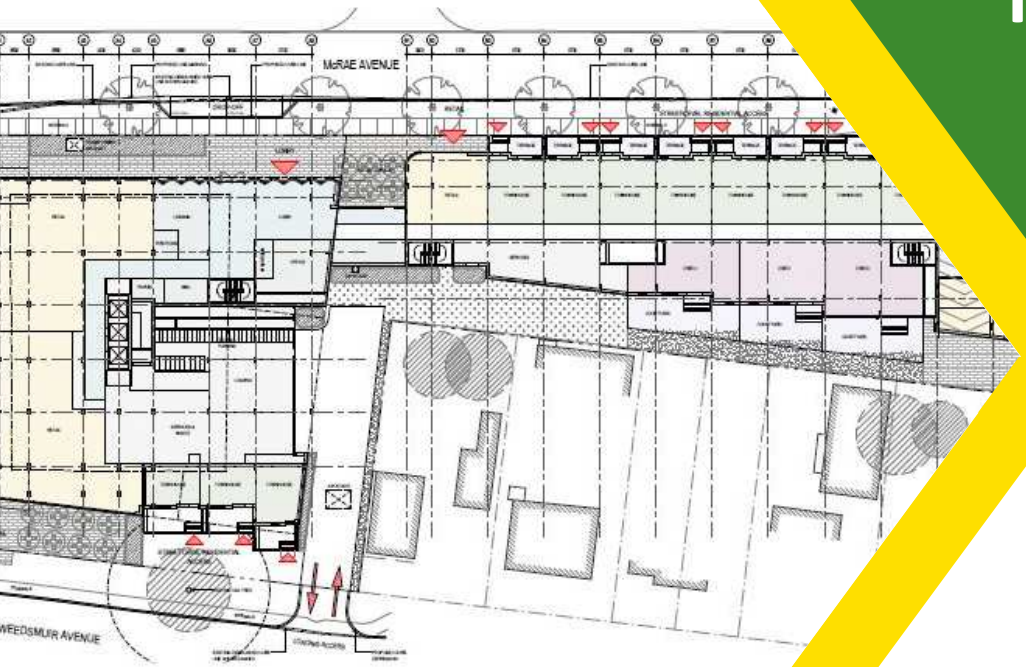
## GWL Realty Advisors

# 320 McRae Ave




# Transportation Impact Assessment

CGH TRANSPORTATION

# 320 McRae

# Transportation Impact Assessment

Step 1 Screening Report

Step 2 Scoping Report

Step 3 Forecasting Report

Step 4 Strategy Report

Prepared for:

GWL Realty Advisors
33 Yonge Street Suite 1000
Toronto, ON M5E 1G4

Prepared by:

CGH TRANSPORTATION
13 Markham Avenue
Ottawa, ON K2G 3Z1

January 2020

PN: 2019-29

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# 1 Screening

This study has been prepared according to the City of Ottawa's 2017 Transportation Impact Assessment (TIA) Guidelines. Accordingly, a Step 1 Screening Form has been prepared and is included as Appendix A, along with the Certification Form for TIA Study PM. As shown in the Screening Form, a TIA is required including the Design Review component and the Network Impact Component. This study has been prepared to support a site plan application for 320 McRae Avenue.

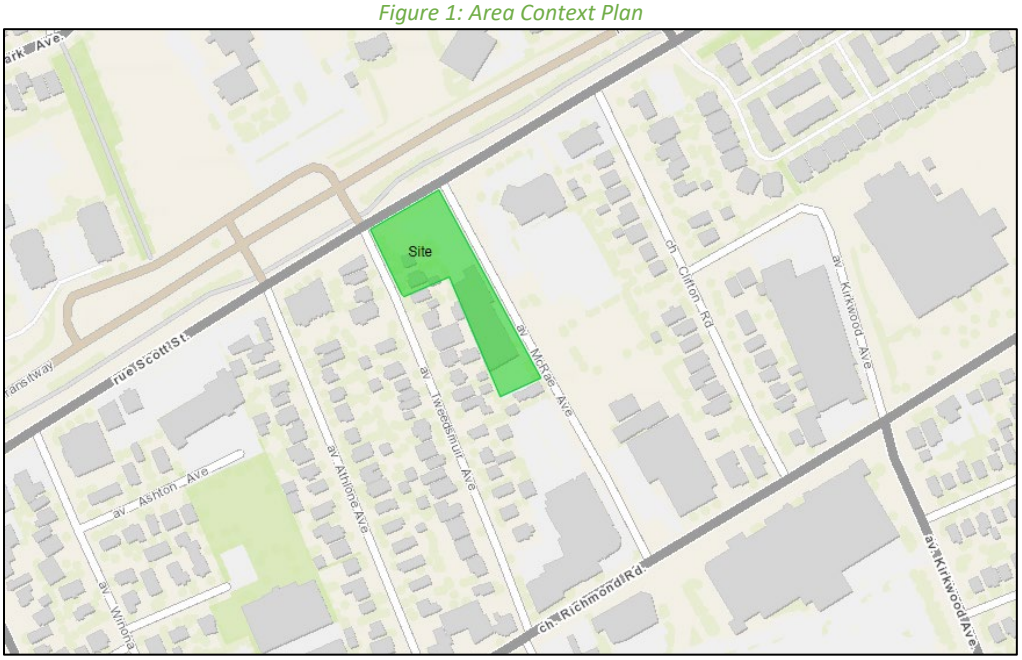
# 2 Existing and Planned Conditions

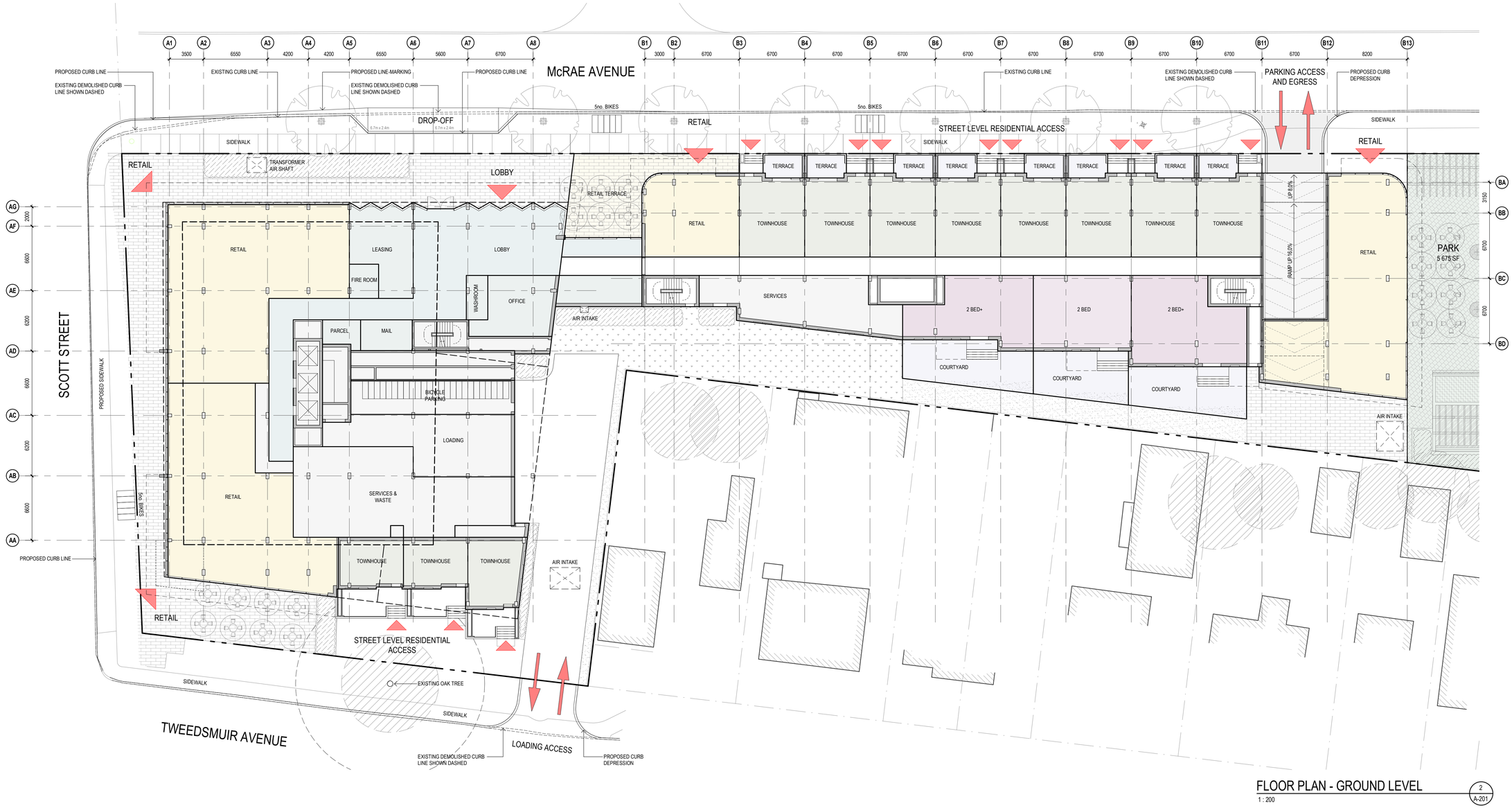
## 2.1 Proposed Development

The proposed development located at 320 McRae Avenue is currently a mix of residential and commercial buildings. The site is in an area that is zoned as part Traditional Mainstreet (TM 2489 S382-h), part Parks and Open Space (O 1) and part General Mixed Zone (GM2490 H (15) h). The proposed development is within 400 metres of the future Westboro LRT Station to be built by 2025 and therefore TOD principles apply to the applicable future horizons.

The proposed development is made up of a four-storey commercial / residential tower, and a commercial / residential tower with both a 26-storey and a six-storey component. The development is expected to have 882 square metres (9,494 square feet) of commercial space, 307 apartment units, 11 townhouse units, 185 underground automobile parking spaces and 163 bicycle parking spaces. Of the 163 bicycle spaces, 123 will be underground and due to space restrictions, 15 bicycle parking spaces will be slightly off the property and 25 will be in the loading area. The site is proposed to have two full-movement accesses, one approximately 40 metres, curb to curb, south of Scott Street on Tweedsmuir Avenue (Site Access #1) and the second approximately 120 metres, curb to curb, south of Scott Street on McRae Avenue (Site Access #2). Site Access #2 is a loading access and is intended for truck use only. A drop-off area is located on McRae Avenue, approximately 23 metres, curb to curb, south of Scott Street. The anticipated full build-out and occupancy horizon is 2022. Figure 1 illustrates the Study Area Context. Figure 2 illustrates the proposed concept plan.

*Figure 1: Area Context Plan*






FLOOR PLAN - GROUND LEVEL

1 : 200

2 / A-201

NOTES GÉNÉRALES General Notes

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ARCHITECTURE DE PAYSAGE Landscape Architect
**James B. Lennox & Associates Inc.**
3352 Carling Ave
Ottawa, Ontario K2H 5A8
T 613 722 5168

CIVIL Civil
**R.V. Anderson Associates Limited**
1750 Courtwood Crescent, Suite 220
Ottawa, ON K2C 2B5
T 613 226 1844

ARPENTEUR Surveyor
**Stantec Geomatics Ltd.**
400 - 1331 Clyde Avenue
Ottawa, ON K2C 3G4
T 613 722 4420

URBANISTE Urban Planner
**Fotenn Planning + Design**
396 Cooper Street - Suite 300
Ottawa, ON, K2P 2H7
T 613 730 5709

ARCHITECTES Architect
**NEUF architect(e)s** SENCRL
630, boul. René-Lévesque O. 32e étage, Montréal QC H3B 1S6
T 514 847 1117 NEUFarchitectes.com

**SCEAU** / Seal

NEUF
ARCHITECT(E)S
NEUF ARCHITECTES SENCRL

CLIENT Client

GWL REALTY ADVISORS

OUVRAGE Project

## 320 McRAE AVENUE

EMPLACEMENT Location
1976 SCOTT ST & 320 McRAE AVE
OTTAWA, ON

NO PROJET No.
12087

| NO | REVISION | DATE |
|---|---|---|

Préliminaire
NE PAS UTILISER POUR CONSTRUCTION

DESSINÉ PAR Drawn by
Author

VÉRIFIÉ PAR Checked
Checker

DATE
29/01/20

ÉCHELLE Scale
1 : 200

TITRE DU DESSIN Drawing Title

## FLOOR PLAN - GROUND LEVEL

RÉVISION Revision

NO. DESSIN Dwg Number
**A-201**

C:\Fichiers Revit Locaux\xA_12087_ARCH_R18_dheard.rvt

## 2.2 Existing Conditions

### 2.2.1 Area Road Network

*Scott Street:* Scott Street is a City of Ottawa arterial road with a two-lane cross-section and has a posted speed limit of 50 km/h. Scott Street primarily has curbs and gutters on the south side of the road and has a gravel shoulder on the north side. Intermittent parking lanes exist on the south side of the street. Bicycle lanes are present on both sides of the road. The south side has a sidewalk and the north side has a pedestrian asphalt pathway. The existing right-of-way is 26.0 metres.

*McRae Avenue:* McRae Avenue is a local road with a two-lane cross-section. There is an unposted speed limit of 50 km/h. McRae Avenue has curbs and gutters, as well as sidewalks on both sides of the road. The measured right-of-way is 17.0 metres to the south of Scott Street and gradually narrows to 16.0 metres just north of Richmond Road.

*Richmond Road:* Richmond Road is a City of Ottawa arterial road with a four-lane cross-section and on-street parking allowed on both sides. Within the Study Area, Richmond Road has curbs and gutters as well as sidewalks on both sides of the street. The posted speed limit is 50 km/h. The measured existing right-of-way within the Study Area varies between 15.0 metres and 21.0 metres. Richmond Road is designated as a trucking route.

*Tweedsmuir Avenue:* Tweedsmuir Avenue is a local road with a two-lane cross-section. There is an unposted speed limit of 50 km/h. Tweedsmuir Avenue has curbs and gutters, as well as a sidewalk on the east side of the road. There is on-street parking allowed on both the east and west side. The measured right-of-way is 18.0 metres.

### 2.2.2 Existing Intersections

*Scott Street / Tweedsmuir Avenue*

The intersection at Scott Street / Tweedsmuir Avenue is a two-way stop-controlled intersection with stop control on the north and south legs. Directly to the east of this intersection, on Scott Street, is a signalized pedestrian crossing that will be considered part of the intersection. The northern leg does not allow vehicle entry as it is a driveway for buses entering and exiting Westboro Station. The intersection is therefore subject to the appropriate passenger vehicle movement restrictions; no eastbound left-turn, westbound right-turn or northbound through movements. The westbound approach consists of a shared left-turn/through/right-turn lane, the eastbound approach consists of a shared left-turn/through/right-turn lane and the northbound approach consists of a shared left-turn/through/right-turn lane. Trucks are not permitted south of the intersection along Tweedsmuir Avenue.

*Scott Street / McRae Avenue*

The intersection at Scott Street / McRae Avenue is an unsignalized T-intersection. The northbound movement on McRae Avenue is stop-controlled and is a shared left-turn/right-turn lane. The eastbound movement is a shared through/right-turn lane and the westbound movement is a shared through/left-turn lane. No turn restrictions were noted.


*Richmond Road / Tweedsmuir Avenue*

The intersection at Richmond Road / Tweedsmuir Avenue is an unsignalized intersection. Both the northbound and southbound movements are stop-controlled, shared left-turn/through/right-turn lanes. The eastbound movement consists of a shared left-turn/through/right-turn lane and the westbound movement consists of a shared left-turn/through lane and a right-turn lane. No turn restrictions were noted.

*Richmond Road / McRae Avenue*

The intersection at Richmond Road / McRae Avenue is a signalized intersection. The northbound and westbound movements both have auxiliary left-turn lanes and a shared through/right-turn lane. The eastbound movement has an auxiliary left-turn lane and a shared through/right-turn lane. The southbound movement is a shared left-turn/through/right-turn movement. No turn restrictions were noted.


### 2.2.3 Existing Driveways

Within 200 metres of the proposed site access there are multiple existing driveways along Tweedsmuir Avenue, Scott Street, and McRae Avenue. Tweedsmuir Avenue has multiple residential driveways on both sides of the road. McRae Avenue has multiple office, residential and retail driveways on both sides of the road. The primary driveway along Scott Street within 200 metres of the proposed site is the bus entrance and exit to the Westboro Station which is just north of the proposed site. None of these driveways provide access to significant traffic generators and would therefore have no impact on this TIA.

### 2.2.4 Cycling and Pedestrian Facilities

Sidewalks are provided along one side of McRae Avenue, Scott Street and Tweedsmuir Avenue in the Study Area. Additionally, a multi-use pathway is provided on the other side of Scott Street. Sidewalks are provided along both sides of Richmond Road. The cycling network consists of bike lanes on Scott Street, a pathway just north of Scott Street and a suggested spine route along Richmond Road and Scott Street. Figure 3 illustrates the pedestrian facilities in the Study Area and Figure 4 illustrates the cycling facilities.

