00		1.00		1.00	1.00		1.00
Incremental Delay, d2	6.5	13.3	0.9	39.7	6.5		0.5		0.3	0.6		0.0
Delay (s)	22.3	38.4	17.3	74.2	25.5		32.3		20.9	32.9		28.6
Level of Service	C	D	B	E	C		C		C	C		C
Approach Delay (s)		35.3			32.2		26.2			32.3		
Approach LOS		D			C		C			C		
Intersection Summary												
HCM 2000 Control Delay		32.9										
HCM 2000 Volume to Capacity ratio		0.82										
Actuated Cycle Length (s)		110.0			Sum of lost time (s)		17.0					
Intersection Capacity Utilization		107.4%			ICU Level of Service		G					
Analysis Period (min)		15										
c Critical Lane Group												

Block 7
BA Group - TCS

Synchro 10 Report
FB_PM.syn

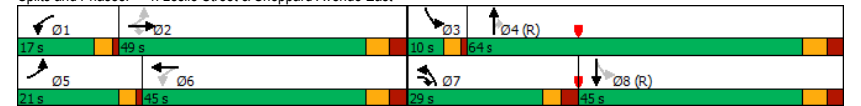
Queues

4: Leslie Street & Sheppard Avenue East

Future Background (Sensitivity Analysis) PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰
Traffic Volume (vph)	295	1295	615	230	1215	625	1120	455	110	515
Future Volume (vph)	295	1295	615	230	1215	625	1120	455	110	515
Lane Group Flow (vph)	298	1308	621	232	1379	631	1131	460	111	798
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	Prot	NA	Perm	pm+pt	NA
Protected Phases	5	2	7	1	6	7	4		3	8
Permitted Phases	2		2	6				4	8	
Detector Phase	5	2	7	1	6	7	4	4	3	8
Switch Phase										
Minimum Initial (s)	6.0	38.0	6.0	6.0	38.0	6.0	38.0	38.0	6.0	38.0
Minimum Split (s)	10.0	45.0	12.0	10.0	45.0	12.0	45.0	45.0	10.0	45.0
Total Split (s)	21.0	49.0	29.0	17.0	45.0	29.0	64.0	64.0	10.0	45.0
Total Split (%)	15.0%	35.0%	20.7%	12.1%	32.1%	20.7%	45.7%	45.7%	7.1%	32.1%
Yellow Time (s)	3.0	4.0	3.0	3.0	4.0	3.0	4.0	4.0	3.0	4.0
All-Red Time (s)	1.0	3.0	3.0	1.0	3.0	3.0	3.0	3.0	1.0	3.0
Lost Time Adjust (s)	-3.0	-1.0	-3.0	-2.0	-1.0	-3.0	-1.0	-1.0	-2.0	-1.0
Total Lost Time (s)	1.0	6.0	3.0	2.0	6.0	3.0	6.0	6.0	2.0	6.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min	None	None	Min	None	C-Min	C-Min	None	C-Min
v/c Ratio	0.97	0.84	0.75	0.96	1.00	0.99	0.77	0.68	0.62	0.59
Control Delay	85.1	51.2	21.8	87.2	73.8	89.4	39.7	25.2	36.4	40.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	85.1	51.2	21.8	87.2	73.8	89.4	39.7	25.2	36.4	40.1
Queue Length 50th (m)	70.7	130.5	80.4	51.7	146.5	95.6	147.8	66.7	16.4	65.1
Queue Length 95th (m)	#132.0	150.2	126.0	#106.6	#183.1	#136.3	176.5	109.7	27.6	80.2
Internal Link Dist (m)		434.4			1078.4		224.4			40.9
Turn Bay Length (m)	170.0		130.0	200.0		175.0				
Base Capacity (vph)	306	1559	828	241	1379	638	1464	676	179	1359
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.97	0.84	0.75	0.96	1.00	0.99	0.77	0.68	0.62	0.59
Intersection Summary										
Cycle Length: 140										
Actuated Cycle Length: 140										
Offset: 77 (55%), Referenced to phase 4:NBT and 8:SBTL, Start of Green										
Natural Cycle: 135										
Control Type: Actuated-Coordinated										
# 95th percentile volume exceeds capacity, queue may be longer.										
Queue shown is maximum after two cycles.										

Splits and Phases: 4: Leslie Street & Sheppard Avenue East



Block 7
BA Group - TCS

Synchro 10 Report
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HCM Signalized Intersection Capacity Analysis

4: Leslie Street & Sheppard Avenue East

Future Background (Sensitivity Analysis) PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↰↰	↰	↰	↰↰↰	↰	↰↰	↰↰	↰	↰	↰↰	↰
Traffic Volume (vph)	295	1295	615	230	1215	150	625	1120	455	110	515	275
Future Volume (vph)	295	1295	615	230	1215	150	625	1120	455	110	515	275
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.5	3.0	3.5	3.0	3.0	3.5	3.5
Total Lost time (s)	1.0	6.0	3.0	2.0	6.0		3.0	6.0	6.0	2.0	6.0	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		0.97	0.95	1.00	1.00	0.91	
Frpb, ped/bikes	1.00	1.00	0.92	1.00	0.99		1.00	1.00	0.92	1.00	0.97	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	0.95	
Flt Protected	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1773	5079	1387	1755	4914		3440	3535	1375	1683	4634	
Flt Permitted	0.10	1.00	1.00	0.10	1.00		1.00	1.00	1.00	0.15	1.00	
Satd. Flow (perm)	169	5079	1387	175	4914		3440	3535	1375	273	4634	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	298	1308	621	232	1227	152	631	1131	460	111	520	278
RTOR Reduction (vph)	0	0	117	0	11	0	0	0	107	0	69	0
Lane Group Flow (vph)	298	1308	504	232	1368	0	631	1131	353	111	729	0
Confl. Peds. (#/hr)	80		105	105		80	65		60	60		65
Heavy Vehicles (%)	0%	1%	0%	1%	1%	1%	0%	1%	0%	0%	1%	2%
Bus Blockages (#/hr)	0	0	0	0	4	4	0	0	3	0	4	4
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		Prot	NA	Perm	pm+pt	NA	
Protected Phases	5	2	7	1	6		7	4		3	8	
Permitted Phases	2		2	6					4	8		
Actuated Green, G (s)	59.0	42.0	65.0	51.0	38.0		23.0	57.0	44.0	38.0		
Effective Green, g (s)	62.0	43.0	71.0	55.0	39.0		26.0	58.0	58.0	48.0	39.0	
Actuated g/C Ratio	0.44	0.31	0.51	0.39	0.28		0.19	0.41	0.41	0.34	0.28	
Clearance Time (s)	4.0	7.0	6.0	4.0	7.0		6.0	7.0	7.0	4.0	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	
Lane Grp Cap (vph)	303	1559	703	238	1368		638	1464	569	174	1290	
v/s Ratio Prot	c0.14	0.26	0.13	0.10	0.28		c0.18	c0.32		0.04	0.16	
v/s Ratio Perm	0.29		0.23	c0.28					0.26	0.18		
v/c Ratio	0.98	0.84	0.72	0.97	1.00		0.99	0.77	0.62	0.64	0.57	
Uniform Delay, d1	44.2	45.3	26.7	40.7	50.5		56.9	35.3	32.3	33.5	43.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	46.9	4.1	3.5	50.8	24.4		32.5	4.0	5.0	7.5	1.8	
Delay (s)	91.1	49.4	30.2	91.5	74.9		89.3	39.3	37.3	41.0	45.0	
Level of Service	F	D	C	F	E		F	D	D	D	D	
Approach Delay (s)		49.6			77.3			53.1			44.5	
Approach LOS		D			E			D			D	

Intersection Summary

HCM 2000 Control Delay	56.5	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	114.2%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Block 7
BA Group - TCS

Synchro 10 Report
FB_PM.syn

Queues

8: Leslie Street & Esther Shiner Boulevard

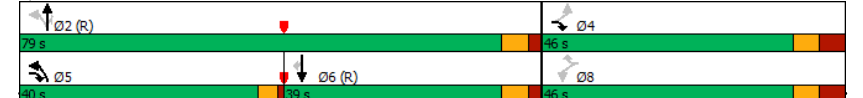
Future Background (Sensitivity Analysis) PM Peak Hour

Lane Group	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBT	SBR
Lane Configurations	↰	↰	↰	↰	↰↰↰	↰↰↰	↰↰↰	↰↰↰	↰
Traffic Volume (vph)	200	915	150	70	530	1895	135	1325	190
Future Volume (vph)	200	915	150	70	530	1895	135	1325	190
Lane Group Flow (vph)	208	953	156	73	552	1974	141	1380	198
Turn Type	Perm	pt+ov	Perm	Perm	pm+pt	NA	Perm	NA	Perm
Protected Phases		4 5			5	2		6	
Permitted Phases	4		8	8	2		2		6
Detector Phase	4	4 5	8	8	5	2	2	6	6
Switch Phase									
Minimum Initial (s)	7.0		7.0	7.0	6.0	25.0	25.0	25.0	25.0
Minimum Split (s)	46.0		46.0	46.0	10.0	31.0	31.0	31.0	31.0
Total Split (s)	46.0		46.0	46.0	40.0	79.0	79.0	39.0	39.0
Total Split (%)	36.8%		36.8%	36.8%	32.0%	63.2%	63.2%	31.2%	31.2%
Yellow Time (s)	4.0		4.0	4.0	3.0	4.0	4.0	4.0	4.0
All-Red Time (s)	4.0		4.0	4.0	1.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-2.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	7.0		7.0	7.0	2.0	5.0	5.0	5.0	5.0
Lead/Lag					Lead		Lag	Lag	
Lead-Lag Optimize?					Yes		Yes	Yes	
Recall Mode	None		None	None	None	C-Min	C-Min	C-Min	C-Min
v/c Ratio	0.43	0.91	0.30	0.15	0.95	0.66	0.17	0.99	0.37
Control Delay	37.4	29.0	34.7	10.7	39.8	16.4	1.4	66.4	6.8
Queue Delay	0.0	35.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.4	64.1	34.7	10.7	39.8	16.4	1.4	66.4	6.8
Queue Length 50th (m)	42.6	159.4	30.6	2.2	130.0	144.8	3.2	131.1	0.0
Queue Length 95th (m)	66.5	#286.0	49.7	13.5	m136.2	m148.4	m2.7	#166.7	18.6
Internal Link Dist (m)						231.2		224.4	
Turn Bay Length (m)					150.0		170.0		175.0
Base Capacity (vph)	489	1047	515	483	586	3006	831	1398	540
Starvation Cap Reductn	0	158	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	1.07	0.30	0.15	0.94	0.66	0.17	0.99	0.37

Intersection Summary

Cycle Length: 125
Actuated Cycle Length: 125
Offset: 98 (78%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 8: Leslie Street & Esther Shiner Boulevard



Block 7
BA Group - TCS

Synchro 10 Report
FB_PM.syn

HCM Signalized Intersection Capacity Analysis 8: Leslie Street & Esther Shiner Boulevard

Future Background (Sensitivity Analysis) PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	200	0	915	150	0	70	530	1895	135	0	1325	190	
Future Volume (vph)	200	0	915	150	0	70	530	1895	135	0	1325	190	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.5	3.5	3.0	
Total Lost time (s)	7.0		7.0	7.0		7.0	2.0	5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00		1.00	1.00		1.00	1.00	0.91	1.00		0.91	1.00	
Frpb, ped/bikes	1.00		1.00	1.00		0.94	1.00	1.00	0.93		1.00	0.97	
Flpb, ped/bikes	0.95		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00		0.85	1.00		0.85	1.00	1.00	0.85		1.00	0.85	
Flt Protected	0.95		1.00	0.95		1.00	1.00	1.00	1.00		1.00	1.00	
Satd. Flow (prot)	1570		1507	1652		1416	1739	5079	1308		5079	1442	
Flt Permitted	0.95		1.00	0.95		1.00	0.11	1.00	1.00		1.00	1.00	
Satd. Flow (perm)	1570		1507	1652		1416	186	5079	1308		5079	1442	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	
Adj. Flow (vph)	208	0	953	156	0	73	552	1974	141	0	1380	198	
RTOR Reduction (vph)	0	0	87	0	0	42	0	0	58	0	0	144	
Lane Group Flow (vph)	208	0	866	156	0	31	552	1974	83	0	1380	54	
Confl. Peds. (#/hr)	50					50	15		20	20		15	
Heavy Vehicles (%)	2%	0%	0%	2%	0%	0%	2%	1%	6%	0%	1%	1%	
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	3	0	0	0	
Turn Type	Perm		pt+ov	Perm		Perm	pm+pt	NA	Perm		NA	Perm	
Protected Phases			4 5				5	2			6		
Permitted Phases	4			8		8	2		2			6	
Actuated Green, G (s)	38.0		81.6	38.0		38.0	73.0	73.0	73.0		33.4	33.4	
Effective Green, g (s)	39.0		82.6	39.0		39.0	75.0	74.0	74.0		34.4	34.4	
Actuated g/C Ratio	0.31		0.66	0.31		0.31	0.60	0.59	0.59		0.28	0.28	
Clearance Time (s)	8.0			8.0		8.0	4.0	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0			3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	489		995	515		441	578	3006	774		1397	396	
v/s Ratio Prot			c0.57				c0.29	0.39			c0.27		
v/s Ratio Perm	0.13			0.09		0.02	0.29		0.06			0.04	
v/c Ratio	0.43		0.87	0.30		0.07	0.96	0.66	0.11		0.99	0.14	
Uniform Delay, d1	34.1		16.9	32.7		30.2	35.7	17.0	11.1		45.1	34.1	
Progression Factor	1.00		1.00	1.00		1.00	0.80	0.93	0.67		1.00	1.00	
Incremental Delay, d2	0.6		8.4	0.3		0.1	11.9	0.4	0.1		21.4	0.7	
Delay (s)	34.7		25.3	33.0		30.3	40.3	16.2	7.6		66.4	34.8	
Level of Service	C		C	C		C	D	B	A		E	C	
Approach Delay (s)		27.0			32.1		20.7				62.5		
Approach LOS		C			C		C				E		
Intersection Summary													
HCM 2000 Control Delay	34.2			HCM 2000 Level of Service						C			
HCM 2000 Volume to Capacity ratio	0.98												
Actuated Cycle Length (s)	125.0			Sum of lost time (s)						16.0			
Intersection Capacity Utilization	106.4%			ICU Level of Service						G			
Analysis Period (min)	15												
c Critical Lane Group													

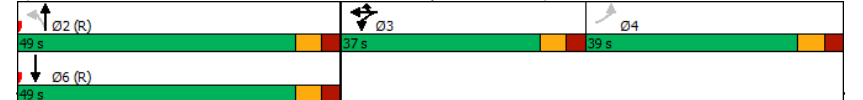
Queues

9: Leslie Street & Oriole GO Station Access/Hwy 401 WB Off-Ramp

Future Background (Sensitivity Analysis) PM Peak Hour

Lane Group	EBL	EBR	WBL	WBT	WBR	NBL	NBT	SBT
Lane Configurations	↰	↱	↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	105	145	715	15	1040	15	1415	1715
Future Volume (vph)	105	145	715	15	1040	15	1415	1715
Lane Group Flow (vph)	109	151	745	547	552	16	1474	1807
Turn Type	Perm	Free	Split	NA	Prot	Perm	NA	NA
Protected Phases			3	3	3		2	6
Permitted Phases	4	Free				2		
Detector Phase	4		3	3	3	2	2	6
Switch Phase								
Minimum Initial (s)	7.0		7.0	7.0	7.0	27.0	27.0	27.0
Minimum Split (s)	39.0		14.0	14.0	14.0	34.0	34.0	34.0
Total Split (s)	39.0		37.0	37.0	37.0	49.0	49.0	49.0
Total Split (%)	31.2%		29.6%	29.6%	29.6%	39.2%	39.2%	39.2%
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lag		Lead	Lead	Lead			
Lead-Lag Optimize?	Yes		Yes	Yes	Yes			
Recall Mode	None		None	None	None	C-Min	C-Min	C-Min
v/c Ratio	0.75	0.10	0.89	0.95	0.98	0.29	0.99	0.84
Control Delay	75.9	0.1	59.5	49.5	56.0	33.3	48.3	30.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	75.9	0.1	59.5	49.5	56.0	33.3	48.3	30.7
Queue Length 50th (m)	26.8	0.0	96.3	81.0	84.8	0.0	209.1	165.5
Queue Length 95th (m)	44.9	0.0	#130.0	#159.7	#166.1	m4.1	#297.6 m#201.9	
Internal Link Dist (m)				220.4			38.0	231.2
Turn Bay Length (m)					150.0	35.0		
Base Capacity (vph)	208	1507	836	577	565	56	1493	2162
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.10	0.89	0.95	0.98	0.29	0.99	0.84
Intersection Summary								
Cycle Length: 125								
Actuated Cycle Length: 125								
Offset: 25 (20%), Referenced to phase 2:NBTL and 6:SBT, Start of Green								
Natural Cycle: 150								
Control Type: Actuated-Coordinated								
# 95th percentile volume exceeds capacity, queue may be longer.								
Queue shown is maximum after two cycles.								
m Volume for 95th percentile queue is metered by upstream signal.								

Splits and Phases: 9: Leslie Street & Oriole GO Station Access/Hwy 401 WB Off-Ramp



HCM Signalized Intersection Capacity Analysis

9: Leslie Street & Oriole GO Station Access/Hwy 401 WB Off-Ramp Future Background (Sensitivity Analysis) PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	→	↱	↰	→	↱	↰	→	↱	↰	→	↱
Traffic Volume (vph)	105	0	145	715	15	1040	15	1415	0	0	1715	20
Future Volume (vph)	105	0	145	715	15	1040	15	1415	0	0	1715	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.0		3.0	6.0	6.0	6.0	6.0	6.0			6.0	
Lane Util. Factor	1.00		1.00	0.97	0.95	0.95	1.00	0.95			0.91	
Frpb, ped/bikes	1.00		1.00	1.00	0.97	1.00	1.00	1.00			1.00	
Flpb, ped/bikes	0.99		1.00	1.00	1.00	1.00	1.00	1.00			1.00	
Frt	1.00		0.85	1.00	0.85	0.85	1.00	1.00			1.00	
Flt Protected	0.95		1.00	1.00	1.00	1.00	0.95	1.00			1.00	
Satd. Flow (prot)	1671		1507	3373	1481	1432	1685	3535			5119	
Flt Permitted	0.45		1.00	1.00	1.00	1.00	0.08	1.00			1.00	
Satd. Flow (perm)	787		1507	3373	1481	1432	134	3535			5119	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	109	0	151	745	16	1083	16	1474	0	0	1786	21
RTOR Reduction (vph)	0	0	0	0	211	211	0	0	0	0	1	0
Lane Group Flow (vph)	109	0	151	745	336	341	16	1474	0	0	1806	0
Confl. Peds. (#/hr)	15					15	5		10	10		5
Heavy Vehicles (%)	0%	0%	0%	2%	0%	0%	0%	1%	0%	0%	0%	0%
Turn Type	Perm		Free	Split	NA	Prot	Perm	NA			NA	
Protected Phases				3	3	3		2			6	
Permitted Phases	4		Free				2					
Actuated Green, G (s)	22.2		125.0	30.0	30.0	30.0	51.8	51.8			51.8	
Effective Green, g (s)	23.2		125.0	31.0	31.0	31.0	52.8	52.8			52.8	
Actuated g/C Ratio	0.19		1.00	0.25	0.25	0.25	0.42	0.42			0.42	
Clearance Time (s)	7.0			7.0	7.0	7.0	7.0	7.0			7.0	
Vehicle Extension (s)	3.0			3.0	3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)	146		1507	836	367	355	56	1493			2162	
v/s Ratio Prot				0.22	0.23	c0.24		c0.42			0.35	
v/s Ratio Perm	c0.14		0.10				0.12					
v/c Ratio	0.75		0.10	0.89	0.92	0.96	0.29	0.99			0.84	
Uniform Delay, d1	48.1		0.0	45.4	45.7	46.4	23.7	35.8			32.2	
Progression Factor	1.00		1.00	1.00	1.00	1.00	0.74	0.83			0.86	
Incremental Delay, d2	18.6		0.1	11.7	26.9	37.5	8.9	16.9			1.6	
Delay (s)	66.7		0.1	57.1	72.6	84.0	26.6	46.7			29.2	
Level of Service	E		A	E	E	F	C	D			C	
Approach Delay (s)	28.1				69.7		46.5				29.2	
Approach LOS	C				E		D				C	

Intersection Summary

HCM 2000 Control Delay	47.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	102.7%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Block 7
BA Group - TCS

Synchro 10 Report
FB_PM.syn

Queues

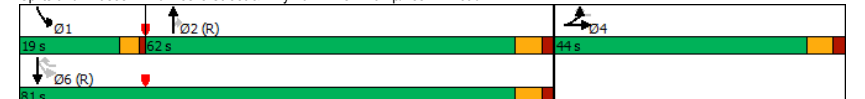
10: Leslie Street & Hwy 401 EB Off-Ramp/Lesmill Road Future Background (Sensitivity Analysis) PM Peak Hour

Lane Group	EBL	EBT	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰	↱	↱	↱	↱	↱	↱
Traffic Volume (vph)	495	125	880	2085	110	240	1115
Future Volume (vph)	495	125	880	2085	110	240	1115
Lane Group Flow (vph)	250	376	889	2106	111	242	1126
Turn Type	Split	NA	Perm	NA	Perm	pm+pt	NA
Protected Phases	4	4		2		1	6
Permitted Phases			4 6		2	6	
Detector Phase	4	4	4 6	2	2	1	6
Switch Phase							
Minimum Initial (s)	7.0	7.0		20.0	20.0	6.0	20.0
Minimum Split (s)	43.0	43.0		26.0	26.0	10.0	26.0
Total Split (s)	44.0	44.0		62.0	62.0	19.0	81.0
Total Split (%)	35.2%	35.2%		49.6%	49.6%	15.2%	64.8%
Yellow Time (s)	4.0	4.0		4.0	4.0	3.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	1.0	2.0
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-3.0	-1.0
Total Lost Time (s)	5.0	5.0		5.0	5.0	1.0	5.0
Lead/Lag				Lag	Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	Yes	
Recall Mode	None	None		C-Min	C-Min	None	C-Min
v/c Ratio	0.66	0.49	0.59	0.79	0.15	0.73	0.46
Control Delay	50.7	42.2	1.7	28.4	9.5	28.8	12.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.7	42.2	1.7	28.4	9.5	28.8	12.0
Queue Length 50th (m)	64.3	46.0	0.0	161.9	6.3	39.4	111.5
Queue Length 95th (m)	87.9	56.5	0.0	207.2	18.6	m54.9	m139.2
Internal Link Dist (m)		272.4		188.8			87.0
Turn Bay Length (m)	130.0				30.0	80.0	
Base Capacity (vph)	498	1019	1519	2659	762	345	2437
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.37	0.59	0.79	0.15	0.70	0.46

Intersection Summary

Cycle Length: 125
Actuated Cycle Length: 125
Offset: 101 (81%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 10: Leslie Street & Hwy 401 EB Off-Ramp/Lesmill Road



Block 7
BA Group - TCS

Synchro 10 Report
FB_PM.syn

HCM Signalized Intersection Capacity Analysis

10: Leslie Street & Hwy 401 EB Off-Ramp/Lesmill Road Future Background (Sensitivity Analysis) PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↱				↱		↰↱↲	↱	↰	↰↱	
Traffic Volume (vph)	495	125	0	0	0	880	0	2085	110	240	1115	0
Future Volume (vph)	495	125	0	0	0	880	0	2085	110	240	1115	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900
Lane Width	3.0	3.5	3.5	3.5	3.5	3.0	3.5	3.5	3.0	3.0	3.5	3.5
Total Lost time (s)	5.0	5.0				5.0	5.0	5.0	1.0	5.0		
Lane Util. Factor	0.91	0.91				1.00	0.91	1.00	1.00	0.95		
Frpb, ped/bikes	1.00	1.00				1.00	1.00	0.97	1.00	1.00		
Flpb, ped/bikes	1.00	1.00				1.00	1.00	1.00	1.00	1.00		
Frt	1.00	1.00				0.86	1.00	0.85	1.00	1.00		
Flt Protected	1.00	0.97				1.00	1.00	1.00	1.00	1.00		
Satd. Flow (prot)	1598	3266				1519	5029	1388	1848	3570		
Flt Permitted	1.00	0.97				1.00	1.00	1.00	0.06	1.00		
Satd. Flow (perm)	1598	3266				1519	5029	1388	107	3570		
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	500	126	0	0	0	889	0	2106	111	242	1126	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	29	0	0	0
Lane Group Flow (vph)	250	376	0	0	0	889	0	2106	82	242	1126	0
Confl. Peds. (#/hr)			5	5			5		10	10		5
Heavy Vehicles (%)	1%	2%	3%	0%	0%	1%	0%	2%	4%	1%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	3	0	0	0
Turn Type	Split	NA				Perm	NA	Perm	pm+pt	NA		
Protected Phases	4	4					2		1	6		
Permitted Phases						4 6		2	6			
Actuated Green, G (s)	28.7	28.7				125.0	65.1	65.1	84.3	84.3		
Effective Green, g (s)	29.7	29.7				125.0	66.1	66.1	87.3	85.3		
Actuated g/C Ratio	0.24	0.24				1.00	0.53	0.53	0.70	0.68		
Clearance Time (s)	6.0	6.0					6.0	6.0	4.0	6.0		
Vehicle Extension (s)	3.0	3.0					3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	379	776				1519	2659	733	328	2436		
v/s Ratio Prot	0.16	0.12					c0.42		c0.11	0.32		
v/s Ratio Perm						c0.59		0.06	0.41			
v/c Ratio	0.66	0.48				0.59	0.79	0.11	0.74	0.46		
Uniform Delay, d1	43.1	41.1				0.0	23.9	14.8	36.4	9.2		
Progression Factor	1.00	1.00				1.00	1.00	1.00	0.65	1.14		
Incremental Delay, d2	4.1	0.5				0.6	2.5	0.3	4.8	0.4		
Delay (s)	47.2	41.5				0.6	26.4	15.1	28.4	10.9		
Level of Service	D	D				A	C	B	C	B		
Approach Delay (s)		43.8			0.6		25.8			14.0		
Approach LOS		D			A		C			B		
Intersection Summary												
HCM 2000 Control Delay		20.5				HCM 2000 Level of Service		C				
HCM 2000 Volume to Capacity ratio		0.75										
Actuated Cycle Length (s)		125.0				Sum of lost time (s)		11.0				
Intersection Capacity Utilization		123.6%				ICU Level of Service		H				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

11: CTC North Access & Sheppard Avenue East Future Background (Sensitivity Analysis) PM Peak Hour

							
Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations							
Traffic Volume (veh/h)	1630	35	30	1850	15	40	
Future Volume (Veh/h)	1630	35	30	1850	15	40	
Sign Control	Free			Free	Stop		
Grade	0%			0%	0%		
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	
Hourly flow rate (vph)	1663	36	31	1888	15	41	
Pedestrians					50		
Lane Width (m)					3.0		
Walking Speed (m/s)					1.2		
Percent Blockage					3		
Right turn flare (veh)							
Median type	None			None			
Median storage (veh)							
Upstream signal (m)	144			105			
pX, platoon unblocked			0.74		0.66	0.74	
vC, conflicting volume			1749		2737	900	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol			1299		787	144	
tC, single (s)			4.1		6.8	6.9	
tC, 2 stage (s)							
tF (s)			2.2		3.5	3.3	
p0 queue free %			92		92	93	
cM capacity (veh/h)			383		194	625	
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	1109	590	31	944	944	15	41
Volume Left	0	0	31	0	0	15	0
Volume Right	0	36	0	0	0	0	41
cSH	1700	1700	383	1700	1700	194	625
Volume to Capacity	0.65	0.35	0.08	0.56	0.56	0.08	0.07
Queue Length 95th (m)	0.0	0.0	2.1	0.0	0.0	2.0	1.7
Control Delay (s)	0.0	0.0	15.2	0.0	0.0	25.1	11.2
Lane LOS			C			D	B
Approach Delay (s)	0.0		0.2			14.9	
Approach LOS						B	
Intersection Summary							
Average Delay			0.4				
Intersection Capacity Utilization			61.1%		ICU Level of Service		B
Analysis Period (min)			15				

Queues

1: Bessarion Road/Burbank Drive & Sheppard Avenue East Future Total (Sensitivity Analysis) AM Peak Hour

	↖	→	↗	↖	↗	↖	↗	↖	↗
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	
Lane Configurations	↖	↖↗	↖	↖↗	↖	↖	↖	↖	
Traffic Volume (vph)	25	1310	15	1395	15	20	275	15	
Future Volume (vph)	25	1310	15	1395	15	20	275	15	
Lane Group Flow (vph)	28	1467	17	1672	17	55	306	84	
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA	
Protected Phases		2		6		4		8	
Permitted Phases	2		6		4		8		
Detector Phase	2	2	6	6	4	4	8	8	
Switch Phase									
Minimum Initial (s)	24.0	24.0	24.0	24.0	7.0	7.0	7.0	7.0	
Minimum Split (s)	30.0	30.0	30.0	30.0	35.0	35.0	35.0	35.0	
Total Split (s)	66.0	66.0	66.0	66.0	39.0	39.0	39.0	39.0	
Total Split (%)	62.9%	62.9%	62.9%	62.9%	37.1%	37.1%	37.1%	37.1%	
Yellow Time (s)	4.0	4.0	4.0	4.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	4.0	4.0	4.0	4.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	6.0	6.0	6.0	6.0	
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	C-Min	C-Min	C-Min	C-Min	None	None	None	None	
v/c Ratio	0.40	0.69	0.16	0.80	0.05	0.11	0.87	0.19	
Control Delay	33.1	16.6	14.9	19.8	25.9	16.6	59.7	20.4	
Queue Delay	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	
Total Delay	33.1	16.6	14.9	20.9	25.9	16.6	59.7	20.4	
Queue Length 50th (m)	3.1	111.8	1.6	142.2	2.6	4.4	59.9	9.1	
Queue Length 95th (m)	#16.8	140.6	6.1	179.4	7.8	13.5	#103.8	20.9	
Internal Link Dist (m)		449.7		65.9		131.2		187.8	
Turn Bay Length (m)	30.0		30.0		15.0		40.0		
Base Capacity (vph)	70	2115	104	2098	385	540	391	487	
Starvation Cap Reductn	0	0	0	204	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.40	0.69	0.16	0.88	0.04	0.10	0.78	0.17	

Intersection Summary

Cycle Length: 105

Actuated Cycle Length: 105

Offset: 55 (52%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

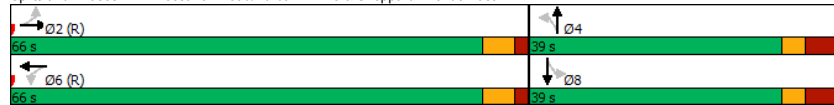
Natural Cycle: 80

Control Type: Actuated-Coordinated

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

Queue shown is maximum after two cycles.