*Figure 3: Study Area Pedestrian Facilities*

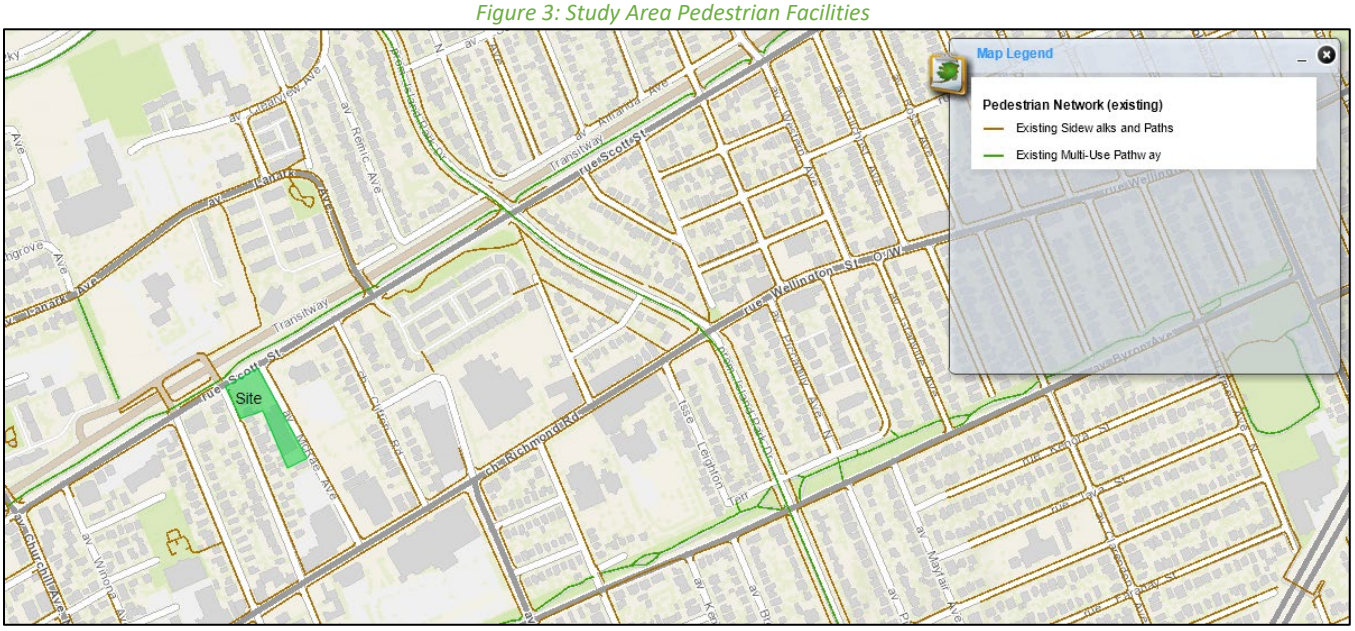
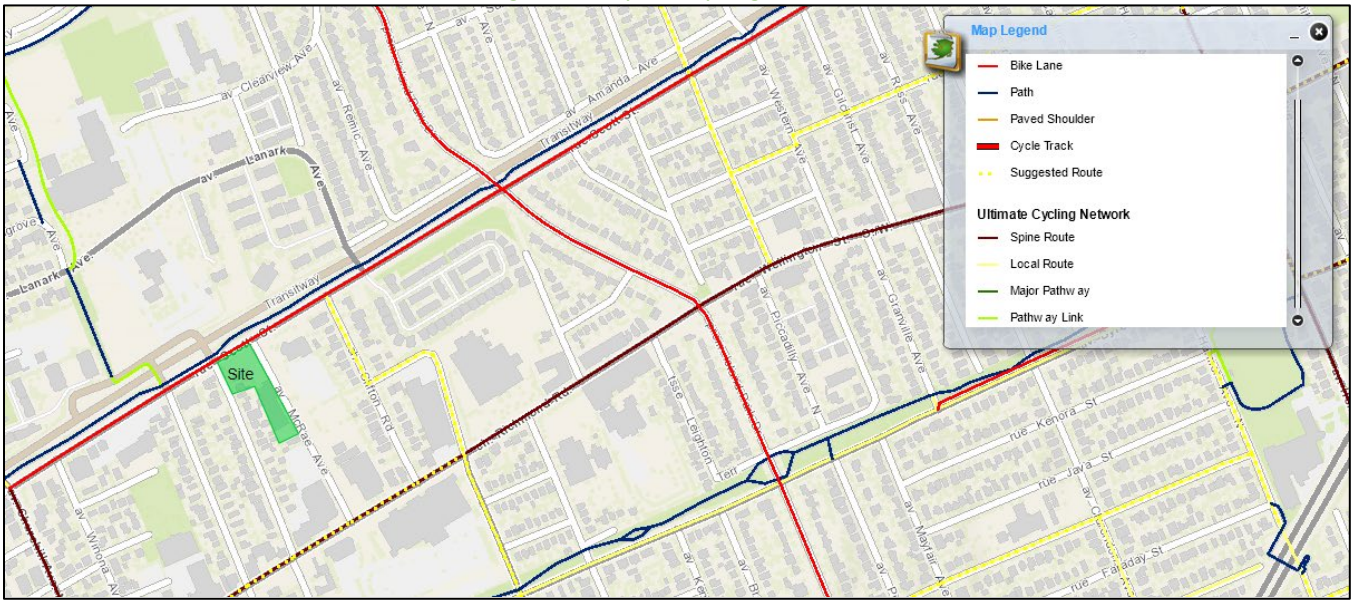



*Figure 4: Study Area Cycling Facilities*




### 2.2.5 Existing Transit

Within the Study Area, Route #11 has two stops at the intersection of McRae Avenue and Richmond Road. The stop on the northeast corner is also shared by Routes #81 and 153. Along McRae Avenue three stops are shared by Routes #81 and 153.

The frequencies of these routes within the proximity of the proposed site currently are:

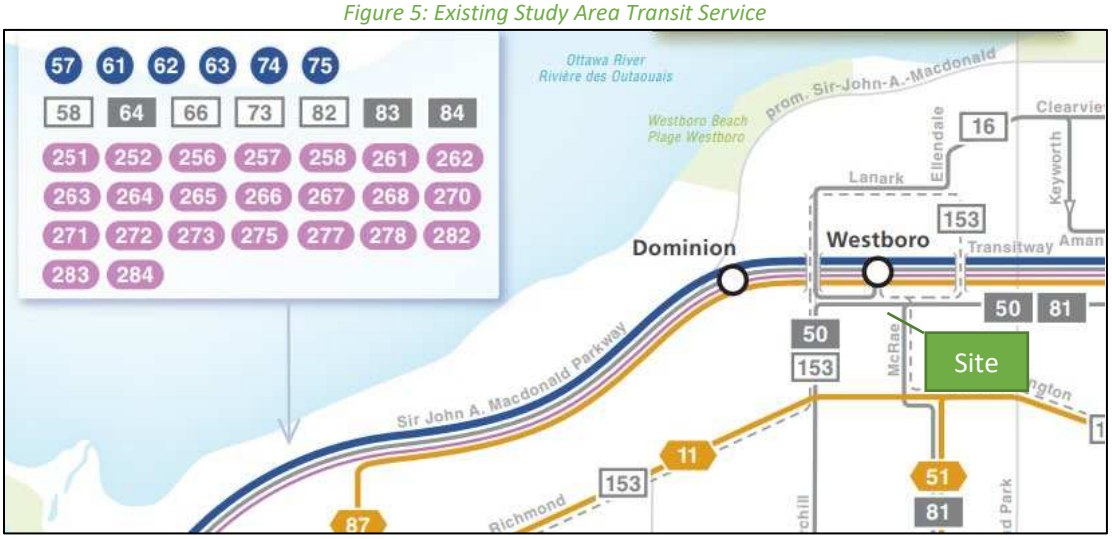
- Route #11— every 15 minutes from AM to PM weekday peak hours and mid-day weekend peak hours, and 30 minutes in the off-peak times
- Route #50— every 15 minutes in the peak direction, and 30 minutes in the off-peak direction, off-peak times and Saturdays with no operation on Sundays

- Route #81— every 15-20 minutes in the peak direction, and 30 minutes in the off-peak direction, off-peak times and Saturdays with no operation on Sundays
- Route #153— every two hours from approximately 11AM to 6PM

Additionally, the Westboro Rapid Route station is located approximately 50 metres northwest of the development. This station is part of the Transitway.

Figure 5 illustrates the transit system map and summarizes the route information for Westboro Station. Figure 6 illustrates the transit stops in the Study Area.

*Figure 5: Existing Study Area Transit Service*




**AM Connexion Routes***
**Circuits* Connexion le matin**

LIMITED SERVICE **UNTIL** TUNNEY'S PASTURE STATION

Service from the west is **off-only** at the following stations: Moodie, Pinecrest, Queensway, Lincoln Fields, Dominion and Westboro.

Service from the southwest is **off-only** at the following stations: Baseline, Iris, Queensway, Lincoln Fields, Dominion and Westboro.

*Except Routes 258, 282 and 284 which offer full service.

SERVICE LIMITÉ **JUSQU'À** LA STATION TUNNEY'S PASTURE

Les circuits en provenance de l'ouest offrent le service de **débarquement, seulement,** aux stations suivantes : Moodie, Pinecrest, Queensway, Lincoln Fields, Dominion et Westboro.

Les circuits en provenance du sud-ouest offrent le service de **débarquement, seulement,** aux stations suivantes : Baseline, Iris, Queensway, Lincoln Fields, Dominion et Westboro.

*Sauf les circuits 258, 282 et 284 qui offrent un service complet.

**PM Connexion Routes**
**Circuits Connexion en après-midi**

LIMITED SERVICE **AFTER** TUNNEY'S PASTURE STATION

No service from Westboro Station to Pinecrest Station
Routes 251, 252, 256, 257, 261, 262, 263, 264, 265, 266, 267 and 268

No service from Westboro Station to Baseline Station
Routes 270, 271, 272, 273, 275, 277, 278

No service from Westboro Station to Dominion Station
Route 283

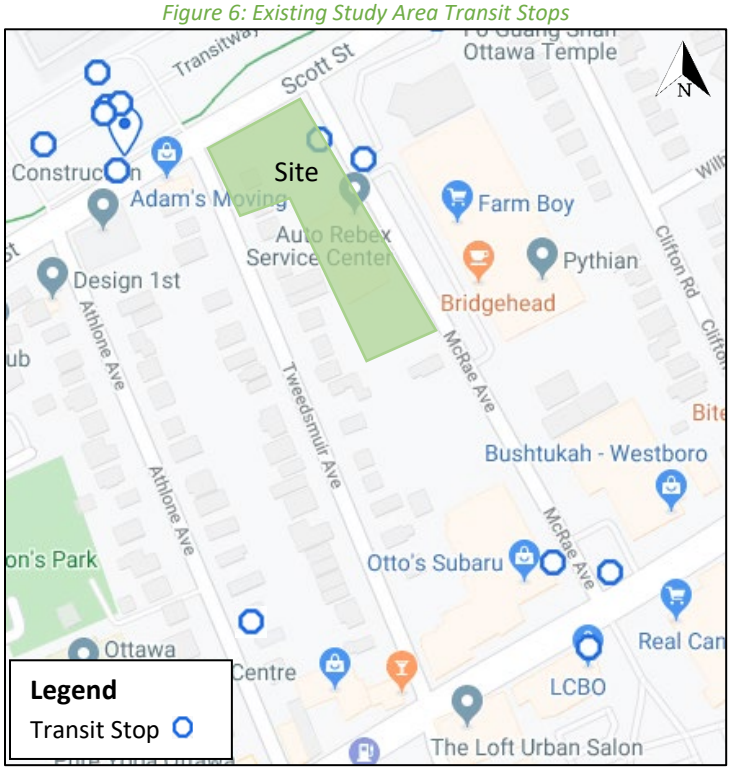
SERVICE LIMITÉ **APRÈS** LA STATION TUNNEY'S PASTURE

Pas de service de la station Westboro à la station Pinecrest
Circuits 251, 252, 256, 257, 261, 262, 263, 264, 265, 266, 267 et 268

Pas de service de la station Westboro à la station Baseline
Circuits 270, 271, 272, 273, 275, 277, 278

Pas de service de la station Westboro à la station Dominion
Circuit 283

*Figure 6: Existing Study Area Transit Stops*




### 2.2.6 Existing Area Traffic Management Measures

Existing traffic management measures within the Study Area take the form of:

- Truck turning restrictions at Scott Street and Tweedsmuir Avenue – no EBR or WBL turns
- Turning restrictions (buses exempt) at Scott Street and Tweedsmuir – no EBL, NBT or WBR turns
- Truck turning restrictions at Richmond Road and Tweedsmuir Avenue – no EBL or WBR turns

### 2.2.7 Existing Peak Hour Travel Demand

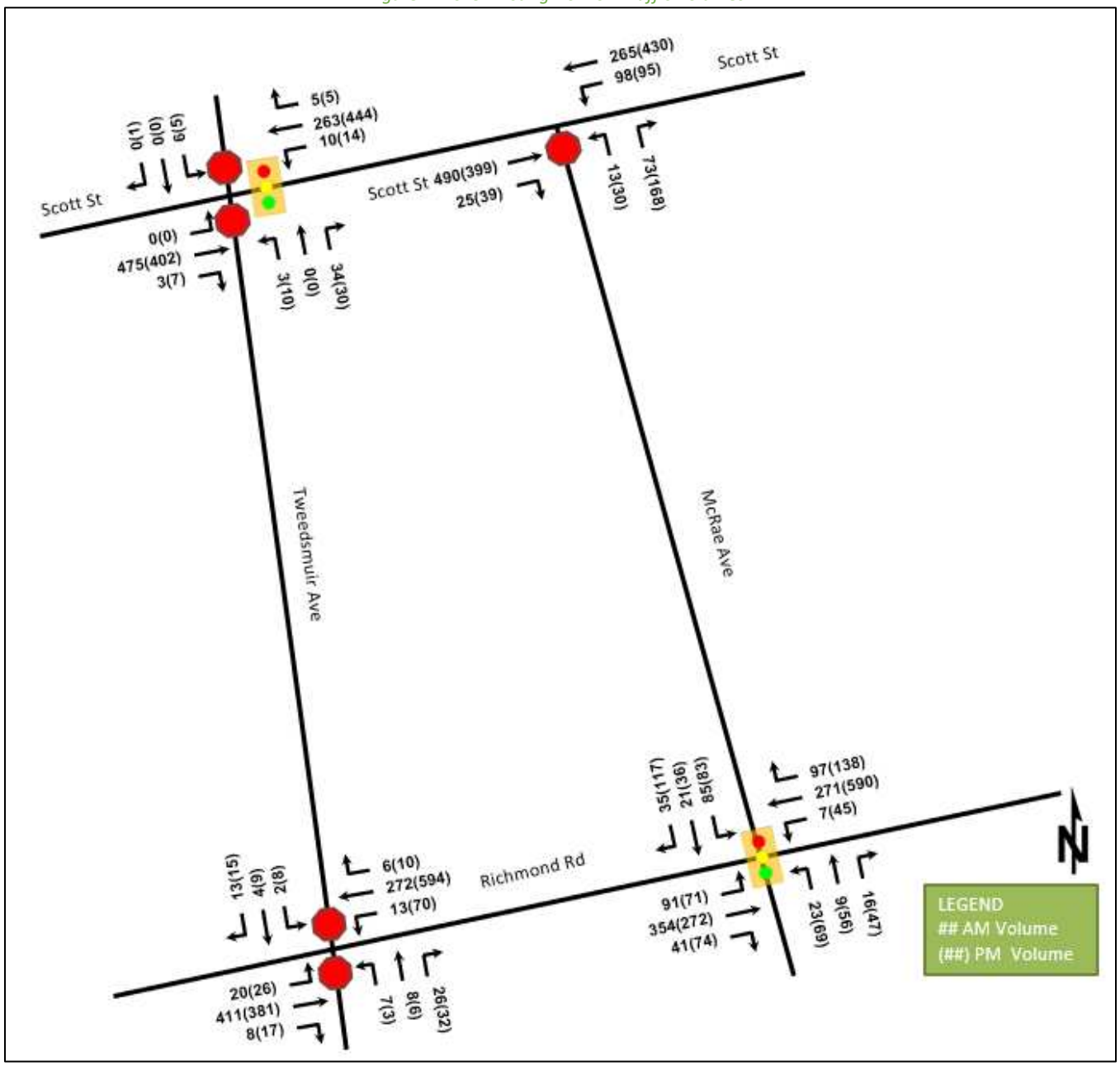
Existing turning movement counts were acquired from the City of Ottawa and Traffic Specialists for the existing Study Area intersections. Table 1 summarizes the intersection count dates and data sources.

*Table 1: Intersection Count Date and Data Sources*

| Intersection | Count Date | Data Source |
|---|---|---|
| **Scott Street @ Tweedsmuir Avenue** | Thursday July 18, 2019 | Traffic Specialists |
| **Scott Street @ McRae Avenue** | Thursday July 18, 2019 | Traffic Specialists |
| **Richmond Road @ Tweedsmuir Avenue** | Thursday July 18, 2019 | Traffic Specialists |
| **Richmond Road @ McRae Avenue** | Thursday April 20, 2017 | City of Ottawa |

Figure 7 illustrates the 2019 existing horizon traffic volumes. As shown above, the turning movement count data has been collected over different years. An adjacent area transportation study has used a 2% traffic growth within the Study Area of this report. As such, an annual background growth of 2% will be used in order to remain uniform with that study and produce a consistent horizon year. Detailed turning movement count data and signal timing plans are included in Appendix B.

*Figure 7: 2019 Existing Horizon Traffic Volumes*




### 2.2.8 Collision Analysis

Collision data has been acquired from the City of Ottawa for five years prior to the commencement of this TIA at each of the Study Area intersections. Specific attention is directed to the four primary intersections within the Study Area. Figure 8 illustrates the intersections and segments analyzed, and Table 2 summarizes the total collisions for the intersections of interest. Collision data is included in Appendix C.

*Figure 8: Study Area Representation of Collision Locations*

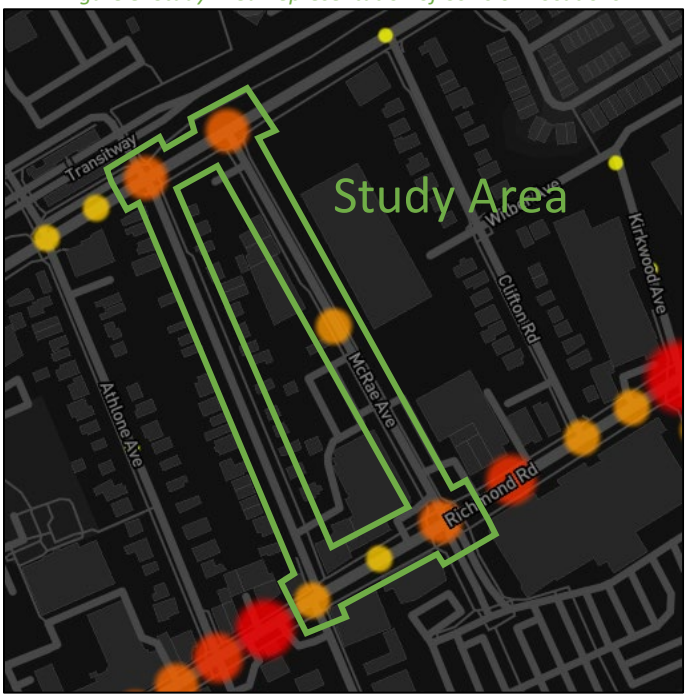



*Table 2: Summary of Collision Locations*

| | Number | % |
|---|---|---|
| **Intersections / Segments** | **27** | **100%** |
| **Scott St @ Tweedsmuir Ave** | 4 | 15% |
| **Scott St @ McRae Ave** | 7 | 26% |
| **Richmond Rd @ Tweedsmuir Ave** | 11 | 41% |
| **Richmond Rd @ McRae Ave** | 5 | 18% |

Overall, no fatal collisions were documented in the Study Area and a total of 4 collisions were noted involving pedestrians or cyclists. Three of these collisions involved pedestrians, all of which occurred at the intersection of McRae Avenue and Richmond Road. One collision involved a cyclist and it occurred at the intersection of Tweedsmuir Avenue and Richmond Road.

Table 3, Table 4, Table 5, and Table 6 summarize the collision types and conditions of the four intersections of interest within the Study Area on an individual basis.

Scott Street and Tweedsmuir Avenue experienced four collisions between 2013-2017. Three of those collisions resulted in property damage only, while one resulted in a non-fatal injury. Three collisions fall under the Rear End impact type and one falls under the Angle impact type. Weather/road conditions are considered a contributing factor for 25.00% of collisions at this intersection.

*Table 3: Scott Street at Tweedsmuir Avenue Collision Summary*

| **Total Collisions** | | **Number** | **%** |
|---|---|---|---|
| | | **4** | **100.00%** |
| **Classification** | Fatality | 0 | 0.00% |
| | Non-Fatal Injury | 1 | 25.00% |
| | Property Damage Only | 3 | 75.00% |
| **Initial Impact Type** | Angle | 1 | 25.00% |

| | | | |
|---|---|---|---|
| | Rear end | 3 | 75.00% |
| **Road Surface Condition** | Dry | 3 | 75.00% |
| | Wet | 1 | 25.00% |
| **Pedestrian Involved** | | **0** | **0.00%** |
| **Cyclist Involved** | | **0** | **0.00%** |

Scott Street and McRae Avenue experienced seven collisions between 2013-2017. Six of those collisions resulted in property damage only, while one resulted in a non-fatal injury. Three collisions fall under the Rear End impact type and four fall under the Angle impact type. Weather/road conditions are considered a contributing factor for 14.29% of collisions at this intersection.

*Table 4: Scott Street and McRae Collision Summary*

| **Total Collisions** | | **Number** | **%** |
|---|---|---|---|
| | | **7** | **100.00%** |
| **Classification** | Fatality | 0 | 0.00% |
| | Non-Fatal Injury | 1 | 14.29% |
| | Property Damage Only | 6 | 85.71% |
| **Initial Impact Type** | Angle | 4 | 42.86% |
| | Rear end | 3 | 42.86% |
| **Road Surface Condition** | Dry | 6 | 85.71% |
| | Wet | 1 | 14.29% |
| **Pedestrian Involved** | | **0** | **0.00%** |
| **Cyclist Involved** | | **0** | **0.00%** |

Richmond Road and McRae Avenue experienced 11 collisions between 2013-2017. Eight of those collisions resulted in property damage only, while three resulted in non-fatal injuries. The collision impact types vary between Angle, Rear End, Turning Movement, and SMV Other at 9.09%, 54.55%, 9.09%, and 27.27% of the 11 collisions respectively. Weather/road conditions are considered a contributing factor for 45.45% of collisions at this intersection.

*Table 5: McRae Avenue and Richmond Road Collision Summary*

| **Total Collisions** | | **Number** | **%** |
|---|---|---|---|
| | | **11** | **100.00%** |
| **Classification** | Fatality | 0 | 0.00% |
| | Non-Fatal Injury | 3 | 27.27% |
| | Property Damage Only | 8 | 72.73% |
| **Initial Impact Type** | Angle | 1 | 9.09% |
| | Rear end | 6 | 54.55% |
| | Turning Movement | 1 | 9.09% |
| | SMV Other | 3 | 27.27% |
| **Road Surface Condition** | Dry | 6 | 54.55% |
| | Wet | 4 | 36.36% |
| | Loose Snow | 1 | 9.09% |
| **Pedestrian Involved** | | **3** | **27.27%** |
| **Cyclist Involved** | | **0** | **0.00%** |

Richmond Road and Tweedsmuir Avenue experienced five collisions between 2013-2017. Three of those collisions resulted in property damage only, while two resulted in non-fatal injuries. The collision impact types vary between Angle, Turning Movement, SMV Unattended Vehicle, and SMV Other at 40.00%, 20.00%, 20.00%, and 20.00% of

the five collisions respectively. Weather/road conditions are considered a contributing factor for 60.00% of collisions at this intersection.

*Table 6: Tweedsmuir Avenue at Richmond Road Collision Summary*

| Total Collisions | | Number | % |
|---|---|---|---|
| | | **5** | **100.00%** |
| **Classification** | Fatality | 0 | 0.00% |
| | Non-Fatal Injury | 2 | 40.00% |
| | Property Damage Only | 3 | 60.00% |
| **Initial Impact Type** | Angle | 2 | 40.00% |
| | Turning Movement | 1 | 20.00% |
| | SMV unattended vehicle | 1 | 20.00% |
| | SMV Other | 1 | 20.00% |
| **Road Surface Condition** | Dry | 2 | 40.00% |
| | Wet | 2 | 40.00% |
| | Packed Snow | 1 | 20.00% |
| **Pedestrian Involved** | | **0** | **0.00%** |
| **Cyclist Involved** | | **1** | **20.00%** |

## 2.3 Planned Conditions

### 2.3.1 Changes to the Area Transportation Network

The proposed development is subject to the Richmond Road / Westboro Secondary Plan as well as TOD principles, both of which promote a shift towards more sustainable modes of transportation in the area. These plans are expressed as elements of the Ottawa Official Plan, Ottawa Transportation Master Plan, Ottawa Pedestrian Plan and the Ottawa Cycling Plan. Measures to be implemented include:

- A pedestrian / cycling path along McRae Avenue within the Study Area (unspecified date)
- Pedestrian specific infrastructure improvements (unspecified date)
- Implementation of pedestrian specific safety programming and promotion (unspecified date)
- A cycling spine route along Richmond Road and Scott Street within the Study Area as part of the City of Ottawa Ultimate Cycling Plan

Additionally, as stated by the City of Ottawa, the Westboro LRT Station is expected to be completed by 2025.

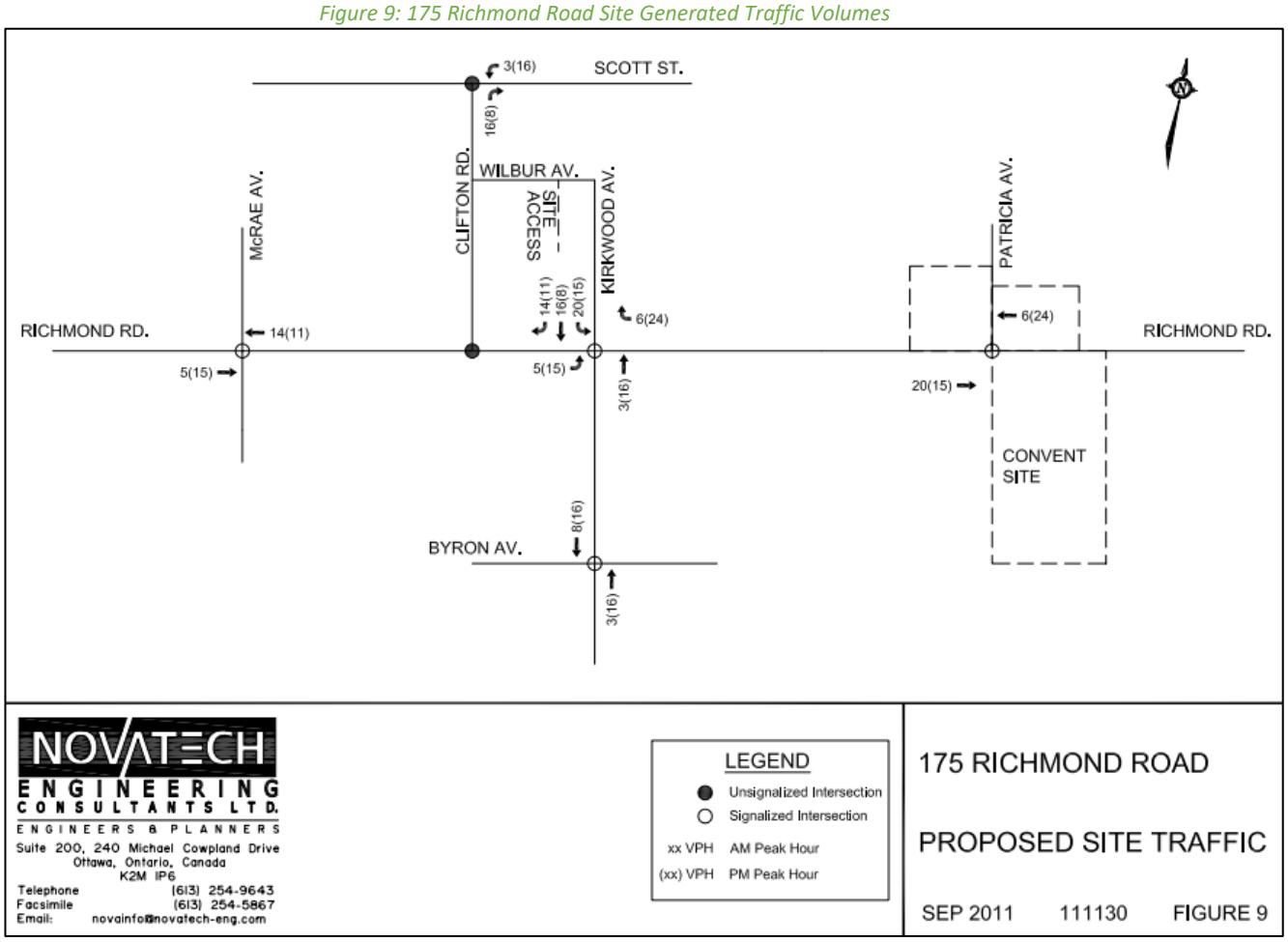
### 2.3.2 Other Study Area Developments

At the time of this report, a few development applications were available for the adjacent properties as listed on the City's Development Application Search tool:

- 403 Tweedsmuir Avenue – The City of Ottawa has received a Zoning By-law Amendment application to allow a six-storey mixed-use building for residential and hotel uses. A proposed underground parking garage will include 25 vehicle parking spaces. At this time, it is unclear as to the impact the trip generation from this development will have on the surrounding area
- 236 Richmond Road – The existing building will be demolished and replaced with a nine-storey mixed-use building with commercial use on the ground floor and the other floors housing approximately 70 units. At this time, it is unclear as to the impact the trip generation from this development will have on the surrounding areas
- 175 Richmond Road – The City of Ottawa has received a Zoning By-law Amendment and Site Plan Control application to allow a stepped nine-storey, six-storey, and four-storey mixed-use building. A total of 241

residential units and 675 square metres of retail commercial area are proposed. The anticipated trip generation can be seen in Figure 9 and is an excerpt from the 175 Richmond Road Transportation Brief prepared by Novatech Engineering Consultants Ltd.

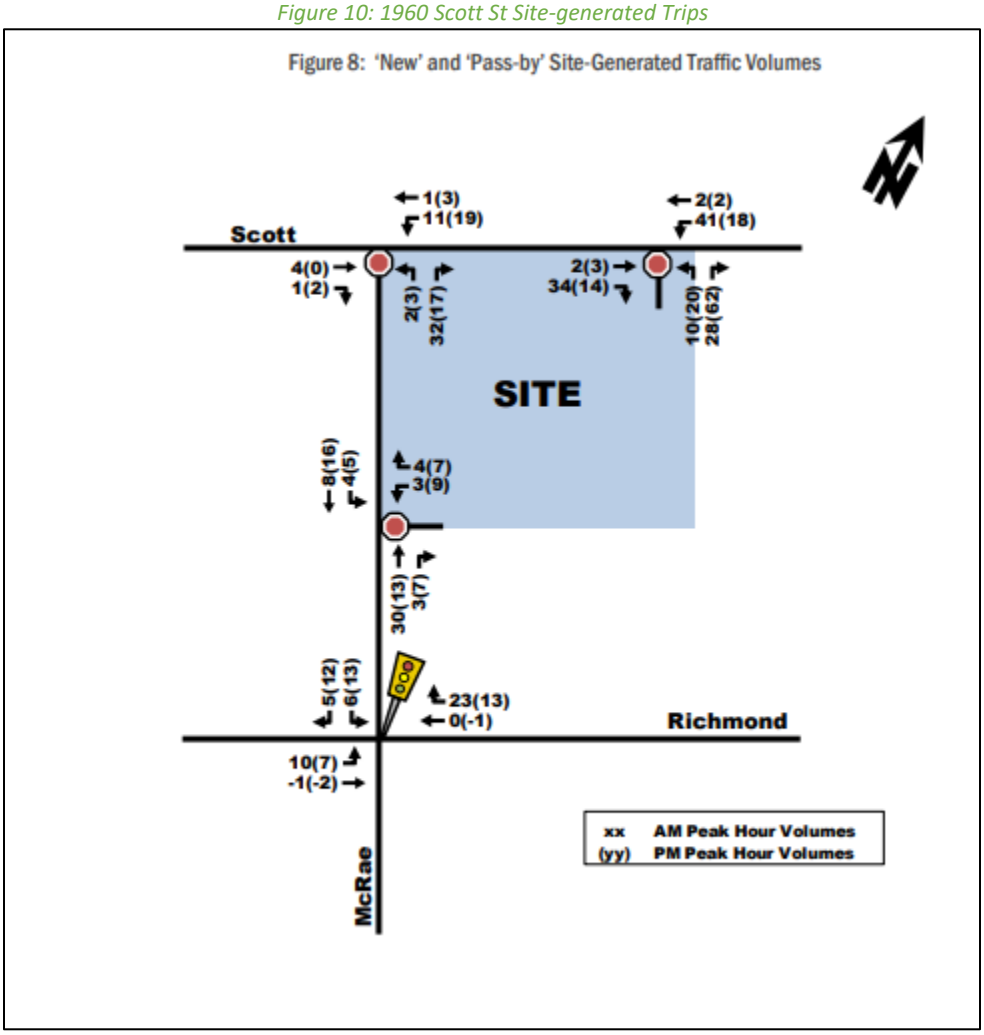
*Figure 9: 175 Richmond Road Site Generated Traffic Volumes*




Source: Residential Development 175 Richmond Road Transportation Brief-September 2011

- 341/343 Tweedsmuir Avenue – The City of Ottawa has received Zoning Bylaw Amendment and Site Plan Control applications to facilitate the establishment of a fourth unit in the basement of these three-unit dwellings. Trip generation is expected to have negligible impacts on the surrounding area.
- 1946 Scott Street – 12-storey residential building with 60 units and 13 above ground parking spaces. As the trip generation trigger is not met, no site generated trips are provided and so the impact of the trips generated from this development on the surrounding area is unknown
- 320 Bloomfield Avenue – The planned redevelopment of the City Works Yard includes changes to both the building and parking facilities. At this time, limited information is provided and so the impact of trips generated from this development on the surrounding area is unknown.
- 1960 Scott Street – 22-storey mixed-use development of 120 residential units, 6889 square metres of office space and 1341 square metres of retail space. An estimated 159 parking spaces and 100 bicycle spaces have been proposed. The anticipated trip generation can be seen in Figure 10 and is an excerpt from the 1960 Scott Street Transportation Brief prepared by Parsons

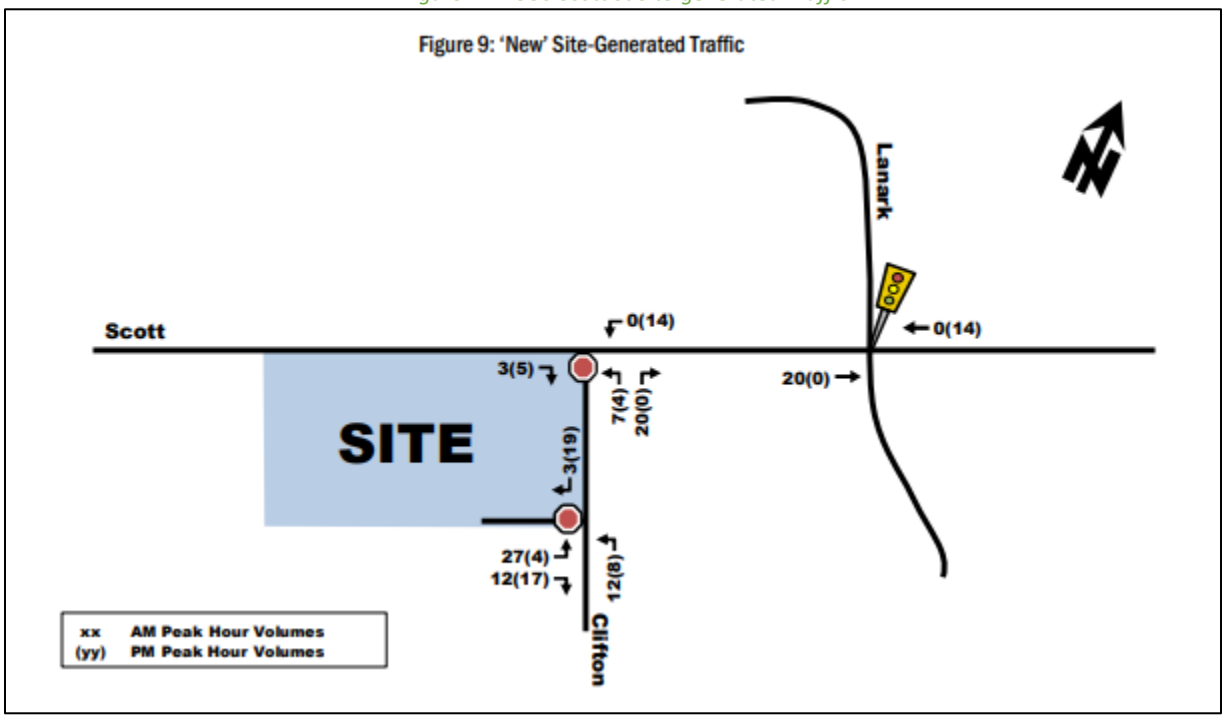
*Figure 10: 1960 Scott St Site-generated Trips*




Source: 1960 Scott Street-Transportation Brief-July 31, 2017

- 1950 Scott St – The City of Ottawa has received a Zoning By-law Amendment application to permit a 20-storey residential building with 141 units, 162 parking spaces and 10 visitor parking spaces. The anticipated trip generation can be seen in Figure 11 and is an excerpt from the 1950 Scott Street TIA Strategy Report prepared by Parsons.

*Figure 11: 1950 Scott St Site-generated Traffic*




Source: 1950 Scott Street-Transportation Impact Assessment Strategy Report-July 2018

# 3 Study Area and Time Periods

## 3.1 Study Area

The study area will include the intersections of Scott Street and Tweedsmuir Avenue, Scott Street and McRae Avenue, Richmond Road and Tweedsmuir Avenue, and Richmond Road and McRae Avenue. Scott Street, Tweedsmuir Avenue, and McRae Avenue are noted as the boundary roads for the site.

As part of the review process, comments requesting additional intersections be considered as part of the Study Area were received from the City of Ottawa Transportation Project Manager. These intersections were Richmond Road at Churchill Avenue, Scott Street at Island Park Drive, and Richmond Road at Kirkwood Avenue. In response to this, a preliminary trip generation for the site using TOD mode shares was conducted at the time of these comments. While these findings are subject to refinement as the site plan is being finalized, it was found that the subject site would generate approximately 24 single direction trips at its peak for the ultimate future horizon within this study. By the time these trips distribute to the road network, the amount of traffic impacting the requested additional intersections would be negligible. As can be seen in the following sections, it is still estimated that the subject site will generate approximately 24 single direction trips, supporting the above conclusions. Therefore, the Study Area as defined above, is adequate to capture the auto impacts of the proposed development and no additional intersections are required to be analyzed.

## 3.2 Time Periods

The AM and PM peak hours will be examined for the proposed development.

## 3.3 Horizon Years

The anticipated build-out year is 2022. As a result, the full build-out plus five years horizon year is 2027.

# 4 Exemption Review

Table 7 summarizes the exemptions for this TIA.

*Table 7: Exemption Review*

| Module | Element | Explanation | Exempt/Required |
|---|---|---|---|
| **Design Review Component** | | | |
| **4.1 Development Design** | 4.1.2 Circulation and Access | Only required for site plans | Required |
| | 4.2.3 New Street Networks | Only required for plans of subdivision | Exempt |
| **4.2 Parking** | 4.2.1 Parking Supply | Only required for site plans | Required |
| | 4.2.2 Spillover Parking | Only required for site plans where parking supply is 15% below unconstrained demand | Exempt |
| **Network Impact Component** | | | |
| **4.5 Transportation Demand Management** | All Elements | Not required for site plans expected to have fewer than 60 employees and/or students on location at any given time | Required (for residential portion only) |
| **4.6 Neighbourhood Traffic Management** | 4.6.1 Adjacent Neighbourhoods | Only required when the development relies on local or collector streets for access and total volumes exceed ATM capacity thresholds | Required |
| **4.8 Network Concept** | | Only required when proposed development generates more than 200 person-trips during the peak hour in excess of equivalent volume permitted by established zoning | Exempt |

# 5 Development-Generated Travel Demand

## 5.1 Trip Generation and Mode Shares

This TIA has been prepared using the vehicle and person trip rates for the residential components using the TRANS Trip Generation Study Report (2009) and the vehicle trip rates for the retail components, a factor of 1.28 has been applied to the ITE rates. Table 8 summarizes the person trip rates for the proposed land uses.

*Table 8: Trip Generation Person Trip Rates*

| Dwelling Type | Land Use Code | Peak Hour | Vehicle Trip Rate | Person Trip Rates |
|---|---|---|---|---|
| **Townhouses** | 224 (TRANS) | AM | 0.51 | 1.13 |
| | | PM | 0.51 | 0.96 |
| **Mid-rise Apartments** | 223 (TRANS) | AM | 0.24 | 0.65 |
| | | PM | 0.28 | 0.70 |
| **High-rise Apartments** | 222 (TRANS) | AM | 0.24 | 0.65 |
| | | PM | 0.27 | 0.68 |
| **Shopping Centre** | 820 | AM | 0.94 | 1.20 |
| | | PM | 3.81 | 4.88 |

Using the above Person Trip rates, the total person trip generation has been estimates. Table 9 below illustrates the total person trip generation by dwelling type.