Splits and Phases: 1: Bessarion Road/Burbank Drive & Sheppard Avenue East

Block 7
BA Group - TCSSynchro 10 Report
FT_AM.syn

HCM Signalized Intersection Capacity Analysis

1: Bessarion Road/Burbank Drive & Sheppard Avenue East Future Total (Sensitivity Analysis) AM Peak Hour

	↖	→	↗	↖	↗	↖	↗	↖	↗	↖	↗	↖	↗	↖	↗
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR			
Lane Configurations	↖	↖↗		↖	↖↗		↖	↖		↖	↖	↖			
Traffic Volume (vph)	25	1310		15	1395		15	20		30	275	15		60	
Future Volume (vph)	25	1310		15	1395		15	20		30	275	15		60	
Ideal Flow (vphpl)	1900	1900		1900	1900		1900	1900		1900	1900	1900		1900	
Lane Width	3.0	3.5		3.0	3.5		3.0	3.5		3.0	3.5	3.0		3.5	
Total Lost time (s)	5.0	5.0		5.0	5.0		6.0	6.0		6.0	6.0	6.0		6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	0.99		1.00	0.99	1.00		0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.98	1.00		0.99	1.00	0.99		1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.91		1.00	0.88	1.00		0.88	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	0.95		1.00	
Satd. Flow (prot)	1620	3458		1504	3423		1659	1662		1643	1497	1643		1497	
Flt Permitted	0.07	1.00		0.11	1.00		0.70	1.00		0.72	1.00	0.72		1.00	
Satd. Flow (perm)	117	3458		170	3423		1227	1662		1247	1497	1247		1497	
Peak-hour factor, PHF	0.90	0.90		0.90	0.90		0.90	0.90		0.90	0.90	0.90		0.90	
Adj. Flow (vph)	28	1456		17	1550		17	22		33	306	17		67	
RTOR Reduction (vph)	0	0		0	5		0	19		0	0	18		0	
Lane Group Flow (vph)	28	1467		17	1667		17	36		306	66	0		0	
Confl. Peds. (#/hr)	30			70			30	15		5	5	15		15	
Heavy Vehicles (%)	4%	3%		0%	12%		2%	9%		0%	2%	12%		7%	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm		NA	
Protected Phases		2			6			4			8			8	
Permitted Phases	2			6			4			8					
Actuated Green, G (s)	63.2	63.2		63.2	63.2		28.8	28.8		28.8	28.8	28.8		28.8	
Effective Green, g (s)	64.2	64.2		64.2	64.2		29.8	29.8		29.8	29.8	29.8		29.8	
Actuated g/C Ratio	0.61	0.61		0.61	0.61		0.28	0.28		0.28	0.28	0.28		0.28	
Clearance Time (s)	6.0	6.0		6.0	6.0		7.0	7.0		7.0	7.0	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	
Lane Grp Cap (vph)	71	2114		103	2092		348	471		353	424	353		424	
v/s Ratio Prot		0.42			c0.49			0.02			0.04				
v/s Ratio Perm	0.24			0.10			0.01			c0.25					
v/c Ratio	0.39	0.69		0.17	0.80		0.05	0.08		0.87	0.16	0.87		0.16	
Uniform Delay, d1	10.4	13.8		8.8	15.5		27.3	27.5		35.7	28.2	35.7		28.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00		1.00	
Incremental Delay, d2	15.6	1.9		3.4	3.3		0.1	0.1		19.4	0.2	19.4		0.2	
Delay (s)	26.1	15.7		12.2	18.7		27.4	27.6		55.2	28.3	55.2		28.3	
Level of Service	C	B		B	B		C	C		E	C	E		C	
Approach Delay (s)	15.9			18.7			27.5			49.4		49.4			
Approach LOS	B			B			C			D		D			

Intersection Summary

HCM 2000 Control Delay

21.0

HCM 2000 Volume to Capacity ratio

0.82

Actuated Cycle Length (s)

105.0

Intersection Capacity Utilization

73.9%

Analysis Period (min)

15

c Critical Lane Group

HCM 2000 Level of Service	C
Sum of lost time (s)	11.0
ICU Level of Service	D

Block 7
BA Group - TCSSynchro 10 Report
FT_AM.syn

Queues

2: CTC West Access/Blue Ridge Road & Sheppard Avenue East Total (Sensitivity Analysis) AM Peak Hour

									
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBR	SBL	SBR
Lane Configurations		 			 				
Traffic Volume (vph)	15	1420	200	5	1435	100	10	55	20
Future Volume (vph)	15	1420	200	5	1435	100	10	55	20
Lane Group Flow (vph)	17	1578	222	6	1622	111	11	61	22
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	Perm	Perm
Protected Phases	2								
Permitted Phases	2		2	6		4	4	8	8
Detector Phase	2	2	2	6	6	4	4	8	8
Switch Phase									
Minimum Initial (s)	27.0	27.0	27.0	27.0	27.0	7.0	7.0	7.0	7.0
Minimum Split (s)	33.0	33.0	33.0	33.0	33.0	36.0	36.0	36.0	36.0
Total Split (s)	73.0	73.0	73.0	73.0	73.0	37.0	37.0	37.0	37.0
Total Split (%)	66.4%	66.4%	66.4%	66.4%	66.4%	33.6%	33.6%	33.6%	33.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	C-Min	C-Min	C-Min	C-Min	C-Min	None	None	None	None
v/c Ratio	0.12	0.60	0.23	0.04	0.62	0.45	0.04	0.25	0.09
Control Delay	8.3	8.3	3.7	5.2	7.8	46.7	2.4	41.0	8.9
Queue Delay	0.0	0.5	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Total Delay	8.3	8.8	3.7	5.2	7.9	46.7	2.4	41.0	8.9
Queue Length 50th (m)	0.7	60.4	5.6	0.3	83.6	23.9	0.0	12.7	0.0
Queue Length 95th (m)	5.3	147.4	22.6	m0.5	59.1	34.6	1.3	21.2	4.8
Internal Link Dist (m)	32.6				120.2				
Turn Bay Length (m)	30.0		25.0	35.0					
Base Capacity (vph)	141	2617	986	171	2607	484	459	480	449
Starvation Cap Reductn	0	527	0	0	160	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.76	0.23	0.04	0.66	0.23	0.02	0.13	0.05

Intersection Summary

Cycle Length: 110

Actuated Cycle Length: 110

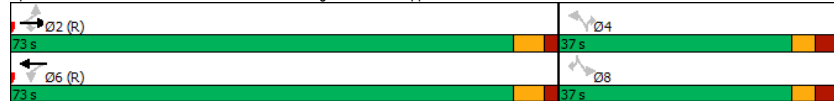
Offset: 56 (51%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

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

Splits and Phases: 2: CTC West Access/Blue Ridge Road & Sheppard Avenue East



Block 7
BA Group - TCS

Synchro 10 Report
FT_AM.syn

HCM Signalized Intersection Capacity Analysis

2: CTC West Access/Blue Ridge Road & Sheppard Avenue East Total (Sensitivity Analysis) AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	15	1420	200	5	1435	25	100	0	10	55	0	20
Traffic Volume (vph)	15	1420	200	5	1435	25	100	0	10	55	0	20
Future Volume (vph)	17	1578	222	6	1622	28	111	0	11	61	0	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.5	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0		5.0		5.0	5.0		5.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00		1.00	1.00		1.00
Frpb, ped/bikes	1.00	1.00	0.87	1.00	1.00		1.00		1.00	1.00		0.98
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00		0.99		1.00	1.00		1.00
Frft	1.00	1.00	0.85	1.00	1.00		1.00		0.85	1.00		0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95		1.00	0.95		1.00
Satd. Flow (prot)	1475	3433	1265	1670	3421		1666		1507	1652		1473
Flt Permitted	0.12	1.00	1.00	0.13	1.00		0.95		1.00	0.95		1.00
Satd. Flow (perm)	185	3433	1265	223	3421		1666		1507	1652		1473
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	17	1578	222	6	1594	28	111	0	11	61	0	22
RTOR Reduction (vph)	0	0	22	0	1	0	0	0	9	0	0	19
Lane Group Flow (vph)	17	1578	200	6	1621	0	111	0	2	61	0	3
Confl. Peds. (#/hr)	15		55	55		15	10					10
Heavy Vehicles (%)	14%	4%	2%	0%	4%	4%	0%	0%	0%	2%	0%	0%
Bus Blockages (#/hr)	0	0	4	0	0	0	0	0	0	0	0	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm		Perm	Perm		Perm
Protected Phases	2		2		6		4		4		8	
Permitted Phases	2		2	6			4		4	8		8
Actuated Green, G (s)	82.9	82.9	82.9	82.9	82.9		15.1		15.1	15.1		15.1
Effective Green, g (s)	83.9	83.9	83.9	83.9	83.9		16.1		16.1	16.1		16.1
Actuated g/C Ratio	0.76	0.76	0.76	0.76	0.76		0.15		0.15	0.15		0.15
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		6.0		6.0	6.0		6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0		3.0
Lane Grp Cap (vph)	141	2618	964	170	2609		243		220	241		215
v/s Ratio Prot	0.46		c0.47									
v/s Ratio Perm	0.09		0.16	0.03			c0.07		0.00	0.04		0.00
v/c Ratio	0.12	0.60	0.21	0.04	0.62		0.46		0.01	0.25		0.01
Uniform Delay, d1	3.4	5.7	3.7	3.2	5.9		42.9		40.1	41.6		40.2
Progression Factor	1.00	1.00	1.00	0.80	0.92		1.00		1.00	1.00		1.00
Incremental Delay, d2	1.7	1.0	0.5	0.3	0.8		1.4		0.0	0.6		0.0
Delay (s)	5.2	6.8	4.2	2.8	6.3		44.3		40.1	42.2		40.2
Level of Service	A	A	A	A	A		D		D	D		D
Approach Delay (s)	6.4		6.3		43.9		41.7					
Approach LOS	A		A		D		D					

Intersection Summary

HCM 2000 Control Delay	8.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	69.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Block 7
BA Group - TCS

Synchro 10 Report
FT_AM.syn

Queues

3: Provost Drive/Ambrose Road & Sheppard Avenue East Future Total (Sensitivity Analysis) AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	NBL	NBR	SBL	SBR
Lane Configurations	↩	↩↩	↩	↩	↩↩	↩	↩	↩	↩
Traffic Volume (vph)	40	1325	135	265	1230	235	190	200	25
Future Volume (vph)	40	1325	135	265	1230	235	190	200	25
Lane Group Flow (vph)	44	1472	150	294	1506	261	211	222	28
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+ov	Perm	Perm
Protected Phases		2		1	6		1		
Permitted Phases	2		2	6		4		8	8
Detector Phase	2	2	2	1	6	4	1	8	8
Switch Phase									
Minimum Initial (s)	30.0	30.0	30.0	6.0	30.0	30.0	6.0	30.0	30.0
Minimum Split (s)	37.0	37.0	37.0	10.0	37.0	38.0	10.0	38.0	38.0
Total Split (s)	53.0	53.0	53.0	19.0	72.0	38.0	19.0	38.0	38.0
Total Split (%)	48.2%	48.2%	48.2%	17.3%	65.5%	34.5%	17.3%	34.5%	34.5%
Yellow Time (s)	4.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	1.0	3.0	4.0	1.0	4.0	4.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	6.0	6.0	6.0	3.0	6.0	7.0	3.0	7.0	7.0
Lead/Lag	Lag	Lag	Lag	Lead		Lead			
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		Yes			
Recall Mode	C-Min	C-Min	C-Min	None	C-Min	None	None	None	None
v/c Ratio	0.45	1.00	0.23	0.97	0.75	0.57	0.31	0.49	0.06
Control Delay	34.0	54.8	9.6	74.6	18.7	39.7	14.8	37.4	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.0	54.8	9.6	74.6	18.7	39.7	14.8	37.4	0.2
Queue Length 50th (m)	7.5	~187.1	12.3	50.3	120.0	50.5	21.6	41.8	0.0
Queue Length 95th (m)	m7.5	#222.7	9.6	#106.2	148.7	78.3	37.8	66.4	0.0
Internal Link Dist (m)		81.5			111.0				
Turn Bay Length (m)	40.0		40.0	165.0					
Base Capacity (vph)	98	1466	657	304	2018	455	683	452	471
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.45	1.00	0.23	0.97	0.75	0.57	0.31	0.49	0.06

Intersection Summary

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 69 (63%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 105

Control Type: Actuated-Coordinated

Volume exceeds capacity, queue is theoretically infinite.