*Table 9: Total Person Trip Generation*

| Land Use | Units / GFA | AM Peak Hour | | | PM Peak Hour | | |
|---|---|---|---|---|---|---|---|
| | | In | Out | Total | In | Out | Total |
| **Townhouses** | 11 units | 4 | 8 | 12 | 6 | 5 | 11 |
| **Mid-Rise Apartments** | 46 units | 7 | 23 | 30 | 20 | 12 | 32 |
| **High-Rise Apartments** | 261 units | 41 | 129 | 170 | 110 | 67 | 177 |
| **Shopping Centre** | 9,494 sq.ft | 6 | 3 | 9 | 20 | 17 | 37 |
| | **Total Person Trips** | **58** | **163** | **221** | **156** | **101** | **257** |

Using the most recent National Capital Region Origin-Destination (OD Survey), the existing mode shares for Ottawa West as well as TOD mode shares, have been summarized in Table 10. The mode shares for Ottawa West will be used to develop interim trip generation for the 2022 future horizon as per the request of the City of Ottawa. This mode share is considered to be very conservative in nature and will produce a "worst case scenario" given the proposed development is within 400 metres of the existing Westboro Transitway Station. The new Westboro LRT Station is projected to be constructed and operational by 2025. As such, a TOD mode share will be used for the 2027 future horizon.

*Table 10: Mode Share*

| Travel Mode | Ottawa West | TOD Mode Share |
|---|---|---|
| **Auto Driver** | 50% | 15% |
| **Auto Passenger** | 15% | 5% |
| **Transit** | 20% | 65% |
| **Cycling** | 5% | 5% |
| **Walking** | 10% | 10% |
| **Total** | 100% | 100% |

Internal capture rates from the ITE Trip Generation Handbook 3rd Edition have been assigned to the development for the retail components for mixed-use developments. The retail portion of this development is the smaller of the two land uses. Therefore, the residential land use is treated as the anchor for this development and is not reduced based on the multi-use capture rate. The smaller portion of the development, the retail portion, has been reduced to reflect residents of the site utilizing the on-site retail instead of leaving the site and/or as a pass-by trip on the way to an ultimate destination (ie. work). The rates summarized in Table 11 represent the percentage of trips to/from the retail uses based on the residential component.

*Table 11: Internal Capture Rates*

| Land Use | AM | | PM | |
|---|---|---|---|---|
| | In | Out | In | Out |
| **Residential to/from Shopping Centre** | 17% | 14% | 10% | 26% |

Using the above mode shares and person trip rates, the person trips by mode have been projected for the 2022 future horizon using the Ottawa West mode shares and for the 2027 future horizon using the TOD mode shares. Table 12 summarizes the trip generation by mode for the 2022 horizon and Table 13 summarizes the trip generation by mode for the 2027 horizon.

*Table 12: 2022 Trip Generation by Mode*

| Travel Mode | Mode Share | In | Out | Total | In | Out | Total |
|---|---|---|---|---|---|---|---|
| **Auto Driver** | 50% | 29 | 83 | 112 | 77 | 50 | 127 |
| **Auto Passenger** | 25% | 9 | 23 | 32 | 24 | 16 | 40 |
| **Transit** | 20% | 11 | 34 | 45 | 31 | 19 | 50 |
| **Cycling** | 5% | 3 | 8 | 11 | 8 | 5 | 13 |
| **Walking** | 10% | 6 | 15 | 21 | 16 | 11 | 27 |
| **Internal Capture** | (varies) | -1 | -1 | -2 | -2 | -6 | -8 |
| **Total** | 100% | 58 | 163 | 221 | 156 | 101 | 257 |

As shown above, 112 AM and 127 PM new peak hour two-way vehicle trips are projected as a result of the proposed development in the 2022 future horizon.

*Table 13: 2027 Trip Generation by Mode*

| Travel Mode | Mode Share | In | Out | Total | In | Out | Total |
|---|---|---|---|---|---|---|---|
| **Auto Driver** | 15% | 9 | 24 | 33 | 24 | 16 | 40 |
| **Auto Passenger** | 5% | 2 | 7 | 9 | 8 | 5 | 13 |
| **Transit** | 65% | 38 | 108 | 146 | 100 | 64 | 164 |
| **Cycling** | 5% | 3 | 8 | 11 | 8 | 5 | 13 |
| **Walking** | 10% | 6 | 16 | 22 | 16 | 11 | 27 |
| **Internal Capture** | (varies) | -1 | -1 | -2 | -2 | -6 | -8 |
| **Total** | 100% | 58 | 163 | 221 | 156 | 101 | 257 |

As shown above, 33 AM and 40 PM new peak hour two-way vehicle trips are projected as a result of the proposed development in the 2027 future horizon.

## 5.2 Trip Distribution

To understand the travel patterns of the subject development, the OD survey has been reviewed to determine the existing travel patterns that will be applied to the new vehicle trips. Table 14 below summarizes the distribution for Ottawa West.

*Table 14: OD Survey Existing Mode Share - Ottawa West*

| To/From | % of Trips |
|---|---|
| **North** | 15% |
| **South** | 35% |
| **East** | 35% |
| **West** | 15% |
| **Total** | 100% |

## 5.3 Trip Assignment

Using the distribution outlined above, turning movement splits, and access to major transportation infrastructure, the trips generated by the site have been assigned to the Study Area road network. No trips have been assigned to the loading access on Tweedsmuir Avenue as this access will be used only during off-peak hours. Figure 12 illustrates the new site traffic assignment by percentage. Figure 13 and Figure 14 illustrate the new site generated volumes for the 2022 future horizon and the 2027 future horizons respectively.

*Figure 12: New Site Generation Assignment (%)*

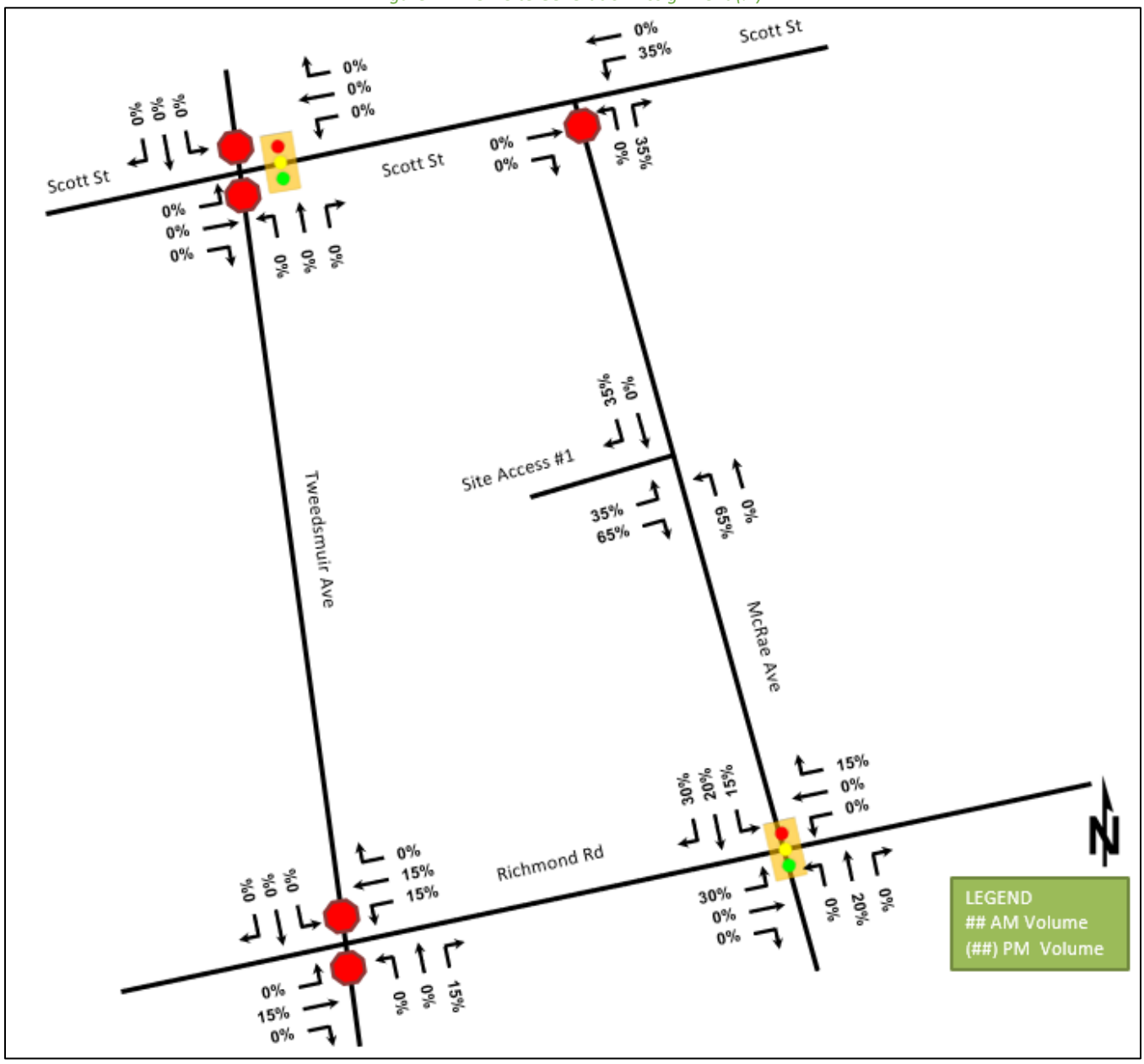


*Figure 13: New 2022 Site Generation Auto Volumes*

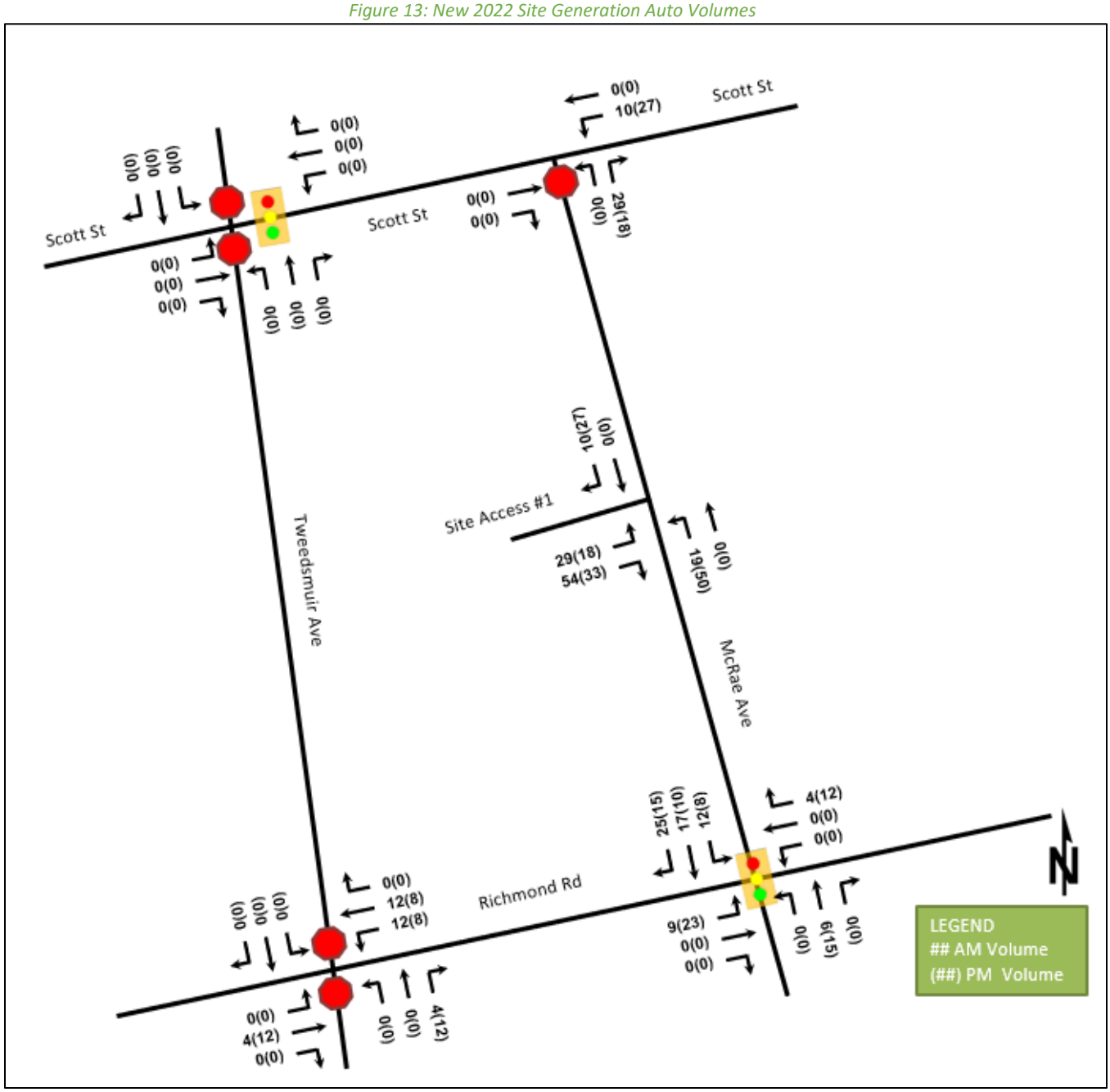
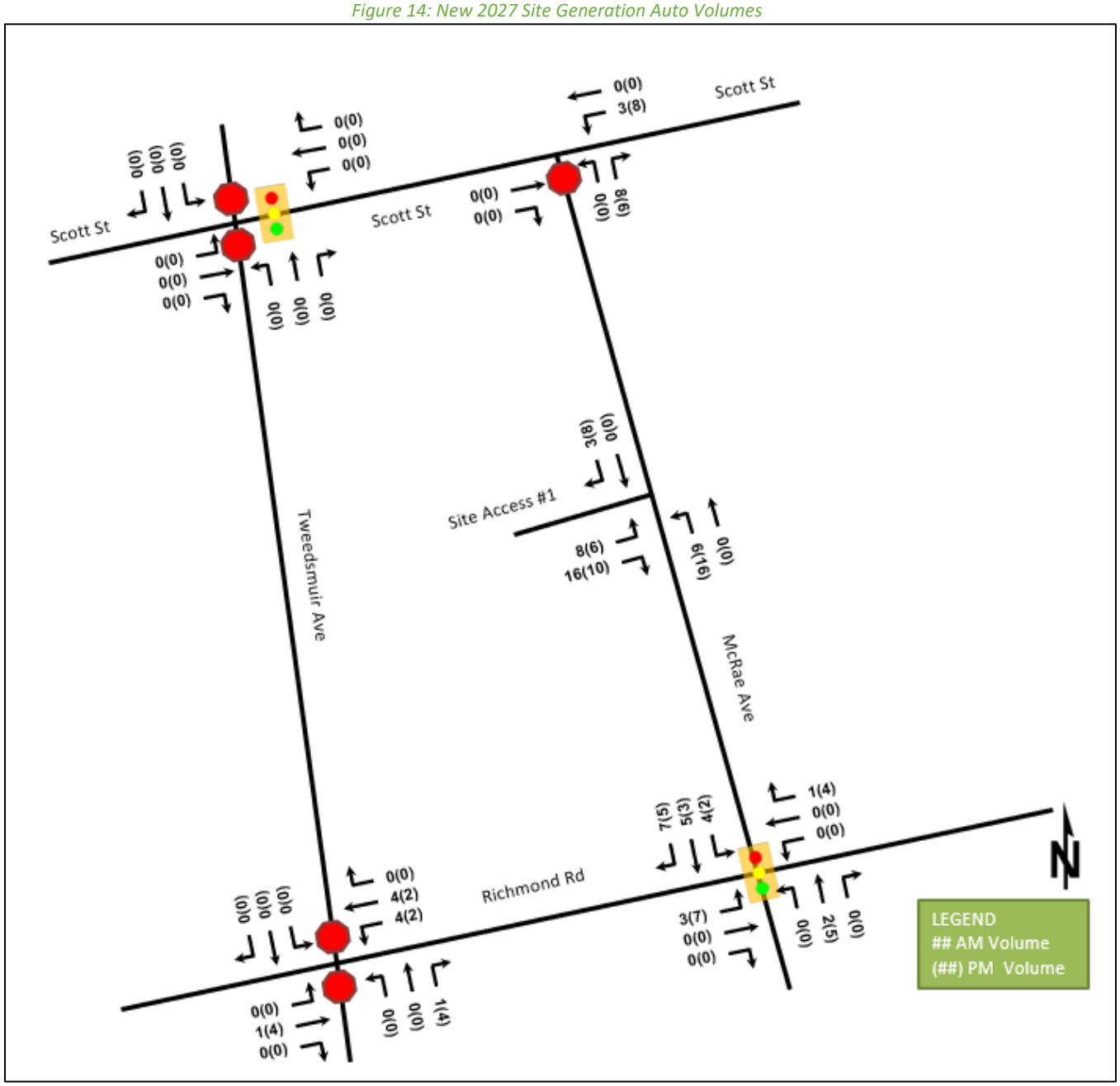


*Figure 14: New 2027 Site Generation Auto Volumes*




# 6 Background Network Travel Demands

## 6.1 Transportation Network Plans

The transportation network plans were discussed in Section 2.3.1. The opening of the Westboro LRT station and Dominion LRT station, isolated measure transit priority along Richmond Road and TOD policies have been accounted for within the modal share assumptions. No road improvements within the study horizons are noted for this area.

The additional connectivity provided by future bicycle spine routes along Scott Street and Richmond Road as part of the City of Ottawa ultimate cycling plan will improve the active mode network.

## 6.2 Background Growth and Other Developments

As stated in Section 2.2.7, an adjacent area transportation study has used a 2% traffic growth within the Study Area of this report. As such, an annual background growth of 2% has been applied to remain consistent with that study and produce a conservative estimate of growth.

The background developments explicitly considered in the background conditions include 175 Richmond, 1960 Scott Street, and 1950 Scott Street. These developments are discussed in Section 2.3.2.

Figure 15 illustrates the 2022 background volumes and Figure 16 illustrates the 2027 background volumes.

*Figure 15: Future Background 2022 Volumes*

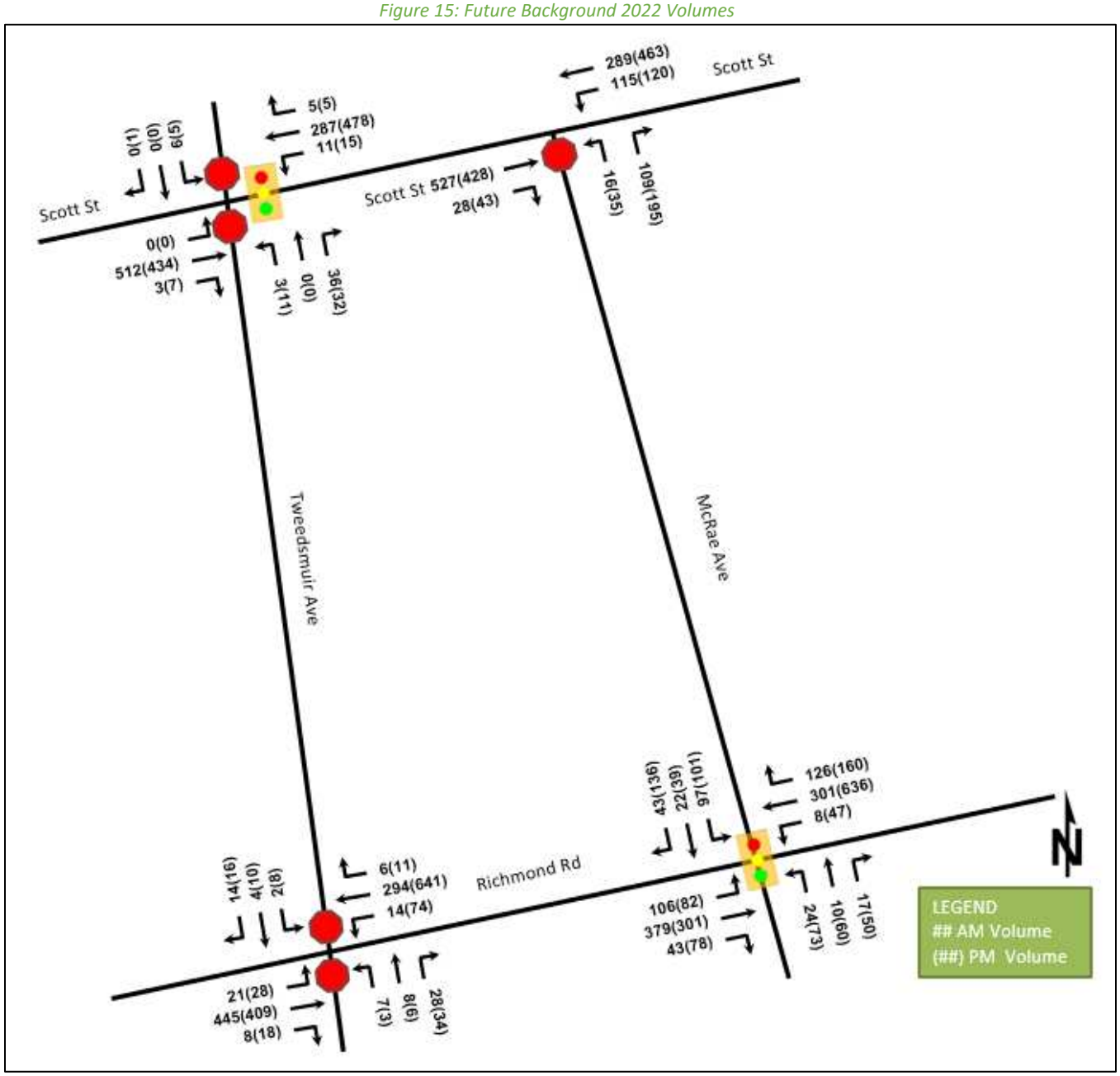
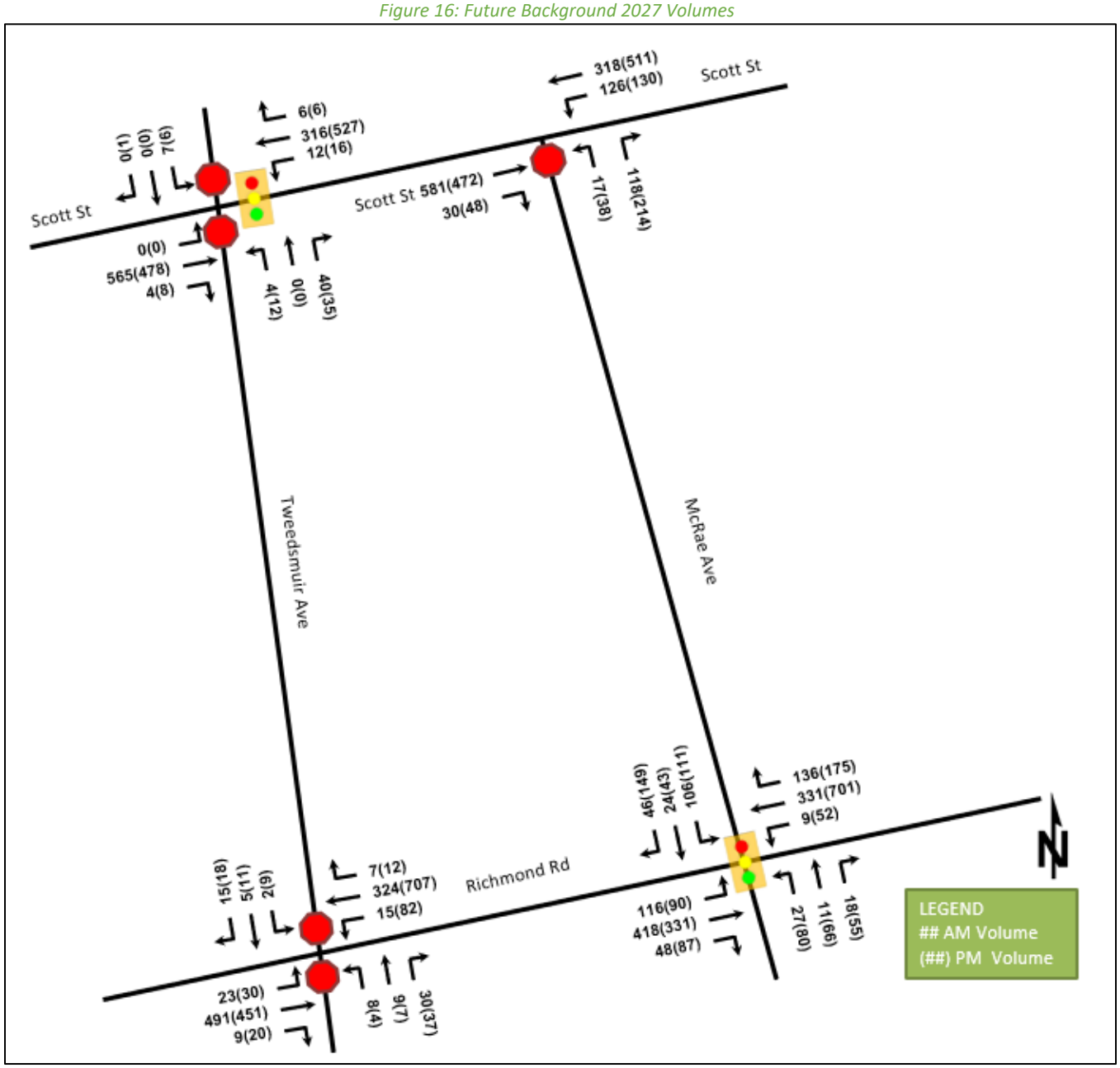


*Figure 16: Future Background 2027 Volumes*




# 7 Demand Rationalization

Changes in traffic volumes between existing and future conditions will come from the applied 2% background growth rate, 175 Richmond, 1960 Scott Street, 1950 Scott Street and the proposed development within this report. Additionally, the trip generation of this development will change due to a shift from the Ottawa West mode share used in 2022 to the TOD modal shares in 2027, as can be seen in Section 5, to conservatively account for the Westboro LRT. The future total 2022 and 2027 volumes are illustrated in Figure 17 and Figure 18 respectively.

*Figure 17: Future Total 2022 Volumes*

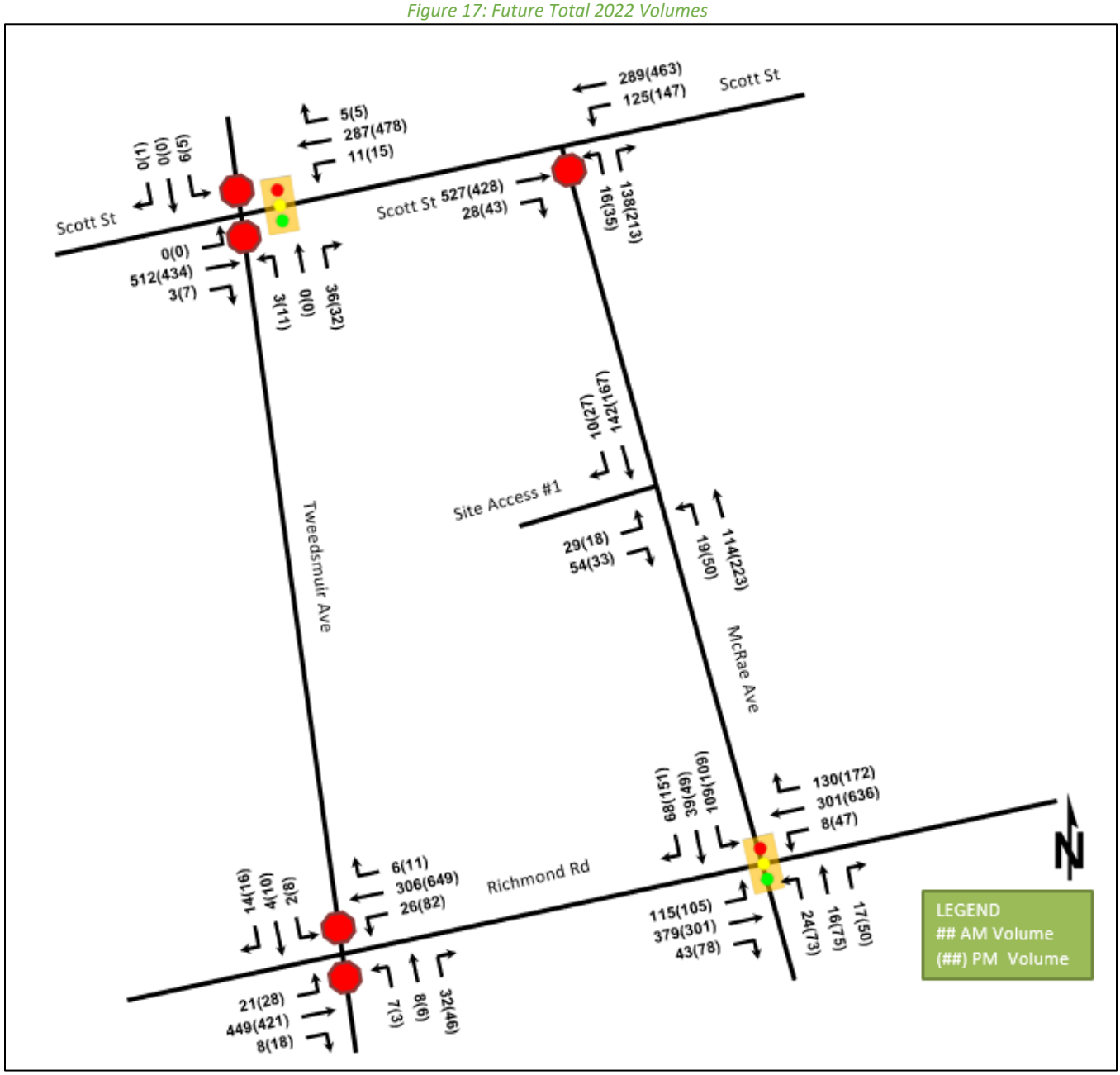
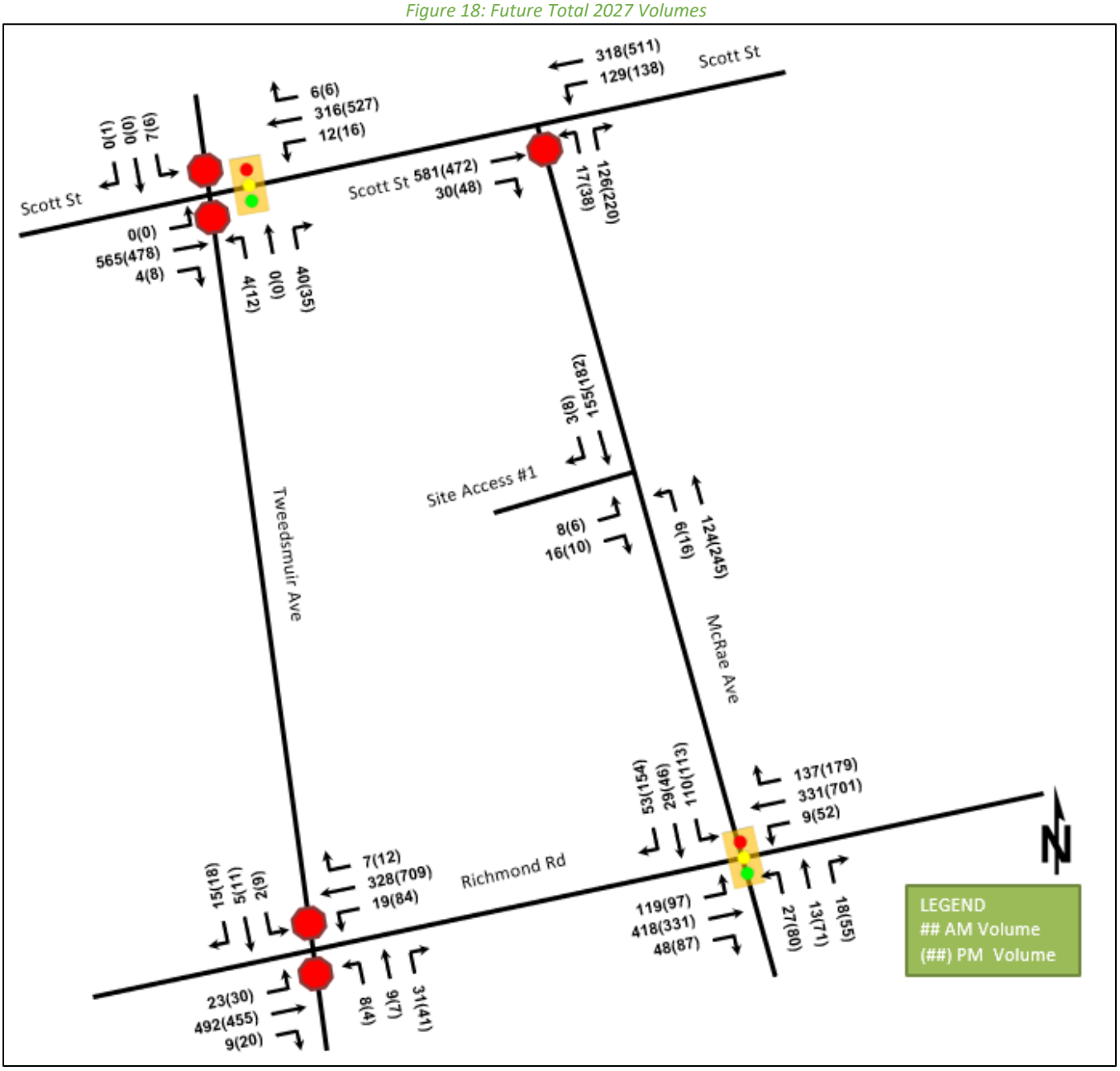


*Figure 18: Future Total 2027 Volumes*




Given the Study Area is subject to TOD policies, an expected shift in mode share is anticipated following the implementation of future TOD policies as well as the building of both the Dominion and Westboro LRT Stations. This shift is anticipated to result in an auto driver mode reduction and an increase in transit and non-auto mode shares.

# 8 Development Design

## 8.1 Design for Sustainable Modes

The proposed development is a commercial/residential development divided into two buildings with underground automobile and bicycle parking.

The proposed development is bordered by existing pedestrian and cyclist facilities along Scott Street, existing pedestrian facilities along Tweedsmuir Avenue and McRae Avenue, and planned future cyclist facilities along McRae Avenue. The existing Westboro station is within 400 metres from the development and can be accessed by these facilities. As such, the future Westboro LRT Station will be within 400 metres of the proposed development and will be able to be accessed by these facilities as well.

Additionally, facilities that are supportive of sustainable modes in the City of Ottawa's TDM-supportive Development Design and Infrastructure Checklist, which are required for zoning and standard site design, are recommended. The following additional measures are also recommended:

- Locate building close to the street, and do not locate parking areas between the street and building entrances
- Locate building entrances in order to minimize walking distances to sidewalks and transit facilities
- Locate building doors and entrances to ensure visibility of pedestrians from the building
- Provide lighting, landscaping and benches along walking and cycling routes between building entrances and streets, sidewalks and trails
- Provide a permanent bike repair station
- Provide a designated area for carpool drivers to drop off or pick up passengers without using fire lanes or other no-stopping zones
- Provide parking for long-term and short-term users that is consistent with mode share targets, considering the potential for visitors to use off-site public parking
- Provide separate area for short-term and long-term parking to permit access controls and simplify enforcement

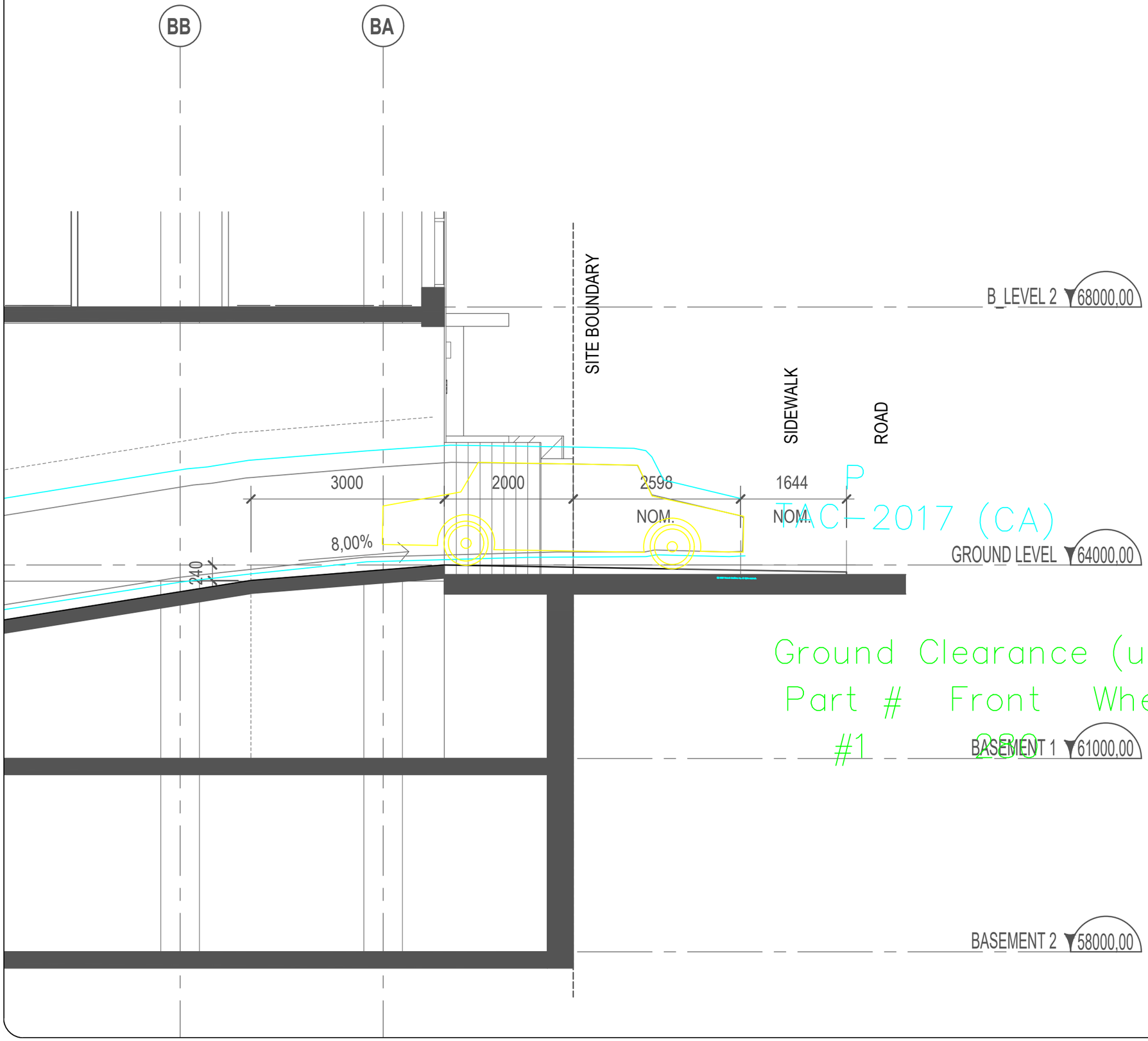
TDM Checklists can be found in Appendix D.

## 8.2 Circulation and Access

The primary Access #1 on McRae Avenue will accommodate passenger vehicles accessing the underground automobile parking. Access #2 is considered the primary entrance/exit to the loading area and will accommodate minimal truck volumes primarily during off-peak hours. Access #2 is also expected to be used by garbage trucks to access the development.

While the horizontal geometry of each access point is relatively straightforward, and meets the private approach by-law, the vertical geometry of the underground parking lot does not. Therefore, a review of the vertical geometry has been examined. As shown in Figure 19, a vehicle outbound on the proposed ramp would be able to exit the building and see the sidewalk and the road, without blocking the sidewalk or the road.