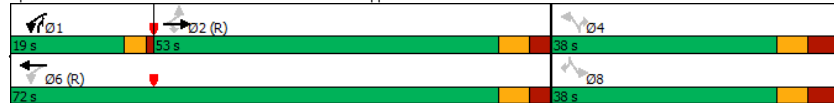
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 3: Provost Drive/Ambrose Road & Sheppard Avenue East



HCM Signalized Intersection Capacity Analysis

3: Provost Drive/Ambrose Road & Sheppard Avenue East Future Total (Sensitivity Analysis) AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↩	↩↩	↩	↩	↩↩	↩	↩	↩	↩	↩	↩	↩
Traffic Volume (vph)	40	1325	135	265	1230	125	235	0	190	200	0	25
Future Volume (vph)	40	1325	135	265	1230	125	235	0	190	200	0	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.5	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	6.0	6.0	6.0	3.0	6.0		7.0		3.0	7.0		7.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00		1.00	1.00		1.00
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00		1.00		0.97	1.00		0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.99		1.00	0.96		1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00		0.85	1.00		0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95		1.00	0.95		1.00
Satd. Flow (prot)	1600	3433	1420	1636	3352		1618		1429	1604		1473
Flt Permitted	0.14	1.00	1.00	0.08	1.00		0.95		1.00	0.95		1.00
Satd. Flow (perm)	231	3433	1420	138	3352		1618		1429	1604		1473
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	44	1472	150	294	1367	139	261	0	211	222	0	28
RTOR Reduction (vph)	0	0	51	0	7	0	0	0	23	0	0	20
Lane Group Flow (vph)	44	1472	99	294	1499	0	261	0	188	222	0	8
Confl. Peds. (#/hr)	15		25	25		15	10		35	35		10
Heavy Vehicles (%)	5%	4%	2%	3%	4%	1%	3%	0%	2%	1%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	4	4	0	0	0	0	0	0
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm		pm+ov	Perm		Perm
Protected Phases		2		1	6				1			
Permitted Phases	2		2	6			4		4	8		8
Actuated Green, G (s)	46.0	46.0	46.0	65.0	65.0		30.0		45.0	30.0		30.0
Effective Green, g (s)	47.0	47.0	47.0	66.0	66.0		31.0		47.0	31.0		31.0
Actuated g/C Ratio	0.43	0.43	0.43	0.60	0.60		0.28		0.43	0.28		0.28
Clearance Time (s)	7.0	7.0	7.0	4.0	7.0		8.0		4.0	8.0		8.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0		3.0
Lane Grp Cap (vph)	98	1466	606	300	2011		455		610	452		415
v/s Ratio Prot		0.43		c0.14	0.45				0.04			
v/s Ratio Perm	0.19		0.07	c0.45			c0.16		0.09	0.14		0.01
v/c Ratio	0.45	1.00	0.16	0.98	0.75		0.57		0.31	0.49		0.02
Uniform Delay, d1	22.3	31.5	19.4	35.2	15.9		33.8		20.8	32.9		28.5
Progression Factor	0.84	1.00	1.02	1.00	1.00		1.00		1.00	1.00		1.00
Incremental Delay, d2	12.3	22.8	0.5	45.9	2.6		1.8		0.3	0.8		0.0
Delay (s)	30.9	54.3	20.3	81.1	18.5		35.6		21.1	33.8		28.5
Level of Service	C	D	C	F	B		D		C	C		C
Approach Delay (s)		50.6			28.7		29.1			33.2		
Approach LOS		D			C		C			C		

Intersection Summary

HCM 2000 Control Delay	37.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	96.1%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Queues

4: Leslie Street & Sheppard Avenue East

Future Total (Sensitivity Analysis) AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔↔↔	↔	↔	↔↔↔	↔	↔↔↔	↔	↔↔↔	↔↔↔
Traffic Volume (vph)	210	635	835	260	1180	425	635	335	100	770
Future Volume (vph)	210	635	835	260	1180	425	635	335	100	770
Lane Group Flow (vph)	216	655	861	268	1298	438	655	345	103	1088
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	Prot	NA	Perm	Perm	NA
Protected Phases	5	2	7	1	6	7	4			8
Permitted Phases	2		2	6				4	8	
Detector Phase	5	2	7	1	6	7	4	4	8	8
Switch Phase										
Minimum Initial (s)	6.0	38.0	6.0	6.0	38.0	6.0	38.0	38.0	38.0	38.0
Minimum Split (s)	10.0	45.0	12.0	10.0	45.0	12.0	45.0	45.0	45.0	45.0
Total Split (s)	16.0	47.0	29.0	14.0	45.0	29.0	74.0	74.0	45.0	45.0
Total Split (%)	11.9%	34.8%	21.5%	10.4%	33.3%	21.5%	54.8%	54.8%	33.3%	33.3%
Yellow Time (s)	3.0	4.0	3.0	3.0	4.0	3.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	3.0	3.0	1.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-2.0	-1.0	-3.0	-3.0	-1.0	-3.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	2.0	6.0	3.0	1.0	6.0	3.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	Min	None	None	Min	None	C-Min	C-Min	C-Min	C-Min
v/c Ratio	0.93	0.43	1.02	0.78	0.92	0.70	0.39	0.45	0.52	0.77
Control Delay	78.3	38.8	57.8	42.9	57.2	38.9	16.7	11.9	51.1	45.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	78.3	38.8	57.8	42.9	57.2	38.9	16.7	11.9	51.1	45.5
Queue Length 50th (m)	44.5	54.0	~167.5	48.6	128.7	62.0	83.4	66.8	24.2	96.7
Queue Length 95th (m)	#95.3	66.7	#207.2	#78.3	#156.5	80.1	106.3	100.8	45.1	114.8
Internal Link Dist (m)		434.4			1078.4		224.4			40.9
Turn Bay Length (m)	170.0		130.0	200.0		175.0				
Base Capacity (vph)	232	1512	841	345	1415	630	1680	761	199	1405
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.93	0.43	1.02	0.78	0.92	0.70	0.39	0.45	0.52	0.77

Intersection Summary

Cycle Length: 135

Actuated Cycle Length: 135

Offset: 0 (0%), Referenced to phase 4:NBT and 8:SBTL, Start of Green

Natural Cycle: 125

Control Type: Actuated-Coordinated

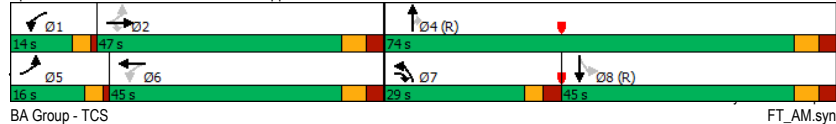
- Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 4: Leslie Street & Sheppard Avenue East



HCM Signalized Intersection Capacity Analysis

4: Leslie Street & Sheppard Avenue East

Future Total (Sensitivity Analysis) AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔↔↔	↔	↔	↔↔↔		↔	↔↔↔	↔	↔↔↔	↔↔↔	
Traffic Volume (vph)	210	635	835	260	1180	80	425	635	335	100	770	285
Future Volume (vph)	210	635	835	260	1180	80	425	635	335	100	770	285
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.5	3.0	3.5	3.0	3.0	3.5	3.5
Total Lost time (s)	2.0	6.0	3.0	1.0	6.0		3.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		0.97	0.95	1.00	1.00	0.91	
Frpb, ped/bikes	1.00	1.00	0.91	1.00	1.00		1.00	1.00	0.93	1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00		1.00	1.00	1.00	0.98	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.96	
Flt Protected	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1721	4980	1321	1713	4878		3276	3336	1302	1629	4697	
Flt Permitted	0.10	1.00	1.00	0.33	1.00		1.00	1.00	1.00	0.40	1.00	
Satd. Flow (perm)	164	4980	1321	565	4878		3276	3336	1302	691	4697	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	216	655	861	268	1216	82	438	655	345	103	794	294
RTOR Reduction (vph)	0	0	160	0	6	0	0	0	106	0	50	0
Lane Group Flow (vph)	216	655	701	268	1292	0	438	655	239	103	1038	0
Confl. Peds. (#/hr)	40		125	125		40	55		55	55		55
Heavy Vehicles (%)	3%	3%	4%	2%	3%	7%	5%	7%	6%	1%	2%	3%
Bus Blockages (#/hr)	0	0	0	0	4	4	0	0	4	0	4	4
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		Prot	NA	Perm	Perm	NA	
Protected Phases	5	2	7	1	6		7	4			8	
Permitted Phases	2		2	6					4	8		
Actuated Green, G (s)	52.0	40.0	63.0	48.0	38.0		23.0	67.0	38.0	38.0		
Effective Green, g (s)	56.0	41.0	69.0	54.0	39.0		26.0	68.0	39.0	39.0		
Actuated g/C Ratio	0.41	0.30	0.51	0.40	0.29		0.19	0.50	0.50	0.29	0.29	
Clearance Time (s)	4.0	7.0	6.0	4.0	7.0		6.0	7.0	7.0	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	
Lane Grp Cap (vph)	229	1512	675	336	1409		630	1680	655	199	1356	
v/s Ratio Prot	c0.10	0.13	c0.20	0.08	0.26		0.13	0.20			c0.22	
v/s Ratio Perm	0.29		0.33	0.24					0.18	0.15		
v/c Ratio	0.94	0.43	1.04	0.80	0.92		0.70	0.39	0.37	0.52	0.77	
Uniform Delay, d1	38.4	37.7	33.0	30.1	46.4		50.8	20.7	20.4	40.1	43.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.64	0.77	1.30	1.00	1.00	
Incremental Delay, d2	43.6	0.2	45.1	12.4	9.6		3.1	0.6	1.5	9.3	4.2	
Delay (s)	82.0	37.9	78.1	42.5	56.1		35.9	16.5	28.0	49.4	48.0	
Level of Service	F	D	E	D	E		D	B	C	D	D	
Approach Delay (s)		63.4			53.7			25.2			48.1	
Approach LOS		E			D			C			D	

Intersection Summary

HCM 2000 Control Delay	48.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	127.7%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Block 7
BA Group - TCSSynchro 10 Report
FT_AM.syn

Queues

8: Leslie Street & Esther Shiner Boulevard

Future Total (Sensitivity Analysis) AM Peak Hour

	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBT	SBR
Lane Configurations	↩	↩	↩	↩	↩	↩	↩	↩	↩
Traffic Volume (vph)	90	890	95	35	440	1210	375	1775	200
Future Volume (vph)	90	890	95	35	440	1210	375	1775	200
Lane Group Flow (vph)	95	937	100	37	463	1274	395	1868	211
Turn Type	Perm	pt+ov	Perm	Perm	pm+pt	NA	Perm	NA	Perm
Protected Phases		4 5			5	2		6	
Permitted Phases	4		8	8	2		2		6
Detector Phase	4	4 5	8	8	5	2	2	6	6
Switch Phase									
Minimum Initial (s)	7.0		7.0	7.0	6.0	25.0	25.0	25.0	25.0
Minimum Split (s)	46.0		46.0	46.0	10.0	31.0	31.0	31.0	31.0
Total Split (s)	46.0		46.0	46.0	34.0	89.0	89.0	55.0	55.0
Total Split (%)	34.1%		34.1%	34.1%	25.2%	65.9%	65.9%	40.7%	40.7%
Yellow Time (s)	4.0		4.0	4.0	3.0	4.0	4.0	4.0	4.0
All-Red Time (s)	4.0		4.0	4.0	1.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-2.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	7.0		7.0	7.0	2.0	5.0	5.0	5.0	5.0
Lead/Lag					Lead		Lag		Lag
Lead-Lag Optimize?					Yes		Yes		Yes
Recall Mode	None		None	None	None	C-Min	C-Min	C-Min	C-Min
v/c Ratio	0.24	1.03	0.22	0.08	1.00	0.42	0.40	1.00	0.32
Control Delay	38.6	62.4	38.2	4.1	72.5	21.7	8.9	70.2	11.7
Queue Delay	0.0	25.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.6	88.3	38.2	4.1	72.5	21.7	8.9	70.2	11.7
Queue Length 50th (m)	20.4	~249.5	21.4	0.0	116.5	100.0	39.5	~200.0	10.1
Queue Length 95th (m)	36.1	#332.2	37.5	4.7	#188.0	112.9	m76.8	m218.4	m13.8
Internal Link Dist (m)						231.2		224.4	
Turn Bay Length (m)					150.0		170.0		175.0
Base Capacity (vph)	401	907	446	445	465	3068	983	1862	665
Starvation Cap Reductn	0	119	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.24	1.19	0.22	0.08	1.00	0.42	0.40	1.00	0.32

Intersection Summary

Cycle Length: 135

Actuated Cycle Length: 135

Offset: 103 (76%), Referenced to phase 2:NBL and 6:SBT, Start of Green

Natural Cycle: 130

Control Type: Actuated-Coordinated

- Volume exceeds capacity, queue is theoretically infinite.