Additionally, turning templates have been developed for passenger cars on both parking levels as well as garbage trucks at Access #2. Garbage trucks will pull into the loading area where members of staff will bring out garbage and act as spotters to help the garbage truck back-up onto Tweedsmuir Avenue. Turning templates can be found in Appendix E.






Ground Clearance (units: mm)

| Part # | Front | Wheelbase | Re |
|---|---|---|---|
| #1 | 250 | 250 | 3 |

Notes:

| REV: | DESCRIPTION: | BY: | DATE: |
|---|---|---|---|
| A | description | by | xx/xx/xx |

STATUS: status

CGH Transportation
13 Markham Ave
Ottawa, ON
K2G 3Z1
(343) 999-9117

CLIENT: GWL Realty Advisors
33 Yonge Street, Suite 1000
Toronto Ontario
M5E 1G4

ARCHITECT: NEUF Architects
47 Clarence Street, Suite 406
Ottawa, ON
K1N 9K1

SITE: 320 McRae

TITLE: Access Review
Vertical Geometry

| SCALE AT A3: | DATE: | DRAWN: | CHECKED: |
|---|---|---|---|
| NTS | 2020-01-28 | MC | |
| **PROJECT NO:** | **DRAWING NO:** | | **REVISION:** |
| 2019-29 | 001 | | |

### 8.3 New Street Networks

This TIA is exempt from this Module (See Table 7).

# 9 Parking

## 9.1 Parking Supply

The parking requirements and provisions for the proposed development are summarized in Table 15.

*Table 15: Parking Provisions*

| Land Use | Parking Rate | Parking Required | Parking Provided |
|---|---|---|---|
| **Dwelling units in same building as non-residential** | N/A | 0 | 185 |
| **Retail Store** | N/A | 0 | |
| **Dwelling units in same building as non-residential (visitor)** | 0.1 spaces/dwelling unit | 30 | |
| **Dwelling units in same building as non-residential (bicycle)** | 0.5 spaces/dwelling unit | 159 | 163 |
| **Retail Store (bicycle)** | 1 space/250m$^2$ GFA | 4 | |

The parking supply has been evaluated for the ultimate horizon conditions which assumes that the Westboro LRT Station has been completed and the surrounding area is operating as a TOD area. As such, no minimum automobile parking space requirements, with the exception of residential visitor parking, are considered for the proposed development. It is noted that of the 163 bicycle parking spaces, 123 will be underground, and due to space restrictions, 25 will be in the loading area and 15 bicycle parking spaces will be slightly off the property along McRae Avenue and Scott Street. The required parking space provisions for both the automobile visitor parking and bicycle parking have been met.

## 9.2 Spillover Parking

This TIA is exempt from this Module (See Table 7).

# 10 Boundary Street Design

For the purposes of this TIA, Scott Street, Tweedsmuir Avenue and McRae Avenue are considered boundary streets for the existing, future 2022 and future 2027 horizons. All three boundary streets are not currently Complete Streets and no plans exist to upgrade them to Complete Streets. Segment MMLOS is broken down into the Pedestrian Level of Service (PLOS), Bicycle Level of Service (BLOS), Transit Level of Service (TLOS) and Truck Level of Service (TkLOS). The segment MMLOS worksheets have been provided in Appendix F.

| Road Segment | Horizon | MMLOS | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | PLOS | | BLOS | | TLOS | | TkLOS | |
| | | Actual | Target | Actual | Target | Actual | Target | Actual | Target |
| **Tweedsmuir Avenue** | Existing | **C** | A | **D** | B | N/A | N/A | N/A | N/A |
| | 2022 | | | | | | | | |
| | 2027 | | | | | | | | |
| **Scott Street** | Existing | **D** | A | D | D | **E** | D | B | D |
| | 2022 | | | | | | | | |
| | 2027 | | | | | | | | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **McRae Avenue** | Existing | **F** | A | D | D | D | D | F | N/A |
| | 2022 | | | | | | | | |
| | 2027 | | | | | | | | |

As the Study Area is considered to be a TOD area for all horizons and no changes to the boundary road segments are planned within the study horizons, the existing and future horizons are the same.

The road segment of Tweedsmuir Avenue will not meet its pedestrian LOS target due to small sidewalk and boulevard widths and will not meet its bicycle LOS targets due to mixed traffic conditions. As Tweedsmuir Avenue is not a truck route and is not part of a transit route, no truck or transit LOS could be determined.

The road segment of Scott Street will not meet the pedestrian LOS target due to small sidewalk and boulevard widths and a high average daily curb lane traffic volume. The transit LOS was not met due to mixed traffic conditions. Scott Street meets both the bicycle and truck LOS targets.

The road segment of McRae Avenue will not meet its pedestrian LOS target due to small sidewalk and boulevard widths. It meets the bicycle and truck LOS targets. As McRae Avenue is a local road, no truck LOS target is available.

Future network plans mentioned in both Section 2.3.1 and Section 6.1 are anticipated to increase connectivity and improve the active mode network within the Study Area. These changes have the potential to improve the MMLOS of the boundary streets.

# 11 Access Intersections Design

## 11.1 Location and Design of Access

Two unsignalized full-movement site accesses are planned for the proposed development. Site Access #1 is approximately 40 metres south of Scott Street on Tweedsmuir Avenue and Site Access #2 is approximately 120 metres south of Scott Street on McRae Avenue. Site Access #2 is a loading access and is intended for truck use only.

## 11.2 Intersection Control

Based on the projected volumes, the two site accesses will have stop-control on the minor approach for both future total horizons. No further traffic control is warranted to address operational issues. Signalization warrants for Site Access #1 can be found in Appendix G.

## 11.3 Intersection Design

Left-turn lane warrants for unsignalized intersections were examined at Site Access #1 for both 2022 and 2027 total future horizons. To determine if a left-turn lane is warranted, the MTO Geometric Design Standards for Ontario Highways, Section E. A left-turn lane was not found to be warranted. Left-turn lane warrant nomographs can be found in Appendix H.

# 12 Transportation Demand Management

Transportation Demand Management measures are implemented to encourage the use of non-auto modes of travel. This is aimed at reducing the reliance on single occupant auto trips in the City of Ottawa. The proposed development adheres to the City's TDM principles by facilitating connections to adjacent pedestrian, cycling and

transit facilities. As the proposed development will be in a designated Transit-oriented Development (TOD) zone a TOD mode share has been used for the 2027 horizon.

The following measures, consistent with the TDM Checklist included in Appendix D, could be implemented to ensure that the travel mode shares meet the TOD targets.

- Designate an internal coordinator, or contract with an external coordinator.
- Display local area maps with walking/cycling access routes and key destinations at major entrances.
- Display relevant transit schedules and route maps at entrances.
- Contract with provider to install on-site carshare vehicles and promote their use by residents.
- Unbundle parking cost from monthly rent.

# 13 Neighbourhood Traffic Management

## 13.1 McRae Avenue

Table 16 summarizes the McRae Avenue peak hour volumes, estimated Average Annual Daily Traffic (AADT) in the peak direction for the proposed development as well as future background volumes.

*Table 16: McRae Avenue Road Volumes - NTM Review*

| **North of the Site Access** | | | | |
|---|---|---|---|---|
| **Segment** | **AM Peak** | | **PM Peak** | |
| | **North** | **South** | **North** | **South** |
| 320 McRae Avenue | 8 (80 AADT) | 3 | 6 | 8 (80 AADT) |
| 2027 FB Volumes | 135 | 155 (1550 AADT) | 252 (2520 AADT) | 182 |
| **Total** | **142** | **158 (1580 AADT)** | **258 (2580 AADT)** | **190** |

| **South of the Site Access** | | | | |
|---|---|---|---|---|
| **Segment** | **AM Peak** | | **PM Peak** | |
| | **North** | **South** | **North** | **South** |
| 320 McRae Avenue | 6 | 16 (160 AADT) | 16 (160 AADT) | 10 |
| 2027 FB Volumes | 263 (2240 AADT) | 176 | 331 (3310 AADT) | 303 |
| **Total** | **269 (2690 AADT)** | **194** | **347 (3470 AADT)** | **313** |
| | | | | |
| **South of Richmond Road** | | | | |
| **Segment** | **AM Peak** | | **PM Peak** | |
| | **North** | **South** | **North** | **South** |
| 320 McRae Avenue | 2 | 5 (50 AADT) | 5 (50 AADT) | 3 |
| 2027 FB Volumes | 56 | 81 (810 AADT) | 201 (2010 AADT) | 182 |
| **Total** | **58** | **86 (860 AADT)** | **206 (2060 AADT)** | **185** |

Notes:
1 – AADT generated using a conservative 10:1 ratio

The TIA guidelines outline a local road threshold of 1,000 vehicles per day (AADT), or 120 vehicles in a given peak hour for Neighbourhood Traffic Management review. As illustrated above, McRae Avenue will exceed these volume thresholds in 2027. As these thresholds are exceeded independently of the subject development, which makes up 5% or less of the total future volumes on McRae Avenue, no Neighbourhood Traffic Management Plans are recommended as a result of the proposed development's site generated traffic.

## 13.2 Tweedsmuir Avenue

Table 17 summarizes the Tweedsmuir Avenue peak hour volumes, estimated AADT in the peak direction for the proposed development as well as future background volumes.

*Table 17: Tweedsmuir Avenue Road Volumes - NTM Review*

| North of Scott Street | | | | |
|---|---|---|---|---|
| **Segment** | **AM Peak** | | **PM Peak** | |
| | **North** | **South** | **North** | **South** |
| 320 McRae Avenue | 0 | 0 | 0 | 0 |
| 2027 FB Volumes | 6 | 7<br>(70 AADT) | 6 | 7<br>(70 AADT) |
| **Total** | **6** | **7<br>(70 AADT)** | **6** | **7<br>(70 AADT)** |

| South of Scott Street | | | | |
|---|---|---|---|---|
| **Segment** | **AM Peak** | | **PM Peak** | |
| | **North** | **South** | **North** | **South** |
| 320 McRae Avenue | 0 | 0 | 0 | 0 |
| 2027 FB Volumes | 44<br>(440 AADT) | 16 | 47<br>(470 AADT) | 24 |
| **Total** | **44<br>(440 AADT)** | **16** | **47<br>(470 AADT)** | **240** |

| South of Richmond Road | | | | |
|---|---|---|---|---|
| **Segment** | **AM Peak** | | **PM Peak** | |
| | **North** | **South** | **North** | **South** |
| 320 McRae Avenue | 1 | 4<br>(40 AADT) | 4<br>(40 AADT) | 2 |
| 2027 FB Volumes | 47<br>(470 AADT) | 29 | 48 | 113<br>(1130 AADT) |
| **Total** | **48<br>(480 AADT)** | **33** | **52** | **115<br>(1150 AADT)** |

Notes:
1 – AADT generated using a conservative 10:1 ratio

The TIA guidelines outline a local road threshold of 1,000 vehicles per day (AADT), or 120 vehicles in a given peak hour for Neighbourhood Traffic Management review. As illustrated above, Tweedsmuir Avenue will not exceed these volume thresholds in 2027 with the exception of the southbound PM Peak volumes south of Richmond Road. As this threshold is exceeded independently of the subject development, which makes up approximately 2% of the total future the southbound PM Peak volumes south of Richmond Road on Tweedsmuir Avenue. As such, no Neighbourhood Traffic Management Plans are recommended as a result of the proposed development's site generated traffic.

# 14 Transit

In Section 5.1 the trip generation by mode was estimated, including the number of transit trips that will be generated by the proposed development. Table 18 summarizes the transit trip generation for the ultimate future horizon year of 2027.

*Table 18: Trip Generation by Transit Mode*

| Travel Mode | Mode Share | AM Peak Period | | | PM Peak Period | | |
|---|---|---|---|---|---|---|---|
| | | In | Out | Total | In | Out | Total |
| | 65% | 38 | 108 | 146 | 100 | 64 | 164 |

The Westboro LRT Station is expected to provide adequate transit capacity to support the increase in travel demand by the proposed development.

# 15 Review of Network Concept

This TIA is exempt from this Module (See Table 7).

# 16 Intersection Design

## 16.1 Intersection Control

A signal warrant analysis was performed for the intersections of Richmond Road and Tweedsmuir Avenue and McRae Avenue and Scott Street. Signalization was not warranted at either of the intersections analyzed. As such, the intersection method of control will remain consistent with existing methods of control for all Study Area intersections at both future horizons. Signal warrants can be found in Appendix G.

## 16.2 Intersection Design

To understand the intersection design, an MMLOS analysis of existing, 2022 future horizon, and 2027 future horizon demands is required. The existing and future segment MMLOS has been discussed in Section 10. The following sections will discuss the vehicle LOS at Study Area intersections which is based on the HCM criteria for average delay at unsignalized intersections. At signalized intersections, the level of service is based on the V/C ratio as required by the City of Ottawa.

The intersection of Scott Street and Tweedsmuir Avenue is made up of a two-way stop-controlled intersection with stop control on the north and south legs and a signalized pedestrian crossing directly to the east on Scott Street. The limitations of Synchro are such that this intersection is required to be modelled as two intersections as close to one another as is allowable in Synchro. This approach was confirmed by the City of Ottawa.

This will be followed by a discussion of the intersection MMLOS for other modes.

Additionally, left-turn lane warrants for unsignalized intersections were not examined as a result of the low volume increases and acceptable intersection operations.

### 16.2.1 Existing Conditions

The existing intersection volumes have been analyzed to establish a baseline condition and determine the impact of the subject development on the Study Area road network. Table 19 summarizes the operational analysis of the 2019 existing conditions. Appendix I contains the 2019 Existing Conditions Synchro sheets.

*Table 19: Existing Intersection Operations*

| Intersection | Lane | AM Peak Hour | | | | PM Peak Hour | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | LOS | Delay | V/C | Q (95th) | LOS | Delay | V/C | Q (95th) |
| **Scott Street & Tweedsmuir Avenue *Unsignalized*** | EBL/T/R | A | 0 | - | 0 | A | 0 | - | 0 |
| | WBL/T/R | A | 9 | 0.01 | <1 | A | 8 | 0.01 | <1 |
| | NBL/T/R | B | 13 | 0.08 | 2 | B | 14 | 0.10 | 3 |
| | SBL/T/R | D | 27 | 0.04 | 1 | A | 29 | 0.04 | 1 |
| **Scott Street & Pedestrian Crossing *Signalized*** | EBT | A | 12 | 0.55 | 69 | A | 11 | 0.47 | 54 |
| | WBT | A | 9 | 0.30 | 31 | A | 11 | 0.50 | 58 |
| | **Overall** | **B** | **11** | **-** | **-** | **B** | **11** | **-** | **-** |
| **Scott Street & McRae Avenue *Unsignalized*** | EBT/R | - | - | - | - | - | - | - | - |
| | WBL/T | A | 9 | 0.11 | 3 | A | 9 | 0.10 | 3 |
| | NBL/R | C | 16 | 0.22 | 6 | C | 20 | 0.49 | 19 |
| **Richmond Road & Tweedsmuir Avenue *Unsignalized*** | EBL/T/R | A | 8 | 0.02 | <1 | A | 9 | 0.03 | 1 |
| | WBL/T | A | 0 | 0.01 | <1 | A | 9 | 0.07 | 2 |
| | WBR | - | - | - | - | - | - | - | - |
| | NBL/T/R | B | 15 | 0.11 | 3 | C | 18 | 0.14 | 4 |
| | SBL/T/R | B | 13 | 0.04 | 1 | D | 29 | 0.19 | 7 |
| **Richmond Road & McRae Avenue *Signalized*** | EBL | A | 7 | 0.19 | 14 | A | 18 | 0.30 | 22 |
| | EBT/R | A | 9 | 0.43 | 54 | A | 15 | 0.43 | 73 |
| | WBL | A | 6 | 0.02 | 2 | A | 7 | 0.10 | 8 |
| | WBT/R | A | 8 | 0.41 | 47 | C | 20 | 0.79 | #195 |
| | NBL | A | 25 | 0.13 | 8 | A | 34 | 0.44 | 21 |
| | NBT/R | A | 14 | 0.10 | 7 | A | 16 | 0.30 | 18 |
| | SBL/T/R | B | 35 | 0.63 | 32 | C | 41 | 0.80 | 51 |
| | **Overall** | **B** | **12** | **-** | **-** | **C** | **22** | **-** | **-** |
| **Notes:** | Saturation flow rate of 1800 veh/h/lane | | | | | | | | |
| | PHF = 0.90 | | | | | | | | |
| | # indicates the volume for the 95th percentile cycle exceeds capacity | | | | | | | | |

In general, the existing intersections operated well during the peak hours with no high delays or capacity issues noted. At the intersection of Richmond Road and McRae Avenue, the 95th percentile cycle exceeds capacity for the westbound shared through / right movement in the PM peak. The V/C ratio for this movement is less than one and it can therefore be assumed that in practice the 95th percentile queue will rarely be exceeded.

### 16.2.2 2022 Future Background

The 2022 future background intersection volumes and other development traffic has been analyzed to allow a comparison between the future volumes with and without the proposed development. Table 20 summarizes the operational analysis of 2022 future background conditions. Appendix J contains the 2022 Future Background Synchro sheets.

*Table 20: 2022 Future Background Conditions Operational Analysis*

| Intersection | Lane | AM Peak Hour | | | | PM Peak Hour | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | LOS | Delay | V/C | Q (95th) | LOS | Delay | V/C | Q (95th) |
| **Scott Street & Tweedsmuir Avenue** ***Unsignalized*** | EBL/T/R | A | 0 | - | 0 | A | 0 | - | 0 |
| | WBL/T/R | A | 9 | 0.01 | <1 | A | 8 | 0.01 | <1 |
| | NBL/T/R | B | 13 | 0.09 | 2 | B | 14 | 0.10 | 3 |
| | SBL/T/R | D | 30 | 0.04 | 1 | D | 27 | 0.04 | 1 |
| **Scott Street & Pedestrian Crossing** ***Signalized*** | EBT | A | 13 | 0.59 | 77 | A | 11 | 0.45 | 52 |
| | WBT | A | 9 | 0.33 | 35 | A | 11 | 0.48 | 56 |
| | **Overall** | **B** | **11** | **-** | **-** | **B** | **11** | **-** | **-** |
| **Scott Street & McRae Avenue** ***Unsignalized*** | EBT/R | - | - | - | - | - | - | - | - |
| | WBL/T | A | 9 | 0.13 | 4 | A | 9 | 0.11 | 3 |
| | NBL/R | C | 19 | 0.34 | 11 | C | 21 | 0.51 | 20 |
| **Richmond Road & Tweedsmuir Avenue** ***Unsignalized*** | EBL/T/R | A | 8 | 0.02 | <1 | A | 9 | 0.03 | 1 |
| | WBL/T | A | 0 | 0.02 | <1 | A | 9 | 0.07 | 2 |
| | WBR | - | - | - | - | - | - | - | - |
| | NBL/T/R | C | 15 | 0.12 | 3 | C | 17 | 0.12 | 3 |
| | SBL/T/R | B | 13 | 0.05 | 1 | D | 27 | 0.17 | 5 |
| **Richmond Road & McRae Avenue** ***Signalized*** | EBL | A | 9 | 0.26 | 18 | A | 20 | 0.33 | 23 |
| | EBT/R | A | 10 | 0.47 | 62 | A | 15 | 0.43 | 71 |
| | WBL | A | 7 | 0.02 | 2 | A | 8 | 0.09 | 8 |
| | WBT/R | A | 9 | 0.49 | 61 | C | 21 | 0.80 | #193 |
| | NBL | A | 23 | 0.13 | 8 | A | 30 | 0.39 | 19 |
| | NBT/R | A | 13 | 0.10 | 7 | A | 15 | 0.28 | 18 |
| | SBL/T/R | B | 36 | 0.67 | 37 | C | 40 | 0.80 | 54 |
| | **Overall** | **B** | **14** | **-** | **-** | **C** | **22** | **-** | **-** |
| **Notes:** | Saturation flow rate of 1800 veh/h/lane | | | | | | | | |
| | PHF = 1.00 | | | | | | | | |
| | # indicates the volume for the 95th percentile cycle exceeds capacity | | | | | | | | |

With the addition of background growth to reflect the 2022 horizon as well as traffic generated from surrounding developments, the existing intersections are anticipated to operate with similar operational characteristics to the existing conditions, and well within the City of Ottawa operational thresholds.

At the intersection of Richmond Road and McRae Avenue, the 95th percentile cycle exceeds capacity for the westbound shared through / right movement in the PM peak. The V/C ratio for this movement is less than one and it can therefore be assumed that in practice the 95th percentile queue will rarely be exceeded.

### 16.2.3 2027 Future Background

The 2027 future background intersection volumes and other development traffic has been analyzed to allow a comparison between the future volumes with and without the proposed development. Table 21 summarizes the operational analysis of 2027 future background conditions. Appendix K contains the 2027 Future Background Synchro sheets.

*Table 21: 2027 Future Background Conditions Operational Analysis*

| Intersection | Lane | AM Peak Hour | | | | PM Peak Hour | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | LOS | Delay | V/C | Q (95th) | LOS | Delay | V/C | Q (95th) |
| **Scott Street & Tweedsmuir Avenue *Unsignalized*** | EBL/T/R | A | 0 | - | 0 | A | 0 | - | 0 |
| | WBL/T/R | A | 9 | 0.01 | <1 | A | 8 | 0.01 | <1 |
| | NBL/T/R | B | 14 | 0.11 | 3 | C | 15 | 0.11 | 3 |
| | SBL/T/R | E | 35 | 0.06 | 2 | D | 33 | 0.05 | 1 |
| **Scott Street & Pedestrian Crossing *Signalized*** | EBT | B | 15 | 0.66 | #106 | A | 11 | 0.50 | 59 |
| | WBT | A | 10 | 0.36 | 39 | A | 12 | 0.53 | 64 |
| | **Overall** | **B** | **11** | **-** | **-** | **B** | **12** | **-** | **-** |
| **Scott Street & McRae Avenue *Unsignalized*** | EBT/R | - | - | - | - | - | - | - | - |
| | WBL/T | A | 10 | 0.15 | 4 | A | 9 | 0.12 | 3 |
| | NBL/R | C | 22 | 0.41 | 15 | D | 27 | 0.62 | 26 |
| **Richmond Road & Tweedsmuir Avenue *Unsignalized*** | EBL/T/R | A | 8 | 0.02 | 1 | A | 9 | 0.03 | 1 |
| | WBL/T | A | 9 | 0.02 | 1 | A | 9 | 0.08 | 2 |
| | WBR | - | - | - | - | A | 0 | - | - |
| | NBL/T/R | C | 17 | 0.15 | 4 | C | 20 | 0.17 | 6 |
| | SBL/T/R | B | 15 | 0.06 | 2 | D | 34 | 0.24 | 10 |
| **Richmond Road & McRae Avenue *Signalized*** | EBL | A | 10 | 0.31 | 21 | A | 32 | 0.51 | #36 |
| | EBT/R | A | 11 | 0.53 | 72 | A | 17 | 0.50 | 81 |
| | WBL | A | 7 | 0.02 | 3 | A | 9 | 0.12 | 9 |
| | WBT/R | A | 11 | 0.54 | 70 | E | 32 | 0.91 | #223 |
| | NBL | A | 23 | 0.14 | 9 | A | 29 | 0.39 | 21 |
| | NBT/R | A | 13 | 0.10 | 7 | A | 15 | 0.28 | 20 |
| | SBL/T/R | C | 37 | 0.71 | 40 | D | 41 | 0.82 | 61 |
| | **Overall** | **B** | **15** | **-** | **-** | **C** | **28** | **-** | **-** |
| **Notes:** | Saturation flow rate of 1800 veh/h/lane | | | | | | | | |
| | PHF = 1.00 | | | | | | | | |
| | # indicates the volume for the 95th percentile cycle exceeds capacity | | | | | | | | |

With the addition of background growth to reflect the 2027 horizon as well as traffic generated from surrounding developments, the existing intersections are anticipated to operate with similar operational characteristics to the existing conditions, and well within the City of Ottawa operational thresholds.

The AM peak eastbound through at the intersection of Scott Street and the pedestrian signal, and the eastbound left-turn and westbound shared through / right movement in the PM peak at the intersection of Richmond Road and McRae Avenue, exceed the 95th percentile cycle capacity. The V/C ratio for these movements is less than one and it can therefore be assumed that in practice the 95th percentile queue will rarely be exceeded.

### 16.2.4 2022 Total Future

The 2022 total future intersection volumes, including the site generated traffic and other development traffic, has been analyzed to understand the impact of the subject development on the Study Area intersections. Table 22 summarizes the operational analysis of the 2022 total future conditions. Appendix L contains the 2022 Future Total Synchro Sheets.

*Table 22: 2022 Total Future Conditions Operational Analysis*

| Intersection | Lane | AM Peak Hour | | | | PM Peak Hour | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | LOS | Delay | V/C | Q (95th) | LOS | Delay | V/C | Q (95th) |
| **Scott Street & Tweedsmuir Avenue** ***Unsignalized*** | EBL/T/R | A | 0 | - | 0 | A | 0 | - | 0 |
| | WBL/T/R | A | 9 | 0.01 | <1 | A | 8 | 0.01 | <1 |
| | NBL/T/R | B | 13 | 0.09 | 2 | B | 14 | 0.10 | 3 |
| | SBL/T/R | D | 30 | 0.04 | 1 | D | 27 | 0.04 | <1 |
| **Scott Street & Pedestrian Crossing** ***Signalized*** | EBT | A | 13 | 0.59 | 77 | A | 11 | 0.45 | 52 |
| | WBT | A | 9 | 0.33 | 35 | A | 11 | 0.48 | 56 |
| | **Overall** | **B** | **12** | **-** | **-** | **B** | **11** | **-** | **-** |
| **Scott Street & McRae Avenue** ***Unsignalized*** | EBT/R | - | - | - | - | - | - | - | - |
| | WBL/T | A | 9 | 0.14 | 4 | A | 9 | 0.14 | 4 |
| | NBL/R | C | 19 | 0.41 | 19 | C | 23 | 0.56 | 24 |
| **Richmond Road & Tweedsmuir Avenue** ***Unsignalized*** | EBL/T/R | A | 8 | 0.02 | <1 | A | 9 | 0.03 | 1 |
| | WBL/T | A | 9 | 0.03 | 1 | A | 9 | 0.07 | 2 |
| | WBR | - | - | - | - | - | - | - | - |
| | NBL/T/R | C | 16 | 0.14 | 4 | C | 16 | 0.15 | 4 |
| | SBL/T/R | B | 14 | 0.05 | 1 | D | 29 | 0.19 | 6 |
| **Richmond Road & McRae Avenue** ***Signalized*** | EBL | A | 11 | 0.31 | 20 | A | 28 | 0.49 | #36 |
| | EBT/R | A | 12 | 0.50 | 62 | A | 17 | 0.45 | 81 |
| | WBL | A | 8 | 0.02 | 2 | A | 9 | 0.10 | 9 |
| | WBT/R | A | 11 | 0.52 | 61 | D | 26 | 0.85 | #223 |
| | NBL | A | 22 | 0.12 | 8 | A | 28 | 0.36 | 21 |
| | NBT/R | A | 14 | 0.10 | 8 | A | 17 | 0.29 | 20 |
| | SBL/T/R | C | 38 | 0.75 | 49 | D | 41 | 0.82 | 61 |
| | **Overall** | **B** | **16** | **-** | **-** | **C** | **25** | **-** | **-** |
| **McRae Avenue & Site Access #1** ***Unsignalized*** | EBL/R | B | 10 | 0.10 | 3 | B | 11 | 0.07 | 2 |
| | NBL/T | A | 8 | 0.01 | <1 | A | 8 | 0.04 | 1 |
| | SBT/R | - | - | - | - | - | - | - | - |
| **Notes:** | Saturation flow rate of 1800 veh/h/lane | | | | | | | | |
| | PHF = 1.00 | | | | | | | | |
| | # indicates the volume for the 95th percentile cycle exceeds capacity | | | | | | | | |

With the addition of the site generated traffic, the Study Area intersections are expected to operate with similar operational characteristics as the 2022 future background conditions, and well within the City of Ottawa operational thresholds.

The eastbound left-turn and westbound shared through / right movement in the PM peak at the intersection of Richmond Road and McRae Avenue, exceed the 95th percentile cycle capacity. The V/C ratio for these movements is less than one and it can therefore be assumed that in practice the 95th percentile queue will rarely be exceeded.

### 16.2.5 2027 Total Future

The 2027 total future intersection volumes, including the site generated traffic and other development traffic, has been analyzed to understand the impact of the subject development on the Study Area intersections. Table 23 summarizes the operational analysis of the 2027 total future conditions. Appendix M contains the 2027 Future Total Synchro Sheets.

*Table 23: 2027 Total Future Conditions Operational Analysis*

| Intersection | Lane | AM Peak Hour | | | | PM Peak Hour | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | LOS | Delay | V/C | Q (95th) | LOS | Delay | V/C | Q (95th) |
| **Scott Street & Tweedsmuir Avenue** ***Unsignalized*** | EBL/T/R | A | 0 | - | 0 | A | 0 | - | 0 |
| | WBL/T/R | A | 9 | 0.01 | <1 | A | 8 | 0.02 | <1 |
| | NBL/T/R | B | 14 | 0.11 | 3 | C | 15 | 0.12 | 3 |
| | SBL/T/R | E | 35 | 0.06 | 2 | D | 33 | 0.05 | 1 |
| **Scott Street & Pedestrian Crossing** ***Signalized*** | EBT | B | 15 | 0.66 | #106 | A | 11 | 0.50 | 59 |
| | WBT | A | 10 | 0.36 | 39 | A | 12 | 0.53 | 64 |
| | **Overall** | **B** | **13** | **-** | **-** | **B** | **12** | **-** | **-** |
| **Scott Street & McRae Avenue** ***Unsignalized*** | EBT/R | - | - | - | - | - | - | - | - |
| | WBL/T | A | 10 | 0.16 | 5 | A | 9 | 0.13 | 4 |
| | NBL/R | C | 22 | 0.44 | 16 | D | 28 | 0.64 | 31 |
| **Richmond Road & Tweedsmuir Avenue** ***Unsignalized*** | EBL/T/R | A | 8 | 0.02 | 1 | A | 9 | 0.03 | 1 |
| | WBL/T | A | 9 | 0.02 | 1 | A | 9 | 0.08 | 2 |
| | WBR | - | - | - | - | - | - | - | - |
| | NBL/T/R | C | 17 | 0.16 | 4 | C | 20 | 0.18 | 7 |
| | SBL/T/R | B | 15 | 0.06 | 2 | D | 35 | 0.24 | 10 |
| **Richmond Road & McRae Avenue** ***Signalized*** | EBL | A | 11 | 0.33 | 21 | A | 38 | 0.58 | #40 |
| | EBT/R | A | 12 | 0.54 | 72 | A | 18 | 0.51 | 81 |
| | WBL | A | 7 | 0.02 | 3 | A | 9 | 0.12 | 9 |
| | WBT/R | A | 11 | 0.55 | 70 | E | 35 | 0.93 | #225 |
| | NBL | A | 23 | 0.14 | 9 | A | 28 | 0.38 | 21 |
| | NBT/R | A | 13 | 0.10 | 7 | A | 16 | 0.29 | 21 |
| | SBL/T/R | C | 38 | 0.73 | 44 | D | 41 | 0.82 | 64 |
| | **Overall** | **B** | **16** | **-** | **-** | **C** | **30** | **-** | **-** |
| **McRae Avenue & Site Access #1** ***Unsignalized*** | EBL/R | A | 10 | 0.03 | 1 | B | 10 | 0.02 | 1 |
| | NBL/T | A | 8 | 0.00 | <1 | A | 8 | 0.01 | <1 |
| | SBT/R | - | - | - | - | - | - | - | - |
| **Notes:** | Saturation flow rate of 1800 veh/h/lane | | | | | | | | |
| | PHF = 1.00 | | | | | | | | |
| | # indicates the volume for the 95th percentile cycle exceeds capacity | | | | | | | | |

With the addition of the site generated traffic, the Study Area intersections are expected to operate with similar operational characteristics as the 2027 future background conditions, and well within the City of Ottawa operational thresholds.

The AM peak eastbound through at the intersection of Scott Street and the pedestrian signal, and the eastbound left-turn and westbound shared through / right movement in the PM peak at the intersection of Richmond Road and McRae Avenue, exceed the 95th percentile cycle capacity. The V/C ratio for these movements is less than one and it can therefore be assumed that in practice the 95th percentile queue will rarely be exceeded.

### 16.2.6 Intersection MMLOS

As intersection MMLOS is only undertaken at signalized intersections, only the intersection of Richmond Road and McRae Avenue and the intersection of Tweedsmuir Avenue and Scott Street can be analyzed. As no changes that will impact the MMLOS are expected at this intersection, the existing and future horizons are the same and can be considered in one row. The MMLOS worksheets have been provided in Appendix F.

Table 24 summarizes the MMLOS analysis for the network signalized intersection in the Study Area for all horizons.

*Table 24: Study Area Intersection MMLOS Analysis-All Horizons*

| Intersection | Pedestrian LOS | | Bicycle LOS | | Transit LOS | | Truck LOS | | Auto LOS | |
|---|---|---|---|---|---|---|---|---|---|---|
| | PLOS | Target | BLOS | Target | TLOS | Target | TrLOS | Target | ALOS | Target |
| **Richmond Road & McRae Avenue** | **E** | A | **F** | D | **E(F)** | D | **E** | D | B(D) | E |
| **Tweedsmuir Avenue & Scott Street** | **B** | A | **F** | D | C(C) | D | **F** | D | A(A) | E |

The target levels of service within 600 metres of a rapid transit station were used to evaluate the Study Area intersections.

The existing pedestrian LOS does not meet the target at either intersection due to large pedestrian crossing distances. The bicycle LOS does not meet the targets due to mixed traffic conditions along Tweedsmuir Avenue and McRae Avenue, as well as high vehicle operating speeds along Scott Street and Richmond Road. Transit LOS is limited due to signal delay and as such the target is only met in both peak periods at the intersection of Tweedsmuir Avenue and Scott Street. The truck LOS is not met at either intersection due to low number of receiving lanes on the departure from the intersections. Auto LOS meets the targets at both intersections.

### 16.2.7 Intersection Design

No intersection changes are recommended based on the above PLOS, BLOS, TLOS, TkLOS or vehicle LOS analysis above.

# 17 Conclusions

This Transportation Impact Assessment has documented the existing and future transportation conditions, for all travel modes, in the Study Area. The following conclusions can be offered based on the foregoing:

A. The proposed development, located at 320 McRae Avenue, is a mixed-use development which will consist of a four-storey commercial / residential tower, and a commercial / residential tower with both a 26-storey and a six-storey component. The development is expected to have 882 square metres of commercial space, 307 apartment units, 11 townhouse units, 185 underground automobile parking spaces and 163 bicycle parking spaces
B. The proposed development will have two full-movement accesses, one approximately 40 metres, curb to curb, south of Scott Street on Tweedsmuir Avenue (Site Access #1) and the second approximately 120 metres, curb to curb, south of Scott Street on McRae Avenue (Site Access #2). Site Access #2 is a loading access and is intended for truck use only. A drop-off area is located on McRae Avenue, approximately 23 metres, curb to curb, south of Scott Street.
C. The proposed development is within 400 metres of the existing Westboro Transitway Station and will be within 400 metres of the future Westboro LRT Station. As such, can be considered a Transit Oriented Development area.
D. The existing Study Area is currently served by bus routes #11, 50, 81 and 153 as well as the Westboro Transitway Station.
E. The previous five years of collision history at the existing Study Area intersections has been reviewed. No patterns emerged that indicated that mitigation measures or further monitoring was required.
F. Using the TRANS study, the residential trip generation rates were calculated and using the ITE trip generation equations, the retail rates were calculated.

G. The Ottawa West area mode shares were used for the 2022 horizon and the TOD mode shares were used for the 2027 horizon to determine the trip generation by mode.
H. The proposed development is anticipated to generate an estimated 112 AM and 127 PM peak hour two-way person trips in the 2022 horizon and an estimated 33 AM and 40 PM peak hour two-way person trips in the 2027 horizon.
I. TOD areas do not require resident or retail vehicle parking, however, 185 parking spaces will be provided of which 30 are required to be designated as residential visitor parking. Additionally, 163 bicycle parking spots will be provided. All minimum parking requirements are met or exceeded.
J. The vertical geometry of the underground parking ramp has been examined and analyzed.
K. Turning templates indicate that the proposed accesses and circulation route within the development can accommodate the expected garbage trucks and vehicles.
L. It was found that the road segments of Tweedsmuir Avenue, Scott Street and McRae Avenue will not meet the PLOS target. Additionally, Tweedsmuir Avenue will not meet the BLOS target and Scott Street will not meet the Scott Street target. No resulting improvements are recommended.
M. Signal warrants and turning lane warrants were examined for Site Access #1. Neither signalization or turning lanes were warranted.
N. Signal warrants have been examined at the unsignalized intersections within the Study Area. Signalization was not found to be warranted.
O. The Study Area intersections operate satisfactorily during the peak hours in the existing conditions operational analysis.
P. The Study Area intersections operate satisfactorily during the peak hours in the 2022 future background operational analysis.
Q. The Study Area intersections operate satisfactorily during the peak hours in the 2022 future total operational analysis with similar operational characteristics as the 2022 future background conditions.
R. The Study Area intersections operate satisfactorily during the peak hours in the 2027 future background operational analysis.
S. The Study Area intersections operate satisfactorily during the peak hours in the 2027 future total operational analysis with similar operational characteristics as the 2027 future background conditions.
T. The PLOS, BLOS, TLOS, and TkLOS were evaluated at both signalized Study Area intersections (Scott Street at Tweedsmuir Avenue and Richmond Road at McRae Avenue). In some cases, the MMLOS targets were not met. No intersection alterations or mitigation measures are suggested as changes to these intersections are not feasible.

The proposed development will function within the Study Area Road Network. It is recommended that, from a transportation perspective, the proposed development application process proceed.