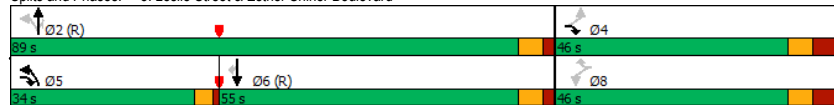
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 8: Leslie Street & Esther Shiner Boulevard



HCM Signalized Intersection Capacity Analysis

8: Leslie Street & Esther Shiner Boulevard

Future Total (Sensitivity Analysis) AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↩		↩	↩		↩	↩	↩	↩	↩	↩	↩
Traffic Volume (vph)	90	0	890	95	0	35	440	1210	375	0	1775	200
Future Volume (vph)	90	0	890	95	0	35	440	1210	375	0	1775	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.5	3.5	3.0
Total Lost time (s)	7.0		7.0	7.0		7.0	2.0	5.0	5.0		5.0	5.0
Lane Util. Factor	1.00		1.00	1.00		1.00	1.00	0.91	1.00		0.91	1.00
Frpb, ped/bikes	1.00		1.00	1.00		0.93	1.00	1.00	0.94		1.00	0.97
Flpb, ped/bikes	0.94		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00
Frt	1.00		0.85	1.00		0.85	1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95		1.00	0.95		1.00	1.00	1.00	1.00		1.00	1.00
Satd. Flow (prot)	1391		1478	1546		1403	1739	4932	1341		5029	1437
Flt Permitted	0.95		1.00	0.95		1.00	0.08	1.00	1.00		1.00	1.00
Satd. Flow (perm)	1391		1478	1546		1403	131	4932	1341		5029	1437
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	95	0	937	100	0	37	463	1274	395	0	1868	211
RTOR Reduction (vph)	0	0	101	0	0	26	0	0	149	0	0	133
Lane Group Flow (vph)	95	0	836	100	0	11	463	1274	246	0	1868	78
Confl. Peds. (#/hr)	55					55	10		15	15		10
Heavy Vehicles (%)	14%	0%	2%	9%	0%	0%	2%	4%	4%	0%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	4	0	0	0
Turn Type	Perm		pt+ov	Perm		Perm	pm+pt	NA	Perm		NA	Perm
Protected Phases			4 5				5	2			6	
Permitted Phases	4			8		8	2		2			6
Actuated Green, G (s)	38.0		76.0	38.0		38.0	83.0	83.0	83.0		49.0	49.0
Effective Green, g (s)	39.0		77.0	39.0		39.0	85.0	84.0	84.0		50.0	50.0
Actuated g/C Ratio	0.29		0.57	0.29		0.29	0.63	0.62	0.62		0.37	0.37
Clearance Time (s)	8.0		8.0	8.0		8.0	4.0	6.0	6.0		6.0	6.0
Vehicle Extension (s)	3.0			3.0		3.0	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	401		843	446		405	463	3068	834		1862	532
v/s Ratio Prot			c0.57				0.24	0.26			c0.37	
v/s Ratio Perm	0.07			0.06		0.01	0.39		0.18			0.05
v/c Ratio	0.24		0.99	0.22		0.03	1.00	0.42	0.29		1.00	0.15
Uniform Delay, d1	36.6		28.7	36.5		34.4	43.9	13.0	11.8		42.5	28.3
Progression Factor	1.00		1.00	1.00		1.00	0.93	1.63	7.81		1.30	3.02
Incremental Delay, d2	0.3		28.8	0.3		0.0	35.5	0.3	0.6		16.2	0.3
Delay (s)	36.9		57.5	36.8		34.4	76.1	21.5	92.8		71.3	85.7
Level of Service	D		E	D		C	E	C	F		E	F
Approach Delay (s)		55.6			36.1			46.6			72.8	
Approach LOS		E			D			D			E	

Intersection Summary

HCM 2000 Control Delay	58.2	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	111.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Block 7
BA Group - TCSSynchro 10 Report
FT_AM.syn

Queues

9: Leslie Street & Oriole GO Station Access/Hwy 401 WB Off-Ramp Total (Sensitivity Analysis) AM Peak Hour

	EBL	EBR	WBL	WBT	WBR	NBL	NBT	SBT
Lane Configurations	↩	↩	↩	↩	↩	↩	↩	↩
Traffic Volume (vph)	25	50	850	65	760	40	1240	1660
Future Volume (vph)	25	50	850	65	760	40	1240	1660
Lane Group Flow (vph)	26	52	885	432	428	42	1292	1776
Turn Type	Perm	Free	Split	NA	Prot	Perm	NA	NA
Protected Phases			3	3	3		2	6
Permitted Phases	4	Free				2		
Detector Phase	4		3	3	3	2	2	6
Switch Phase								
Minimum Initial (s)	7.0		7.0	7.0	7.0	27.0	27.0	27.0
Minimum Split (s)	39.0		14.0	14.0	14.0	34.0	34.0	34.0
Total Split (s)	40.0		42.0	42.0	42.0	53.0	53.0	53.0
Total Split (%)	29.6%		31.1%	31.1%	31.1%	39.3%	39.3%	39.3%
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lag		Lead	Lead	Lead			
Lead-Lag Optimize?	Yes		Yes	Yes	Yes			
Recall Mode	None		None	None	None	C-Min	C-Min	C-Min
v/c Ratio	0.30	0.03	0.98	0.79	0.64	0.58	0.69	0.64
Control Delay	59.7	0.0	75.6	36.5	9.7	57.2	33.5	18.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.7	0.0	75.6	36.5	9.7	57.2	33.5	18.0
Queue Length 50th (m)	7.1	0.0	127.8	68.4	5.5	10.4	179.9	122.7
Queue Length 95th (m)	14.3	0.0	#172.4	#117.5	40.6	m#16.2 m#232.1	m176.9	
Internal Link Dist (m)				220.4			38.0	231.2
Turn Bay Length (m)					150.0	35.0		
Base Capacity (vph)	205	1507	899	545	673	72	1870	2790
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.03	0.98	0.79	0.64	0.58	0.69	0.64

Intersection Summary

Cycle Length: 135

Actuated Cycle Length: 135

Offset: 20 (15%), Referenced to phase 2:NBTL and 6:SBT, Start of Green

Natural Cycle: 130

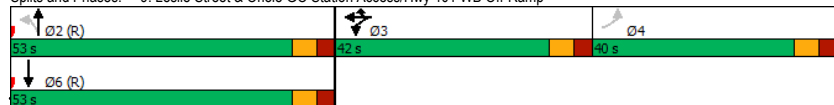
Control Type: Actuated-Coordinated

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 9: Leslie Street & Oriole GO Station Access/Hwy 401 WB Off-Ramp



Block 7

BA Group - TCS

Synchro 10 Report

FT_AM.syn

HCM Signalized Intersection Capacity Analysis

9: Leslie Street & Oriole GO Station Access/Hwy 401 WB Off-Ramp Total (Sensitivity Analysis) AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↩		↩	↩	↩	↩	↩	↩			↩	↩
Traffic Volume (vph)	25	0	50	850	65	760	40	1240	0	0	1660	45
Future Volume (vph)	25	0	50	850	65	760	40	1240	0	0	1660	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.0		3.0	6.0	6.0	6.0	6.0	6.0			6.0	
Lane Util. Factor	1.00		1.00	0.97	0.95	0.95	1.00	*0.97			*0.95	
Frpb, ped/bikes	1.00		1.00	1.00	0.98	1.00	1.00	1.00			1.00	
Flpb, ped/bikes	0.99		1.00	1.00	1.00	1.00	1.00	1.00			1.00	
Frt	1.00		0.85	1.00	0.87	0.85	1.00	1.00			1.00	
Flt Protected	0.95		1.00	1.00	1.00	1.00	0.95	1.00			1.00	
Satd. Flow (prot)	1544		1507	3373	1509	1418	1685	3505			5226	
Flt Permitted	0.50		1.00	1.00	1.00	1.00	0.08	1.00			1.00	
Satd. Flow (perm)	813		1507	3373	1509	1418	136	3505			5226	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	26	0	52	885	68	792	42	1292	0	0	1729	47
RTOR Reduction (vph)	0	0	0	0	143	296	0	0	0	0	1	0
Lane Group Flow (vph)	26	0	52	885	289	132	42	1292	0	0	1775	0
Confl. Peds. (#/hr)	15						15	10		20	20	10
Heavy Vehicles (%)	8%	0%	0%	2%	0%	1%	0%	4%	0%	0%	2%	0%
Turn Type	Perm		Free	Split	NA	Prot	Perm	NA			NA	
Protected Phases				3	3	3		2			6	
Permitted Phases	4		Free				2					
Actuated Green, G (s)	10.7		135.0	35.0	35.0	35.0	68.3	68.3			68.3	
Effective Green, g (s)	11.7		135.0	36.0	36.0	36.0	69.3	69.3			69.3	
Actuated g/C Ratio	0.09		1.00	0.27	0.27	0.27	0.51	0.51			0.51	
Clearance Time (s)	7.0			7.0	7.0	7.0	7.0	7.0			7.0	
Vehicle Extension (s)	3.0			3.0	3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)	70		1507	899	402	378	69	1799			2682	
v/s Ratio Prot				c0.26	0.19	0.09		c0.37			0.34	
v/s Ratio Perm	c0.03		0.03				0.31					
v/c Ratio	0.37		0.03	0.98	0.72	0.35	0.61	0.72			0.66	
Uniform Delay, d1	58.2		0.0	49.2	44.9	40.0	23.3	25.3			24.2	
Progression Factor	1.00		1.00	1.00	1.00	1.00	1.24	1.26			0.69	
Incremental Delay, d2	3.3		0.0	26.0	6.1	0.6	19.2	1.3			0.3	
Delay (s)	61.5		0.0	75.2	51.0	40.6	48.1	33.3			17.2	
Level of Service	E		A	E	D	D	D	C			B	
Approach Delay (s)	20.5				60.7			33.7			17.2	
Approach LOS	C				E			C			B	

Intersection Summary

HCM 2000 Control Delay	37.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	83.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Block 7

BA Group - TCS

Synchro 10 Report

FT_AM.syn

Queues

10: Leslie Street & Hwy 401 EB Off-Ramp/Lesmill Road Future Total (Sensitivity Analysis) AM Peak Hour

	↖	→	↗	↑	↘	↙	↓
Lane Group	EBL	EBT	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖	↖↗	↖	↖↗	↖	↖	↖↗
Traffic Volume (vph)	535	855	530	1580	105	500	1030
Future Volume (vph)	535	855	530	1580	105	500	1030
Lane Group Flow (vph)	468	980	552	1646	109	521	1073
Turn Type	Split	NA	Perm	NA	Perm	pm+pt	NA
Protected Phases	4	4		2		1	6
Permitted Phases			4 6		2	6	
Detector Phase	4	4	4 6	2	2	1	6
Switch Phase							
Minimum Initial (s)	7.0	7.0		20.0	20.0	6.0	20.0
Minimum Split (s)	43.0	43.0		26.0	26.0	10.0	26.0
Total Split (s)	47.0	47.0		53.0	53.0	35.0	88.0
Total Split (%)	34.8%	34.8%		39.3%	39.3%	25.9%	65.2%
Yellow Time (s)	4.0	4.0		4.0	4.0	3.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	1.0	2.0
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-3.0	-1.0
Total Lost Time (s)	5.0	5.0		5.0	5.0	1.0	5.0
Lead/Lag				Lag	Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	Yes	
Recall Mode	None	None		C-Min	C-Min	None	C-Min
v/c Ratio	0.99	0.94	0.37	0.94	0.20	1.00	0.50
Control Delay	84.8	61.8	0.7	53.6	16.1	70.1	16.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	84.8	61.8	0.7	53.6	16.1	70.1	16.8
Queue Length 50th (m)	143.6	147.1	0.0	162.8	9.7	109.7	71.0
Queue Length 95th (m)	#224.1	#191.7	0.0	#195.2	24.0 m#180.7	m60.2	
Internal Link Dist (m)		272.4		188.8			87.0
Turn Bay Length (m)	130.0				30.0	80.0	
Base Capacity (vph)	474	1044	1493	1753	542	522	2130
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.99	0.94	0.37	0.94	0.20	1.00	0.50

Intersection Summary

Cycle Length: 135

Actuated Cycle Length: 135

Offset: 57 (42%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Natural Cycle: 110

Control Type: Actuated-Coordinated

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 10: Leslie Street & Hwy 401 EB Off-Ramp/Lesmill Road



Block 7

BA Group - TCS

Synchro 10 Report

FT_AM.syn

HCM Signalized Intersection Capacity Analysis

10: Leslie Street & Hwy 401 EB Off-Ramp/Lesmill Road Future Total (Sensitivity Analysis) AM Peak Hour

	↖	→	↗	↖	↗	↖	↗	↖	↗	↖	↗	↖	↗
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↖	↖↗				↖		↖↗	↖	↖	↖↗		
Traffic Volume (vph)	535	855	0	0	0	530	0	1580	105	500	1030	0	
Future Volume (vph)	535	855	0	0	0	530	0	1580	105	500	1030	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	
Lane Width	3.0	3.5	3.5	3.5	3.5	3.0	3.5	3.5	3.0	3.0	3.5	3.5	
Total Lost time (s)	5.0	5.0				5.0		5.0	5.0	1.0	5.0		
Lane Util. Factor	0.91	0.91				1.00		0.91	1.00	1.00	0.95		
Frpb, ped/bikes	1.00	1.00				1.00		1.00	0.98	1.00	1.00		
Flpb, ped/bikes	1.00	1.00				1.00		1.00	1.00	1.00	1.00		
Frft	1.00	1.00				0.86		1.00	0.85	1.00	1.00		
Flt Protected	1.00	1.00				1.00		1.00	1.00	1.00	1.00		
Satd. Flow (prot)	1522	3355				1504		4932	1422	1848	3466		
Flt Permitted	1.00	1.00				1.00		1.00	1.00	0.08	1.00		
Satd. Flow (perm)	1522	3355				1504		4932	1422	145	3466		
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	
Adj. Flow (vph)	557	891	0	0	0	552	0	1646	109	521	1073	0	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	37	0	0	0	
Lane Group Flow (vph)	468	980	0	0	0	552	0	1646	72	521	1073	0	
Confl. Peds. (#/hr)			20	20			10		5	5		10	
Heavy Vehicles (%)	6%	1%	4%	0%	0%	2%	0%	4%	2%	1%	3%	0%	
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	4	0	0	0	
Turn Type	Split	NA				Perm		NA	Perm	pm+pt	NA		
Protected Phases	4	4						2		1	6		
Permitted Phases						4 6			2	6			
Actuated Green, G (s)	41.1	41.1				135.0		46.9	46.9	81.9	81.9		
Effective Green, g (s)	42.1	42.1				135.0		47.9	47.9	84.9	82.9		
Actuated g/C Ratio	0.31	0.31				1.00		0.35	0.35	0.63	0.61		
Clearance Time (s)	6.0	6.0						6.0	6.0	4.0	6.0		
Vehicle Extension (s)	3.0	3.0						3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	474	1046				1504		1749	504	520	2128		
v/s Ratio Prot	c0.31	0.29						c0.33		c0.25	0.31		
v/s Ratio Perm						0.37			0.05	0.38			
v/c Ratio	0.99	0.94				0.37		0.94	0.14	1.00	0.50		
Uniform Delay, d1	46.2	45.2				0.0		42.2	29.6	42.8	14.6		
Progression Factor	1.00	1.00				1.00		1.00	1.00	0.96	1.10		
Incremental Delay, d2	37.7	14.9				0.2		11.5	0.6	32.4	0.6		
Delay (s)	83.9	60.0				0.2		53.7	30.2	73.3	16.6		
Level of Service	F	E				A		D	C	E	B		
Approach Delay (s)		67.7			0.2			52.2			35.2		
Approach LOS		E			A			D			D		

Intersection Summary

HCM 2000 Control Delay	46.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	104.3%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Block 7

BA Group - TCS

Synchro 10 Report

FT_AM.syn

HCM Unsignalized Intersection Capacity Analysis 11: CTC North Access & Sheppard Avenue East

Future Total (Sensitivity Analysis) AM Peak Hour

							
Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations							
Traffic Volume (veh/h)	1435	50	35	1455	10	65	
Future Volume (Veh/h)	1435	50	35	1455	10	65	
Sign Control	Free			Free	Stop		
Grade	0%			0%	0%		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	
Hourly flow rate (vph)	1511	53	37	1532	11	68	
Pedestrians					35		
Lane Width (m)					3.0		
Walking Speed (m/s)					1.2		
Percent Blockage					2		
Right turn flare (veh)							
Median type	None			None			
Median storage (veh)							
Upstream signal (m)	144			105			
pX, platoon unblocked			0.79		0.79	0.79	
vC, conflicting volume			1599		2412	817	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol			1226		1058	236	
tC, single (s)			4.2		6.8	7.0	
tC, 2 stage (s)							
tF (s)			2.2		3.5	3.3	
p0 queue free %			91		93	88	
cM capacity (veh/h)			426		157	583	
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	1007	557	37	766	766	11	68
Volume Left	0	0	37	0	0	11	0
Volume Right	0	53	0	0	0	0	68
cSH	1700	1700	426	1700	1700	157	583
Volume to Capacity	0.59	0.33	0.09	0.45	0.45	0.07	0.12
Queue Length 95th (m)	0.0	0.0	2.3	0.0	0.0	1.8	3.1
Control Delay (s)	0.0	0.0	14.2	0.0	0.0	29.6	12.0
Lane LOS			B			D	B
Approach Delay (s)	0.0		0.3			14.4	
Approach LOS						B	
Intersection Summary							
Average Delay			0.5				
Intersection Capacity Utilization			52.1%		ICU Level of Service		A
Analysis Period (min)			15				

Block 7
BA Group - TCS

Synchro 10 Report
FT_AM.syn

Queues

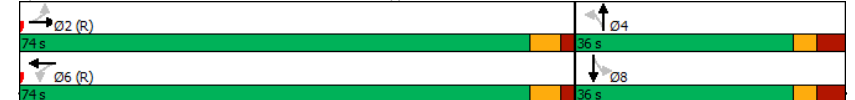
1: Bessarion Road/Burbank Drive & Sheppard Avenue East Future Total (Sensitivity Analysis) PM Peak Hour

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	40	1695	30	1710	10	5	220	20
Future Volume (vph)	40	1695	30	1710	10	5	220	20
Lane Group Flow (vph)	41	1740	31	1934	10	25	224	61
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		2		6		4		8
Permitted Phases	2		6		4		8	
Detector Phase	2	2	6	6	4	4	8	8
Switch Phase								
Minimum Initial (s)	24.0	24.0	24.0	24.0	7.0	7.0	7.0	7.0
Minimum Split (s)	30.0	30.0	30.0	30.0	35.0	35.0	35.0	35.0
Total Split (s)	74.0	74.0	74.0	74.0	36.0	36.0	36.0	36.0
Total Split (%)	67.3%	67.3%	67.3%	67.3%	32.7%	32.7%	32.7%	32.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	4.0	4.0	4.0	4.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	6.0	6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	C-Min	C-Min	C-Min	C-Min	None	None	None	None
v/c Ratio	0.63	0.73	0.33	0.82	0.04	0.07	0.79	0.16
Control Delay	60.7	14.5	13.8	12.7	30.8	15.1	59.4	23.1
Queue Delay	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0
Total Delay	60.7	14.5	13.8	12.9	30.8	15.1	59.4	23.1
Queue Length 50th (m)	4.9	122.1	1.6	120.4	1.8	0.9	47.4	7.0
Queue Length 95th (m)	#28.7	172.5	m2.7	68.7	6.1	7.6	72.9	17.4
Internal Link Dist (m)		449.7		65.9		131.2		187.8
Turn Bay Length (m)	30.0		30.0		15.0		40.0	
Base Capacity (vph)	65	2391	93	2346	345	455	348	456
Starvation Cap Reductn	0	0	0	48	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.73	0.33	0.84	0.03	0.05	0.64	0.13

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 57 (52%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Bessarion Road/Burbank Drive & Sheppard Avenue East



Block 7
BA Group - TCS

Synchro 10 Report
FT_PM.syn

HCM Signalized Intersection Capacity Analysis

1: Bessarion Road/Burbank Drive & Sheppard Avenue East Future Total (Sensitivity Analysis) PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	40	1695	10	30	1710	185	10	5	20	220	20	40
Future Volume (vph)	40	1695	10	30	1710	185	10	5	20	220	20	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.5	3.0	3.5	3.5	3.0	3.5	3.5	3.0	3.5	3.5
Total Lost time (s)	5.0	5.0		5.0	5.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	0.98		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00		0.98	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.88		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1685	3529		1685	3453		1676	1615		1640	1616	
Flt Permitted	0.05	1.00		0.08	1.00		0.72	1.00		0.74	1.00	
Satd. Flow (perm)	95	3529		139	3453		1265	1615		1279	1616	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	41	1730	10	31	1745	189	10	5	20	224	20	41
RTOR Reduction (vph)	0	0	0	0	6	0	0	16	0	0	17	0
Lane Group Flow (vph)	41	1740	0	31	1928	0	10	9	0	224	44	0
Confl. Peds. (#/hr)	25		55	55		25	5		15	15		5
Heavy Vehicles (%)	0%	1%	0%	0%	1%	2%	0%	0%	0%	1%	6%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	73.6	73.6		73.6	73.6		23.4	23.4		23.4	23.4	
Effective Green, g (s)	74.6	74.6		74.6	74.6		24.4	24.4		24.4	24.4	
Actuated g/C Ratio	0.68	0.68		0.68	0.68		0.22	0.22		0.22	0.22	
Clearance Time (s)	6.0	6.0		6.0	6.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	64	2393		94	2341		280	358		283	358	
v/s Ratio Prot		0.49			0.56			0.01			0.03	
v/s Ratio Perm	0.43			0.22			0.01			0.18		
v/c Ratio	0.64	0.73		0.33	0.82		0.04	0.03		0.79	0.12	
Uniform Delay, d1	10.1	11.2		7.3	12.9		33.6	33.5		40.4	34.2	
Progression Factor	1.00	1.00		0.60	0.70		1.00	1.00		1.00	1.00	
Incremental Delay, d2	40.2	2.0		6.4	2.4		0.1	0.0		14.0	0.2	
Delay (s)	50.2	13.2		10.8	11.4		33.6	33.5		54.4	34.4	
Level of Service	D	B		B	B		C	C		D	C	
Approach Delay (s)		14.1			11.4			33.6			50.1	
Approach LOS		B			B			C			D	

Intersection Summary

HCM 2000 Control Delay	15.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	82.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Queues

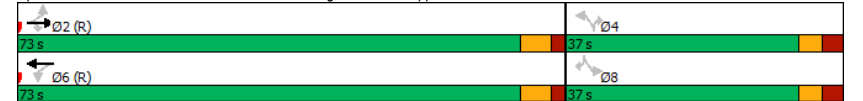
2: CTC West Access/Blue Ridge Road & Sheppard Avenue East Future Total (Sensitivity Analysis) PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	NBL	NBR	SBL	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBR	SBL	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	15	1625	250	25	1790	145	25	20	10
Future Volume (vph)	15	1625	250	25	1790	145	25	20	10
Lane Group Flow (vph)	16	1711	263	26	1942	153	26	21	11
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	Perm	Perm
Protected Phases		2			6				
Permitted Phases	2		2	6		4	4	8	8
Detector Phase	2	2	2	6	6	4	4	8	8
Switch Phase									
Minimum Initial (s)	27.0	27.0	27.0	27.0	27.0	7.0	7.0	7.0	7.0
Minimum Split (s)	33.0	33.0	33.0	33.0	33.0	36.0	36.0	36.0	36.0
Total Split (s)	73.0	73.0	73.0	73.0	73.0	37.0	37.0	37.0	37.0
Total Split (%)	66.4%	66.4%	66.4%	66.4%	66.4%	33.6%	33.6%	33.6%	33.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	C-Min	C-Min	C-Min	C-Min	C-Min	None	None	None	None
v/c Ratio	0.18	0.66	0.27	0.20	0.74	0.56	0.10	0.08	0.04
Control Delay	8.9	6.0	2.9	9.0	10.7	48.5	10.5	35.2	2.4
Queue Delay	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Total Delay	8.9	6.0	2.9	9.0	10.7	48.5	10.5	35.2	2.4
Queue Length 50th (m)	0.7	54.0	6.6	1.9	104.5	32.8	0.0	4.1	0.0
Queue Length 95th (m)	m1.3	70.6	m12.5	m2.4	78.6	46.0	6.2	9.8	1.3
Internal Link Dist (m)		32.6			120.2				
Turn Bay Length (m)	30.0		25.0	35.0					
Base Capacity (vph)	88	2603	965	131	2615	482	449	484	452
Starvation Cap Reductn	0	133	0	0	70	0	0	0	0
Spillback Cap Reductn	0	0	0	0	39	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.69	0.27	0.20	0.76	0.32	0.06	0.04	0.02

Intersection Summary

Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 56 (51%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 2: CTC West Access/Blue Ridge Road & Sheppard Avenue East



HCM Signalized Intersection Capacity Analysis

2: CTC West Access/Blue Ridge Road & Sheppard Avenue East Future Total (Sensitivity Analysis) PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↱	↰	↰	↰↱	↰	↰	↰	↰	↰	↰	↰
Traffic Volume (vph)	15	1625	250	25	1790	55	145	0	25	20	0	10
Future Volume (vph)	15	1625	250	25	1790	55	145	0	25	20	0	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.5	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.86	1.00	1.00	1.00	0.98	1.00	0.98	1.00	0.98	1.00
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00	0.99	1.00	0.99	1.00	0.99	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	1.00	0.85	1.00	0.85	1.00	0.85	1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1685	3500	1263	1674	3513	1659	1473	1666	1481			
Flt Permitted	0.07	1.00	1.00	0.10	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (perm)	119	3500	1263	176	3513	1659	1473	1666	1481			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	16	1711	263	26	1884	58	153	0	26	21	0	11
RTOR Reduction (vph)	0	0	26	0	1	0	0	0	22	0	0	9
Lane Group Flow (vph)	16	1711	237	26	1941	0	153	0	4	21	0	2
Confl. Peds. (#/hr)	20		60	60		20	5		10	10		5
Heavy Vehicles (%)	0%	2%	1%	0%	1%	0%	1%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	4	0	0	0	0	0	0	0	0	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	Perm	Perm	Perm	Perm	Perm
Protected Phases	2		2	6		4		4	8		8	
Actuated Green, G (s)	80.8	80.8	80.8	80.8	80.8	17.2	17.2	17.2	17.2			
Effective Green, g (s)	81.8	81.8	81.8	81.8	81.8	18.2	18.2	18.2	18.2			
Actuated g/C Ratio	0.74	0.74	0.74	0.74	0.74	0.17	0.17	0.17	0.17			
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0			
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	88	2602	939	130	2612	274	243	275	245			
v/s Ratio Prot		0.49			c0.55							
v/s Ratio Perm	0.13		0.19	0.15		c0.09	0.00	0.01	0.00			
v/c Ratio	0.18	0.66	0.25	0.20	0.74	0.56	0.02	0.08	0.01			
Uniform Delay, d1	4.2	7.1	4.4	4.2	8.1	42.2	38.4	38.8	38.4			
Progression Factor	0.70	0.59	0.68	0.92	0.95	1.00	1.00	1.00	1.00			
Incremental Delay, d2	3.1	0.9	0.4	2.0	1.1	2.5	0.0	0.1	0.0			
Delay (s)	6.0	5.1	3.5	5.9	8.8	44.7	38.4	38.9	38.4			
Level of Service	A	A	A	A	A	D	D	D	D			
Approach Delay (s)		4.9			8.8		43.8			38.7		
Approach LOS		A			A		D			D		

Intersection Summary			
HCM 2000 Control Delay	8.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	80.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Block 7
BA Group - TCS

Synchro 10 Report
FT_PM.syn

Queues

3: Provost Drive/Ambrose Road & Sheppard Avenue East Future Total (Sensitivity Analysis) PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBR	SBL	SBR
Lane Configurations	↰	↰↱	↰	↰	↰↱	↰	↰	↰	↰
Traffic Volume (vph)	15	1430	230	290	1680	175	200	195	30
Future Volume (vph)	15	1430	230	290	1680	175	200	195	30
Lane Group Flow (vph)	15	1444	232	293	1859	177	202	197	30
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+ov	Perm	Perm
Protected Phases		2		1	6		1		
Permitted Phases	2		2	6		4		8	8
Detector Phase	2	2	2	1	6	4	1	8	8
Switch Phase									
Minimum Initial (s)	30.0	30.0	30.0	6.0	30.0	30.0	6.0	30.0	30.0
Minimum Split (s)	37.0	37.0	37.0	10.0	37.0	38.0	10.0	38.0	38.0
Total Split (s)	53.0	53.0	53.0	18.0	71.0	39.0	18.0	39.0	39.0
Total Split (%)	48.2%	48.2%	48.2%	16.4%	64.5%	35.5%	16.4%	35.5%	35.5%
Yellow Time (s)	4.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	1.0	3.0	4.0	1.0	4.0	4.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	6.0	6.0	6.0	3.0	6.0	7.0	3.0	7.0	7.0
Lead/Lag	Lag	Lag	Lag	Lead			Lead		
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes		
Recall Mode	C-Min	C-Min	C-Min	None	C-Min	None	None	None	None
v/c Ratio	0.23	0.97	0.34	0.95	0.90	0.38	0.29	0.43	0.06
Control Delay	24.9	39.9	10.2	69.1	26.2	34.7	14.5	35.8	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0
Total Delay	24.9	39.9	10.2	69.1	26.5	34.7	14.5	35.8	0.3
Queue Length 50th (m)	1.5	113.8	13.2	49.5	177.7	32.2	20.3	36.4	0.0
Queue Length 95th (m)	m2.1	#214.0	19.9	#104.1	220.3	52.8	35.9	58.7	0.0
Internal Link Dist (m)		81.5			111.0				
Turn Bay Length (m)	40.0		40.0	165.0					
Base Capacity (vph)	64	1495	679	310	2072	482	685	473	482
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	27	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.97	0.34	0.95	0.91	0.37	0.29	0.42	0.06

Intersection Summary			
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 72 (65%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 95			
Control Type: Actuated-Coordinated			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 3: Provost Drive/Ambrose Road & Sheppard Avenue East



Block 7
BA Group - TCS

Synchro 10 Report
FT_PM.syn

HCM Signalized Intersection Capacity Analysis

3: Provost Drive/Ambrose Road & Sheppard Avenue East

Future Total (Sensitivity Analysis) PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↩	↩↩	↩	↩	↩↩	↩	↩	↩	↩	↩	↩	↩
Traffic Volume (vph)	15	1430	230	290	1680	160	175	0	200	195	0	30
Future Volume (vph)	15	1430	230	290	1680	160	175	0	200	195	0	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.5	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	6.0	6.0	6.0	3.0	6.0		7.0		3.0	7.0		7.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00		1.00	1.00		1.00
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00		1.00		0.97	1.00		0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.98		1.00	0.97		1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00		0.85	1.00		0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95		1.00	0.95		1.00
Satd. Flow (prot)	1682	3500	1449	1668	3444		1657		1435	1629		1465
Flt Permitted	0.09	1.00	1.00	0.08	1.00		0.95		1.00	0.95		1.00
Satd. Flow (perm)	151	3500	1449	140	3444		1657		1435	1629		1465
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	15	1444	232	293	1697	162	177	0	202	197	0	30
RTOR Reduction (vph)	0	0	60	0	6	0	0	0	23	0	0	22
Lane Group Flow (vph)	15	1444	172	293	1853	0	177	0	179	197	0	8
Confl. Peds. (#/hr)	20		25	25		20	15		30	30		15
Heavy Vehicles (%)	0%	2%	0%	1%	1%	1%	0%	0%	2%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	4	4	0	0	0	0	0	0
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm		pm+ov	Perm		Perm
Protected Phases		2		1	6				1			
Permitted Phases	2		2	6			4		4	8		8
Actuated Green, G (s)	46.0	46.0	46.0	65.0	65.0		30.0		45.0	30.0		30.0
Effective Green, g (s)	47.0	47.0	47.0	66.0	66.0		31.0		47.0	31.0		31.0
Actuated g/C Ratio	0.43	0.43	0.43	0.60	0.60		0.28		0.43	0.28		0.28
Clearance Time (s)	7.0	7.0	7.0	4.0	7.0		8.0		4.0	8.0		8.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0		3.0
Lane Grp Cap (vph)	64	1495	619	306	2066		466		613	459		412
v/s Ratio Prot		0.41		c0.14	0.54				0.04			
v/s Ratio Perm	0.10		0.12	c0.43			0.11		0.08	c0.12		0.01
v/c Ratio	0.23	0.97	0.28	0.96	0.90		0.38		0.29	0.43		0.02
Uniform Delay, d1	20.0	30.7	20.5	34.6	19.0		31.8		20.6	32.3		28.5
Progression Factor	0.80	0.81	0.80	1.00	1.00		1.00		1.00	1.00		1.00
Incremental Delay, d2	6.6	13.9	0.9	39.7	6.6		0.5		0.3	0.6		0.0
Delay (s)	22.5	39.0	17.3	74.2	25.7		32.3		20.9	32.9		28.6
Level of Service	C	D	B	E	C		C		C	C		C
Approach Delay (s)		35.8			32.3		26.2			32.3		
Approach LOS		D			C		C			C		

Intersection Summary

HCM 2000 Control Delay	33.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	107.5%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Block 7
BA Group - TCS

Synchro 10 Report
FT_PM.syn

Queues

4: Leslie Street & Sheppard Avenue East

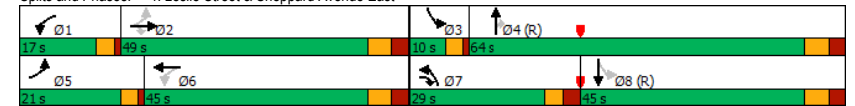
Future Total (Sensitivity Analysis) PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↩	↩↩	↩	↩	↩↩	↩	↩	↩	↩	↩
Traffic Volume (vph)	300	1295	615	230	1215	625	1120	455	110	515
Future Volume (vph)	300	1295	615	230	1215	625	1120	455	110	515
Lane Group Flow (vph)	303	1308	621	232	1379	631	1131	460	111	798
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	Prot	NA	Perm	pm+pt	NA
Protected Phases	5	2	7	1	6	7	4		3	8
Permitted Phases	2		2	6				4	8	
Detector Phase	5	2	7	1	6	7	4	4	3	8
Switch Phase										
Minimum Initial (s)	6.0	38.0	6.0	6.0	38.0	6.0	38.0	38.0	6.0	38.0
Minimum Split (s)	10.0	45.0	12.0	10.0	45.0	12.0	45.0	45.0	10.0	45.0
Total Split (s)	21.0	49.0	29.0	17.0	45.0	29.0	64.0	64.0	10.0	45.0
Total Split (%)	15.0%	35.0%	20.7%	12.1%	32.1%	20.7%	45.7%	45.7%	7.1%	32.1%
Yellow Time (s)	3.0	4.0	3.0	3.0	4.0	3.0	4.0	4.0	3.0	4.0
All-Red Time (s)	1.0	3.0	3.0	1.0	3.0	3.0	3.0	3.0	1.0	3.0
Lost Time Adjust (s)	-3.0	-1.0	-3.0	-2.0	-1.0	-3.0	-1.0	-1.0	-2.0	-1.0
Total Lost Time (s)	1.0	6.0	3.0	2.0	6.0	3.0	6.0	6.0	2.0	6.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min	None	None	Min	None	C-Min	C-Min	None	C-Min
v/c Ratio	0.99	0.84	0.75	0.96	1.00	0.99	0.77	0.68	0.62	0.59
Control Delay	89.3	51.2	21.8	87.2	73.8	89.4	39.7	25.2	36.4	40.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	89.3	51.2	21.8	87.2	73.8	89.4	39.7	25.2	36.4	40.1
Queue Length 50th (m)	72.5	130.5	80.4	51.7	146.5	95.6	147.8	66.7	16.4	65.1
Queue Length 95th (m)	#135.0	150.2	126.0	#106.6	#183.1	#136.3	176.5	109.7	27.6	80.2
Internal Link Dist (m)		434.4			1078.4		224.4			40.9
Turn Bay Length (m)	170.0		130.0	200.0		175.0				
Base Capacity (vph)	306	1559	828	241	1379	638	1464	676	179	1359
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.99	0.84	0.75	0.96	1.00	0.99	0.77	0.68	0.62	0.59

Intersection Summary

Cycle Length: 140
Actuated Cycle Length: 140
Offset: 77 (55%), Referenced to phase 4:NBT and 8:SBTL, Start of Green
Natural Cycle: 135
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Leslie Street & Sheppard Avenue East



Block 7
BA Group - TCS

Synchro 10 Report
FT_PM.syn

HCM Signalized Intersection Capacity Analysis

4: Leslie Street & Sheppard Avenue East

Future Total (Sensitivity Analysis) PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↰↰	↰	↰	↰↰↰	↰	↰↰	↰↰	↰	↰	↰↰	↰
Traffic Volume (vph)	300	1295	615	230	1215	150	625	1120	455	110	515	275
Future Volume (vph)	300	1295	615	230	1215	150	625	1120	455	110	515	275
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.5	3.0	3.5	3.0	3.0	3.5	3.5
Total Lost time (s)	1.0	6.0	3.0	2.0	6.0		3.0	6.0	6.0	2.0	6.0	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		0.97	0.95	1.00	1.00	0.91	
Frpb, ped/bikes	1.00	1.00	0.92	1.00	0.99		1.00	1.00	0.92	1.00	0.97	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	0.95	
Flt Protected	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1773	5079	1387	1755	4914		3440	3535	1375	1683	4634	
Flt Permitted	0.10	1.00	1.00	0.10	1.00		1.00	1.00	1.00	0.15	1.00	
Satd. Flow (perm)	169	5079	1387	175	4914		3440	3535	1375	273	4634	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	303	1308	621	232	1227	152	631	1131	460	111	520	278
RTOR Reduction (vph)	0	0	117	0	11	0	0	0	107	0	69	0
Lane Group Flow (vph)	303	1308	504	232	1368	0	631	1131	353	111	729	0
Confl. Peds. (#/hr)	80		105	105		80	65		60	60		65
Heavy Vehicles (%)	0%	1%	0%	1%	1%	1%	0%	1%	0%	0%	1%	2%
Bus Blockages (#/hr)	0	0	0	0	4	4	0	0	3	0	4	4
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		Prot	NA	Perm	pm+pt	NA	
Protected Phases	5	2	7	1	6		7	4		3	8	
Permitted Phases	2		2	6					4	8		
Actuated Green, G (s)	59.0	42.0	65.0	51.0	38.0		23.0	57.0	44.0	38.0		
Effective Green, g (s)	62.0	43.0	71.0	55.0	39.0		26.0	58.0	58.0	48.0	39.0	
Actuated g/C Ratio	0.44	0.31	0.51	0.39	0.28		0.19	0.41	0.41	0.34	0.28	
Clearance Time (s)	4.0	7.0	6.0	4.0	7.0		6.0	7.0	7.0	4.0	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	
Lane Grp Cap (vph)	303	1559	703	238	1368		638	1464	569	174	1290	
v/s Ratio Prot	c0.14	0.26	0.13	0.10	0.28		c0.18	c0.32		0.04	0.16	
v/s Ratio Perm	0.30		0.23	c0.28					0.26	0.18		
v/c Ratio	1.00	0.84	0.72	0.97	1.00		0.99	0.77	0.62	0.64	0.57	
Uniform Delay, d1	44.6	45.3	26.7	40.7	50.5		56.9	35.3	32.3	33.5	43.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	51.7	4.1	3.5	50.8	24.4		32.5	4.0	5.0	7.5	1.8	
Delay (s)	96.3	49.4	30.2	91.5	74.9		89.3	39.3	37.3	41.0	45.0	
Level of Service	F	D	C	F	E		F	D	D	D	D	
Approach Delay (s)		50.4			77.3			53.1			44.5	
Approach LOS		D			E			D			D	

Intersection Summary

HCM 2000 Control Delay	56.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	114.5%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Block 7
BA Group - TCS

Synchro 10 Report
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Queues

8: Leslie Street & Esther Shiner Boulevard

Future Total (Sensitivity Analysis) PM Peak Hour

Lane Group	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBT	SBR
Lane Configurations	↰	↰	↰	↰	↰↰↰	↰↰↰	↰↰↰	↰↰↰	↰
Traffic Volume (vph)	200	930	150	70	555	1895	135	1325	190
Future Volume (vph)	200	930	150	70	555	1895	135	1325	190
Lane Group Flow (vph)	208	969	156	73	578	1974	141	1380	198
Turn Type	Perm	pt+ov	Perm	Perm	pm+pt	NA	Perm	NA	Perm
Protected Phases		4 5			5	2		6	
Permitted Phases	4		8	8	2		2		6
Detector Phase	4	4 5	8	8	5	2	2	6	6
Switch Phase									
Minimum Initial (s)	7.0		7.0	7.0	6.0	25.0	25.0	25.0	25.0
Minimum Split (s)	46.0		46.0	46.0	10.0	31.0	31.0	31.0	31.0
Total Split (s)	46.0		46.0	46.0	40.0	79.0	79.0	39.0	39.0
Total Split (%)	36.8%		36.8%	36.8%	32.0%	63.2%	63.2%	31.2%	31.2%
Yellow Time (s)	4.0		4.0	4.0	3.0	4.0	4.0	4.0	4.0
All-Red Time (s)	4.0		4.0	4.0	1.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-2.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	7.0		7.0	7.0	2.0	5.0	5.0	5.0	5.0
Lead/Lag					Lead		Lag	Lag	
Lead-Lag Optimize?					Yes		Yes	Yes	
Recall Mode	None		None	None	None	C-Min	C-Min	C-Min	C-Min
v/c Ratio	0.43	0.93	0.30	0.15	0.98	0.66	0.17	1.00	0.37
Control Delay	37.4	30.6	34.7	10.7	45.2	16.2	1.3	69.6	6.9
Queue Delay	0.0	38.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.4	69.0	34.7	10.7	45.2	16.2	1.3	69.6	6.9
Queue Length 50th (m)	42.6	168.1	30.6	2.2	138.2	144.3	3.1	131.1	0.0
Queue Length 95th (m)	66.5	#295.3	49.7	13.5 m	#142.7	m146.4	m2.6	#166.7	18.6
Internal Link Dist (m)						231.2		224.4	
Turn Bay Length (m)					150.0		170.0		175.0
Base Capacity (vph)	489	1047	515	483	587	3006	831	1381	536
Starvation Cap Reductn	0	152	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	1.08	0.30	0.15	0.98	0.66	0.17	1.00	0.37

Intersection Summary

Cycle Length: 125
Actuated Cycle Length: 125
Offset: 98 (78%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 8: Leslie Street & Esther Shiner Boulevard



Block 7
BA Group - TCS

Synchro 10 Report
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HCM Signalized Intersection Capacity Analysis

8: Leslie Street & Esther Shiner Boulevard

Future Total (Sensitivity Analysis) PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	→	↱	↰	→	↱	↰	↑	↱	↰	↑	↱
Traffic Volume (vph)	200	0	930	150	0	70	555	1895	135	0	1325	190
Future Volume (vph)	200	0	930	150	0	70	555	1895	135	0	1325	190
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.5	3.5	3.0
Total Lost time (s)	7.0		7.0	7.0		7.0	2.0	5.0	5.0		5.0	5.0
Lane Util. Factor	1.00		1.00	1.00		1.00	1.00	0.91	1.00		0.91	1.00
Frpb, ped/bikes	1.00		1.00	1.00		0.94	1.00	1.00	0.93		1.00	0.97
Flpb, ped/bikes	0.95		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00
Flt	1.00		0.85	1.00		0.85	1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95		1.00	0.95		1.00	1.00	1.00	1.00		1.00	1.00
Satd. Flow (prot)	1570		1507	1652		1416	1739	5079	1308		5079	1442
Flt Permitted	0.95		1.00	0.95		1.00	0.11	1.00	1.00		1.00	1.00
Satd. Flow (perm)	1570		1507	1652		1416	188	5079	1308		5079	1442
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	208	0	969	156	0	73	578	1974	141	0	1380	198
RTOR Reduction (vph)	0	0	86	0	0	42	0	0	58	0	0	144
Lane Group Flow (vph)	208	0	883	156	0	31	578	1974	83	0	1380	54
Confl. Peds. (#/hr)	50					50	15		20	20		15
Heavy Vehicles (%)	2%	0%	0%	2%	0%	0%	2%	1%	6%	0%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	3	0	0	0
Turn Type	Perm		pt+ov	Perm		Perm	pm+pt	NA	Perm		NA	Perm
Protected Phases			4 5				5 2				6	
Permitted Phases	4			8		8	2		2			6
Actuated Green, G (s)	38.0		82.0	38.0		38.0	73.0	73.0	73.0		33.0	33.0
Effective Green, g (s)	39.0		83.0	39.0		39.0	75.0	74.0	74.0		34.0	34.0
Actuated g/C Ratio	0.31		0.66	0.31		0.31	0.60	0.59	0.59		0.27	0.27
Clearance Time (s)	8.0			8.0		8.0	4.0	6.0	6.0		6.0	6.0
Vehicle Extension (s)	3.0			3.0		3.0	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	489		1000	515		441	584	3006	774		1381	392
v/s Ratio Prot			c0.59				c0.30	0.39			c0.27	
v/s Ratio Perm	0.13			0.09		0.02	0.29		0.06			0.04
v/c Ratio	0.43		0.88	0.30		0.07	0.99	0.66	0.11		1.00	0.14
Uniform Delay, d1	34.1		17.0	32.7		30.2	36.4	17.0	11.1		45.5	34.4
Progression Factor	1.00		1.00	1.00		1.00	0.80	0.92	0.67		1.00	1.00
Incremental Delay, d2	0.6		9.3	0.3		0.1	17.3	0.3	0.1		24.0	0.7
Delay (s)	34.7		26.3	33.0		30.3	46.4	16.0	7.5		69.5	35.1
Level of Service	C		C	C		C	D	B	A		E	D
Approach Delay (s)		27.8			32.1		22.1				65.2	
Approach LOS		C			C		C				E	
Intersection Summary												
HCM 2000 Control Delay			35.7									
HCM 2000 Volume to Capacity ratio			1.00									
Actuated Cycle Length (s)			125.0				Sum of lost time (s)		16.0			
Intersection Capacity Utilization			107.3%				ICU Level of Service		G			
Analysis Period (min)			15									
c Critical Lane Group												

Block 7
BA Group - TCS

Synchro 10 Report
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Queues

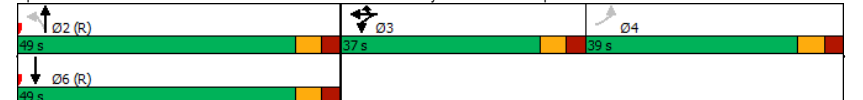
9: Leslie Street & Oriole GO Station Access/Hwy 401 WB Off-Ramp

Lane Group	EBL	EBR	WBL	WBT	WBR	NBL	NBT	SBT
Lane Configurations	↰	↱	↰	↱	↱	↰	↑	↱
Traffic Volume (vph)	105	145	715	15	1050	15	1430	1725
Future Volume (vph)	105	145	715	15	1050	15	1430	1725
Lane Group Flow (vph)	109	151	745	552	558	16	1490	1818
Turn Type	Perm	Free	Split	NA	Prot	Perm	NA	NA
Protected Phases			3	3	3		2	6
Permitted Phases	4	Free				2		
Detector Phase	4		3	3	3	2	2	6
Switch Phase								
Minimum Initial (s)	7.0		7.0	7.0	7.0	27.0	27.0	27.0
Minimum Split (s)	39.0		14.0	14.0	14.0	34.0	34.0	34.0
Total Split (s)	39.0		37.0	37.0	37.0	49.0	49.0	49.0
Total Split (%)	31.2%		29.6%	29.6%	29.6%	39.2%	39.2%	39.2%
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lag		Lead	Lead	Lead			
Lead-Lag Optimize?	Yes		Yes	Yes	Yes			
Recall Mode	None		None	None	None	C-Min	C-Min	C-Min
v/c Ratio	0.75	0.10	0.89	0.96	0.99	0.29	1.00	0.84
Control Delay	76.2	0.1	59.5	51.8	59.2	33.5	51.2	30.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.2	0.1	59.5	51.8	59.2	33.5	51.2	30.8
Queue Length 50th (m)	26.8	0.0	96.3	83.4	87.7	0.0	~217.8	167.1
Queue Length 95th (m)	45.0	0.0	#130.0	#163.1	#170.6	m4.1	#302.2 m#200.6	
Internal Link Dist (m)				220.4			38.0	231.2
Turn Bay Length (m)					150.0	35.0		
Base Capacity (vph)	206	1507	836	576	564	56	1491	2159
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.53	0.10	0.89	0.96	0.99	0.29	1.00	0.84

Intersection Summary

Cycle Length: 125
Actuated Cycle Length: 125
Offset: 25 (20%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
- Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 9: Leslie Street & Oriole GO Station Access/Hwy 401 WB Off-Ramp



HCM Signalized Intersection Capacity Analysis

9: Leslie Street & Oriole GO Station Access/Hwy 401 WB Off-Ramp Total (Sensitivity Analysis) PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	→	↱	↰	→	↱	↰	→	↱	↰	→	↱
Traffic Volume (vph)	105	0	145	715	15	1050	15	1430	0	0	1725	20
Future Volume (vph)	105	0	145	715	15	1050	15	1430	0	0	1725	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.0		3.0	6.0	6.0	6.0	6.0	6.0			6.0	
Lane Util. Factor	1.00		1.00	0.97	0.95	0.95	1.00	0.95			0.91	
Frpb, ped/bikes	1.00		1.00	1.00	0.97	1.00	1.00	1.00			1.00	
Flpb, ped/bikes	0.99		1.00	1.00	1.00	1.00	1.00	1.00			1.00	
Frt	1.00		0.85	1.00	0.85	0.85	1.00	1.00			1.00	
Flt Protected	0.95		1.00	1.00	1.00	1.00	0.95	1.00			1.00	
Satd. Flow (prot)	1671		1507	3373	1481	1432	1685	3535			5119	
Flt Permitted	0.45		1.00	1.00	1.00	1.00	0.08	1.00			1.00	
Satd. Flow (perm)	784		1507	3373	1481	1432	135	3535			5119	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	109	0	151	745	16	1094	16	1490	0	0	1797	21
RTOR Reduction (vph)	0	0	0	0	210	210	0	0	0	0	1	0
Lane Group Flow (vph)	109	0	151	745	342	348	16	1490	0	0	1817	0
Confl. Peds. (#/hr)	15					15	5		10	10		5
Heavy Vehicles (%)	0%	0%	0%	2%	0%	0%	0%	1%	0%	0%	0%	0%
Turn Type	Perm		Free	Split	NA	Prot	Perm	NA			NA	
Protected Phases				3	3	3		2			6	
Permitted Phases	4		Free				2					
Actuated Green, G (s)	22.3		125.0	30.0	30.0	30.0	51.7	51.7			51.7	
Effective Green, g (s)	23.3		125.0	31.0	31.0	31.0	52.7	52.7			52.7	
Actuated g/C Ratio	0.19		1.00	0.25	0.25	0.25	0.42	0.42			0.42	
Clearance Time (s)	7.0			7.0	7.0	7.0	7.0	7.0			7.0	
Vehicle Extension (s)	3.0			3.0	3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)	146		1507	836	367	355	56	1490			2158	
v/s Ratio Prot				0.22	0.23	c0.24		c0.42			0.36	
v/s Ratio Perm	c0.14		0.10				0.12					
v/c Ratio	0.75		0.10	0.89	0.93	0.98	0.29	1.00			0.84	
Uniform Delay, d1	48.1		0.0	45.4	46.0	46.7	23.8	36.1			32.4	
Progression Factor	1.00		1.00	1.00	1.00	1.00	0.75	0.83			0.86	
Incremental Delay, d2	18.6		0.1	11.7	30.2	42.4	8.9	19.7			1.6	
Delay (s)	66.7		0.1	57.1	76.1	89.1	26.7	49.8			29.4	
Level of Service	E		A	E	E	F	C	D			C	
Approach Delay (s)	28.0				72.4			49.6			29.4	
Approach LOS	C				E			D			C	

Intersection Summary

HCM 2000 Control Delay	49.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	103.5%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Block 7
BA Group - TCS

Synchro 10 Report
FT_PM.syn

Queues

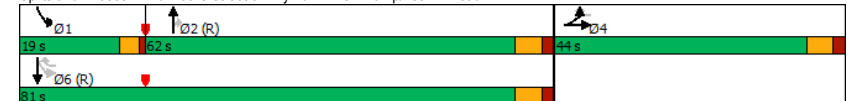
10: Leslie Street & Hwy 401 EB Off-Ramp/Lesmill Road Future Total (Sensitivity Analysis) PM Peak Hour

Lane Group	EBL	EBT	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰	↱	↱	↱	↱	↰	↱
Traffic Volume (vph)	505	125	880	2090	110	240	1120
Future Volume (vph)	505	125	880	2090	110	240	1120
Lane Group Flow (vph)	255	381	889	2111	111	242	1131
Turn Type	Split	NA	Perm	NA	Perm	pm+pt	NA
Protected Phases	4	4		2		1	6
Permitted Phases			4 6		2	6	
Detector Phase	4	4	4 6	2	2	1	6
Switch Phase							
Minimum Initial (s)	7.0	7.0		20.0	20.0	6.0	20.0
Minimum Split (s)	43.0	43.0		26.0	26.0	10.0	26.0
Total Split (s)	44.0	44.0		62.0	62.0	19.0	81.0
Total Split (%)	35.2%	35.2%		49.6%	49.6%	15.2%	64.8%
Yellow Time (s)	4.0	4.0		4.0	4.0	3.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	1.0	2.0
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-3.0	-1.0
Total Lost Time (s)	5.0	5.0		5.0	5.0	1.0	5.0
Lead/Lag				Lag	Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	Yes	
Recall Mode	None	None		C-Min	C-Min	None	C-Min
v/c Ratio	0.67	0.49	0.59	0.80	0.15	0.74	0.47
Control Delay	50.8	42.0	1.7	28.7	9.5	28.8	12.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.8	42.0	1.7	28.7	9.5	28.8	12.3
Queue Length 50th (m)	65.6	46.5	0.0	163.8	6.4	39.5	112.7
Queue Length 95th (m)	89.5	57.3	0.0	208.0	18.6	m54.1	m140.7
Internal Link Dist (m)		272.4		188.8			87.0
Turn Bay Length (m)	130.0				30.0	80.0	
Base Capacity (vph)	498	1019	1518	2650	760	344	2428
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.37	0.59	0.80	0.15	0.70	0.47

Intersection Summary

Cycle Length: 125
Actuated Cycle Length: 125
Offset: 101 (81%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 10: Leslie Street & Hwy 401 EB Off-Ramp/Lesmill Road



Block 7
BA Group - TCS

Synchro 10 Report
FT_PM.syn

HCM Signalized Intersection Capacity Analysis

10: Leslie Street & Hwy 401 EB Off-Ramp/Lesmill Road

Future Total (Sensitivity Analysis) PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↱				↱		↰↱↲	↱	↰	↰↱	
Traffic Volume (vph)	505	125	0	0	0	880	0	2090	110	240	1120	0
Future Volume (vph)	505	125	0	0	0	880	0	2090	110	240	1120	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900
Lane Width	3.0	3.5	3.5	3.5	3.5	3.0	3.5	3.5	3.0	3.0	3.5	3.5
Total Lost time (s)	5.0	5.0				5.0	5.0	5.0	1.0	5.0		
Lane Util. Factor	0.91	0.91				1.00	0.91	1.00	1.00	0.95		
Frpb, ped/bikes	1.00	1.00				1.00	1.00	0.97	1.00	1.00		
Flpb, ped/bikes	1.00	1.00				1.00	1.00	1.00	1.00	1.00		
Frft	1.00	1.00				0.86	1.00	0.85	1.00	1.00		
Flt Protected	1.00	0.97				1.00	1.00	1.00	1.00	1.00		
Satd. Flow (prot)	1598	3265				1519	5029	1388	1848	3570		
Flt Permitted	1.00	0.97				1.00	1.00	1.00	0.06	1.00		
Satd. Flow (perm)	1598	3265				1519	5029	1388	107	3570		
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	510	126	0	0	0	889	0	2111	111	242	1131	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	29	0	0	0
Lane Group Flow (vph)	255	381	0	0	0	889	0	2111	82	242	1131	0
Confl. Peds. (#/hr)			5	5			5		10	10		5
Heavy Vehicles (%)	1%	2%	3%	0%	0%	1%	0%	2%	4%	1%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	3	0	0	0
Turn Type	Split	NA				Perm	NA	Perm	pm+pt	NA		
Protected Phases	4	4					2		1	6		
Permitted Phases						4 6		2	6			
Actuated Green, G (s)	29.0	29.0				125.0	64.8	64.8	84.0	84.0		
Effective Green, g (s)	30.0	30.0				125.0	65.8	65.8	87.0	85.0		
Actuated g/C Ratio	0.24	0.24				1.00	0.53	0.53	0.70	0.68		
Clearance Time (s)	6.0	6.0					6.0	6.0	4.0	6.0		
Vehicle Extension (s)	3.0	3.0					3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	383	783				1519	2647	730	327	2427		
v/s Ratio Prot	0.16	0.12					c0.42		c0.11	0.32		
v/s Ratio Perm						c0.59		0.06	0.40			
v/c Ratio	0.67	0.49				0.59	0.80	0.11	0.74	0.47		
Uniform Delay, d1	43.0	40.9				0.0	24.2	14.9	36.4	9.4		
Progression Factor	1.00	1.00				1.00	1.00	1.00	0.65	1.15		
Incremental Delay, d2	4.3	0.5				0.6	2.6	0.3	5.0	0.4		
Delay (s)	47.3	41.4				0.6	26.8	15.2	28.5	11.1		
Level of Service	D	D				A	C	B	C	B		
Approach Delay (s)	43.7				0.6		26.2			14.2		
Approach LOS	D				A		C			B		
Intersection Summary												
HCM 2000 Control Delay		20.7				HCM 2000 Level of Service		C				
HCM 2000 Volume to Capacity ratio		0.75										
Actuated Cycle Length (s)		125.0				Sum of lost time (s)		11.0				
Intersection Capacity Utilization		123.9%				ICU Level of Service		H				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

11: CTC North Access & Sheppard Avenue East

Future Total (Sensitivity Analysis) PM Peak Hour

							
Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations	 			 			
Traffic Volume (veh/h)	1635	35	30	1855	15	40	
Future Volume (Veh/h)	1635	35	30	1855	15	40	
Sign Control	Free			Free	Stop		
Grade	0%			0%	0%		
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	
Hourly flow rate (vph)	1668	36	31	1893	15	41	
Pedestrians					50		
Lane Width (m)					3.0		
Walking Speed (m/s)					1.2		
Percent Blockage					3		
Right turn flare (veh)							
Median type	None		None				
Median storage (veh)							
Upstream signal (m)	144		105				
pX, platoon unblocked			0.73		0.65	0.73	
vC, conflicting volume			1754		2744	902	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol			1302		779	140	
tC, single (s)			4.1		6.8	6.9	
tC, 2 stage (s)							
tF (s)			2.2		3.5	3.3	
p0 queue free %			92		92	93	
cM capacity (veh/h)			382		196	627	
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	1112	592	31	946	946	15	41
Volume Left	0	0	31	0	0	15	0
Volume Right	0	36	0	0	0	0	41
cSH	1700	1700	382	1700	1700	196	627
Volume to Capacity	0.65	0.35	0.08	0.56	0.56	0.08	0.07
Queue Length 95th (m)	0.0	0.0	2.1	0.0	0.0	2.0	1.7
Control Delay (s)	0.0	0.0	15.3	0.0	0.0	24.9	11.1
Lane LOS			C			C	B
Approach Delay (s)	0.0		0.2			14.8	
Approach LOS						B	
Intersection Summary							
Average Delay			0.4				
Intersection Capacity Utilization			61.3%	ICU Level of Service		B	
Analysis Period (min)			15				