Prepared By:

Robin Marinac, E.I.T.
437-242-5183
Robin.marinac@CGHTransportation.com

Reviewed By:


Mark Crockford, P. Eng.
905-251-4070
Mark.Crockford@CGHTransportation.com

# Appendix A

TIA Screening Form and PM Certification Form

13 Markham Avenue
Ottawa ON K2G 3Z1

City of Ottawa 2017 TIA Guidelines
Step 1 - Screening Form

Date: 31-Jan-20
Project Number: 2019-29
Project Reference: GWL 320 McRae

| 1.1 Description of Proposed Development | |
|---|---|
| Municipal Address | 320 McRae Avenue |
| Description of Location | PLAN 263 LOTS 24 AND 25 PLAN; 273 LOT 12 TO 19 |
| Land Use Classification | Traditional Mainstreet Zone, Parks and Open Spcae Zo |
| Development Size | 318 residential units, 882 square metres of commercial retail, 185 parking spaces, 163 bicycle parking spaces |
| Accesses | Access on McRae Ave (approximately 120 metres south of the Scott St / McRae Ave intersection). Access on Tweedsmuir Ave (approximately 40 metres south of Scott St / Tweedsmuir Ave intersection) |
| Phase of Development | Single Phase |
| Buildout Year | 2022 |
| TIA Requirement | Full TIA Required |

| 1.2 Trip Generation Trigger | | |
|---|---|---|
| Land Use Type | Townhomes or apartments | |
| Development Size | 307 | Units |
| Trip Generation Trigger | Yes | |

| 1.3 Location Triggers | |
|---|---|
| Does the development propose a new driveway to a boundary street that is designated as part of the City's Transit Priority, Rapid Transit or Spine Bicycle Networks? | No |
| Is the development in a Design Priority Area (DPA) or Transit-oriented Development (TOD) zone? | Yes |
| Location Trigger | Yes |

| 1.4. Safety Triggers | |
|---|---|
| Are posted speed limits on a boundary street 80 km/hr or greater? | No |
| Are there any horizontal/vertical curvatures on a boundary street limits sight lines at a proposed driveway? | No |
| Is the proposed driveway within the area of influence of an adjacent traffic signal or roundabout (i.e. within 300 m of intersection in rural conditions, or within 150 m of intersection in urban/ suburban conditions)? | Yes |
| Is the proposed driveway within auxiliary lanes of an intersection? | No |
| Does the proposed driveway make use of an existing median break that serves an existing site? | No |
| Is there is a documented history of traffic operations or safety concerns on the boundary streets within 500 m of the development development? | No |
| Does the development include a drive-thru facility? | No |
| Safety Trigger | Yes |

# TIA Plan Reports

On 14 June 2017, the Council of the City of Ottawa adopted new Transportation Impact Assessment (TIA) Guidelines. In adopting the guidelines, Council established a requirement for those preparing and delivering transportation impact assessments and reports to sign a letter of certification.

Individuals submitting TIA reports will be responsible for all aspects of development-related transportation assessment and reporting, and undertaking such work, in accordance and compliance with the City of Ottawa's Official Plan, the Transportation Master Plan and the Transportation Impact Assessment (2017) Guidelines.

By submitting the attached TIA report (and any associated documents) and signing this document, the individual acknowledges that s/he meets the four criteria listed below.

## CERTIFICATION

1. I have reviewed and have a sound understanding of the objectives, needs and requirements of the City of Ottawa's Official Plan, Transportation Master Plan and the Transportation Impact Assessment (2017) Guidelines;
2. I have a sound knowledge of industry standard practice with respect to the preparation of transportation impact assessment reports, including multi modal level of service review;
3. I have substantial experience (more than 5 years) in undertaking and delivering transportation impact studies (analysis, reporting and geometric design) with strong background knowledge in transportation planning, engineering or traffic operations; and
4. I am either a licensed[1] or registered[2] professional in good standing, whose field of expertise [check √ appropriate field(s)] is either transportation engineering √ or transportation planning □.

**[1,2] License of registration body that oversees the profession is required to have a code of conduct and ethics guidelines that will ensure appropriate conduct and representation for transportation planning and/or transportation engineering works.**

City Of Ottawa
Infrastructure Services and Community Sustainability
Planning and Growth Management
110 Laurier Avenue West, 4th fl.
Ottawa, ON K1P 1J1
Tel. : 613-580-2424
Fax: 613-560-6006

Ville d'Ottawa
Services d 'infrastructure et Viabilité des collectivités
Urbanisme et Gestion de la croissance
110, avenue Laurier Ouest
Ottawa (Ontario) K1P 1J1
Tél. : 613-580-2424
Télécopieur: 613-560-6006

Dated at ___Newmarket_____ this __26__ day of _____July_____, 2019.
(City)

Name: _____Mark Crockford_____
(Please Print)

Professional Title: _____Professional Engineer_____

_____
Signature of Individual certifier that s/he meets the above four criteria

| **Office Contact Information (Please Print)** |
|---|
| Address: 628 Haines Road |
| City / Postal Code: Newmarket / L3Y 6V5 |
| Telephone / Extension: (905) 251-4070 |
| E-Mail Address: Mark.Crockford@CGHTransportation.com |

# Appendix B

Traffic Data

ACCURATE TRUSTED TRAFFIC DATA

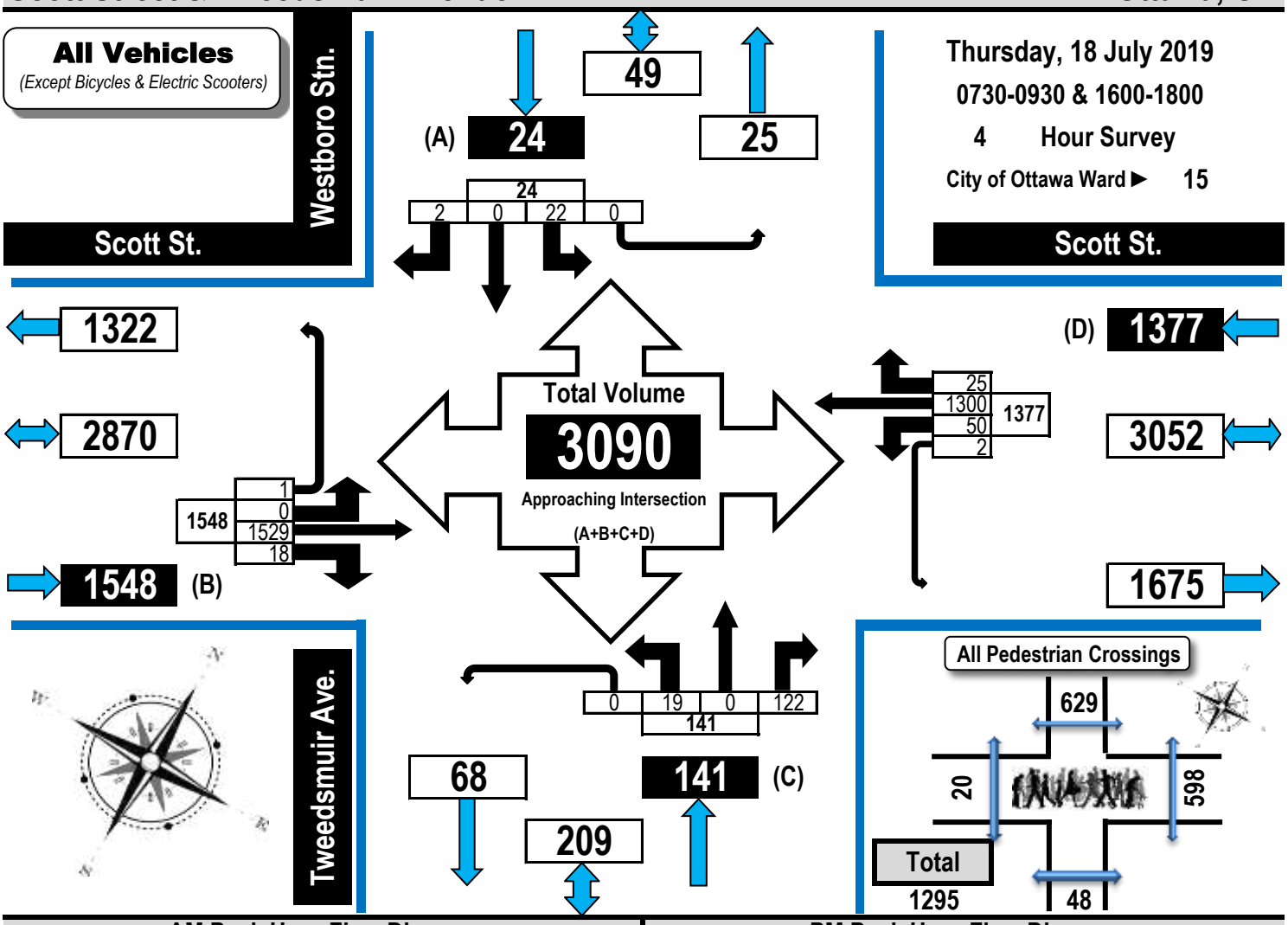
# Turning Movement Count
## Summary, AM and PM Peak Hour Flow Diagrams

Automobiles, Taxis, Light Trucks, Vans, SUV's, Motorcycles, Heavy Trucks, Buses, and School Buses

## Scott Street & Tweedsmuir Avenue — Ottawa, ON

**All Vehicles**
*(Except Bicycles & Electric Scooters)*

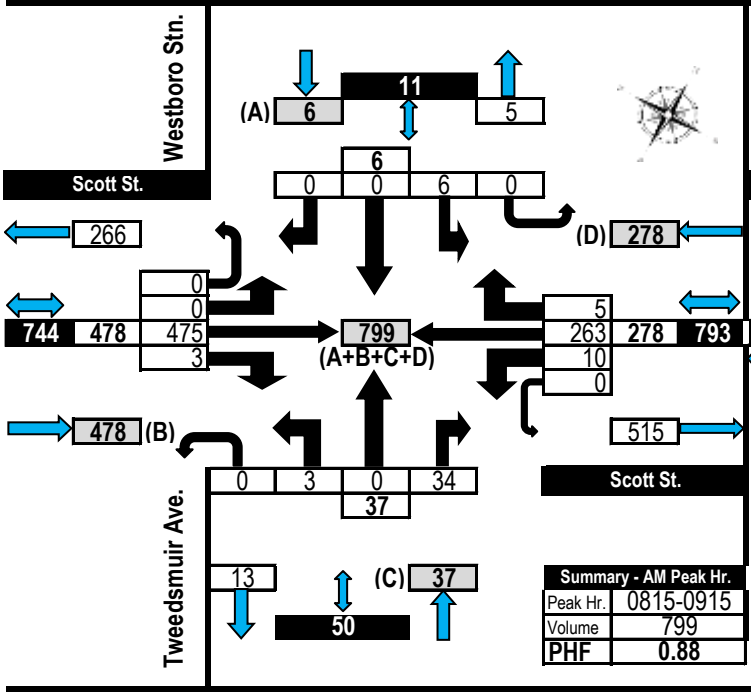
Thursday, 18 July 2019
0730-0930 & 1600-1800
4 Hour Survey
City of Ottawa Ward ▶ 15





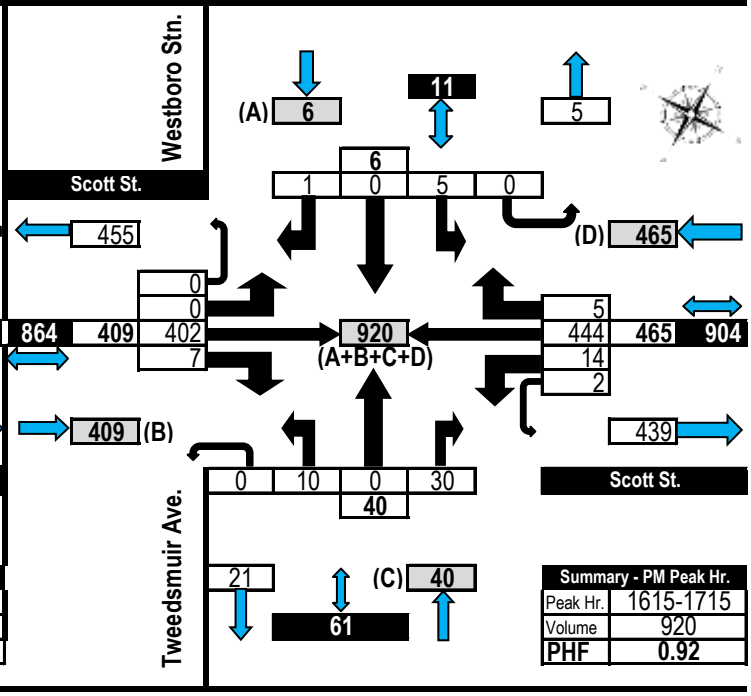


### AM Peak Hour Flow Diagram




| Summary - AM Peak Hr. | |
|---|---|
| Peak Hr. | 0815-0915 |
| Volume | 799 |
| PHF | 0.88 |

### PM Peak Hour Flow Diagram




| Summary - PM Peak Hr. | |
|---|---|
| Peak Hr. | 1615-1715 |
| Volume | 920 |
| PHF | 0.92 |

ACCURATE TRUSTED TRAFFIC DATA

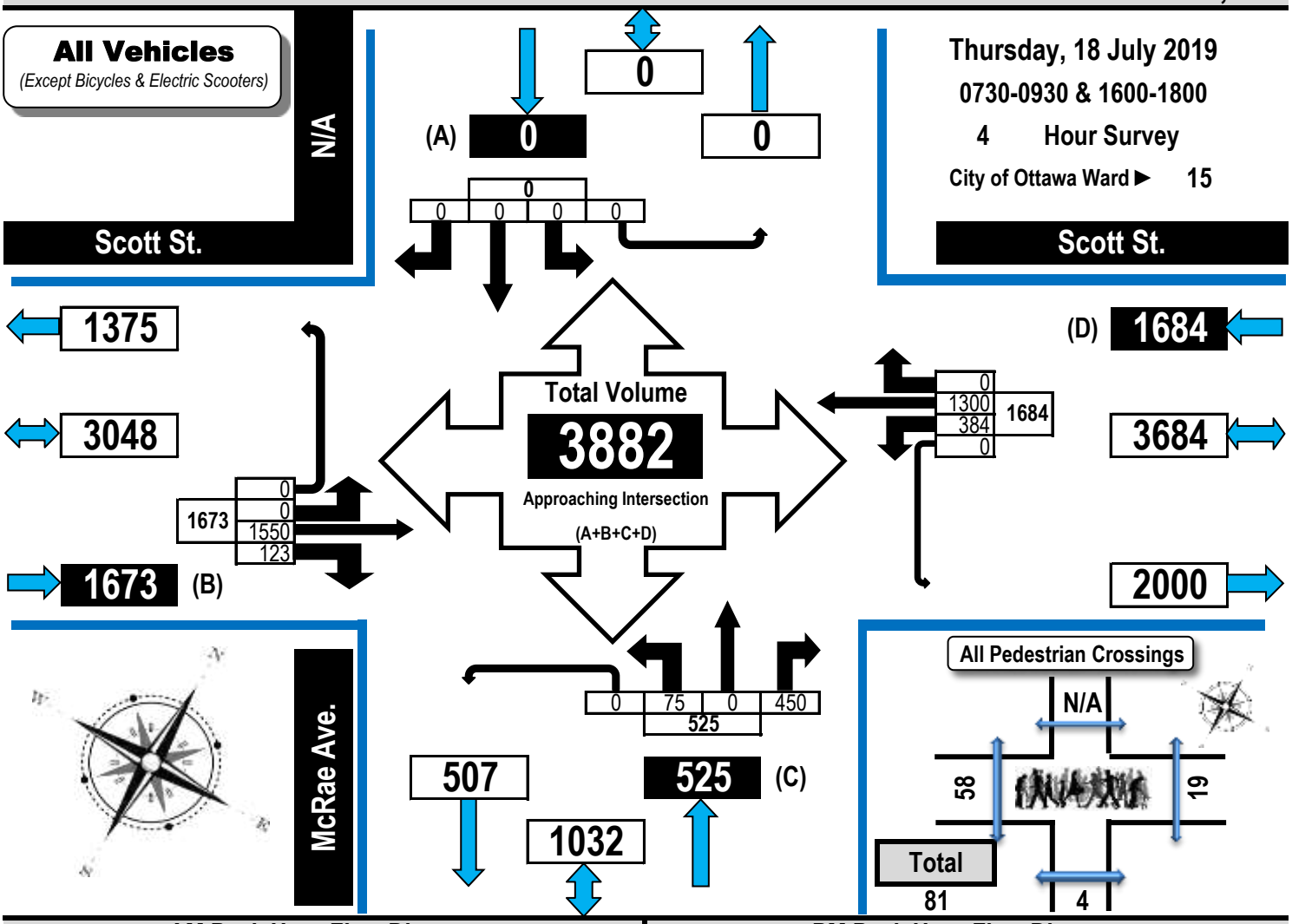
# Turning Movement Count
## Summary, AM and PM Peak Hour Flow Diagrams

Automobiles, Taxis, Light Trucks, Vans, SUV's, Motorcycles, Heavy Trucks, Buses, and School Buses

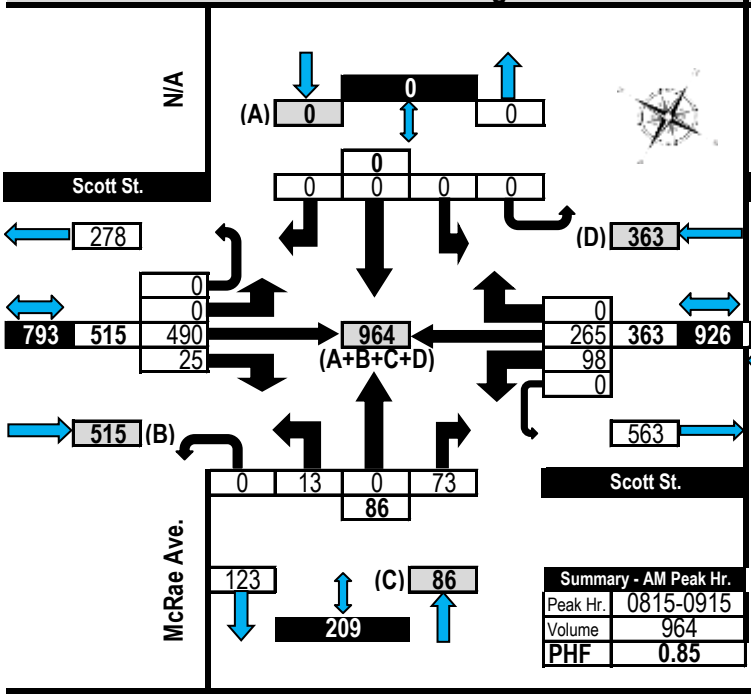
## McRae Avenue & Scott Street — Ottawa, ON

**All Vehicles**
*(Except Bicycles & Electric Scooters)*

**Thursday, 18 July 2019**
**0730-0930 & 1600-1800**
**4 Hour Survey**
**City of Ottawa Ward ▶ 15**

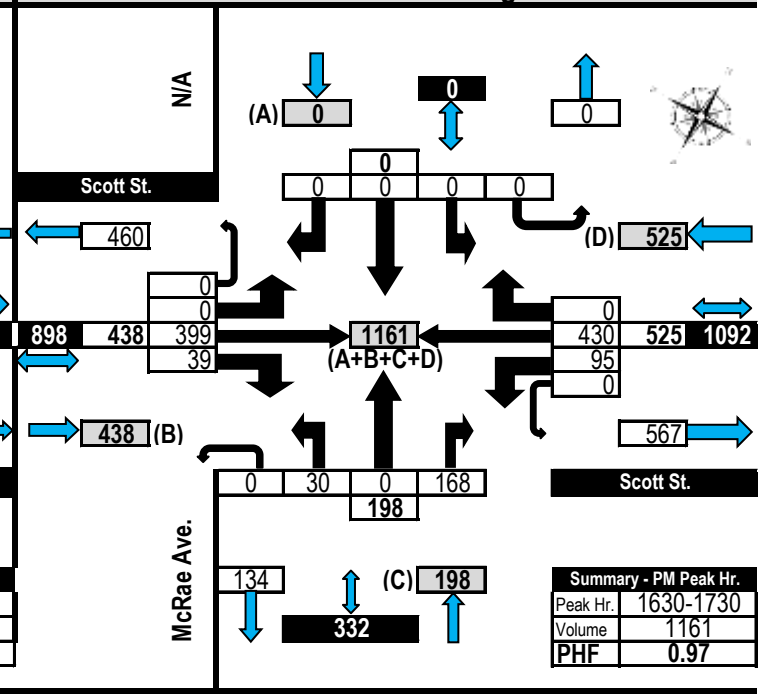



## AM Peak Hour Flow Diagram




| Summary - AM Peak Hr. | |
|---|---|
| Peak Hr. | 0815-0915 |
| Volume | 964 |
| PHF | 0.85 |

## PM Peak Hour Flow Diagram




| Summary - PM Peak Hr. | |
|---|---|
| Peak Hr. | 1630-1730 |
| Volume | 1161 |
| PHF | 0.97 |

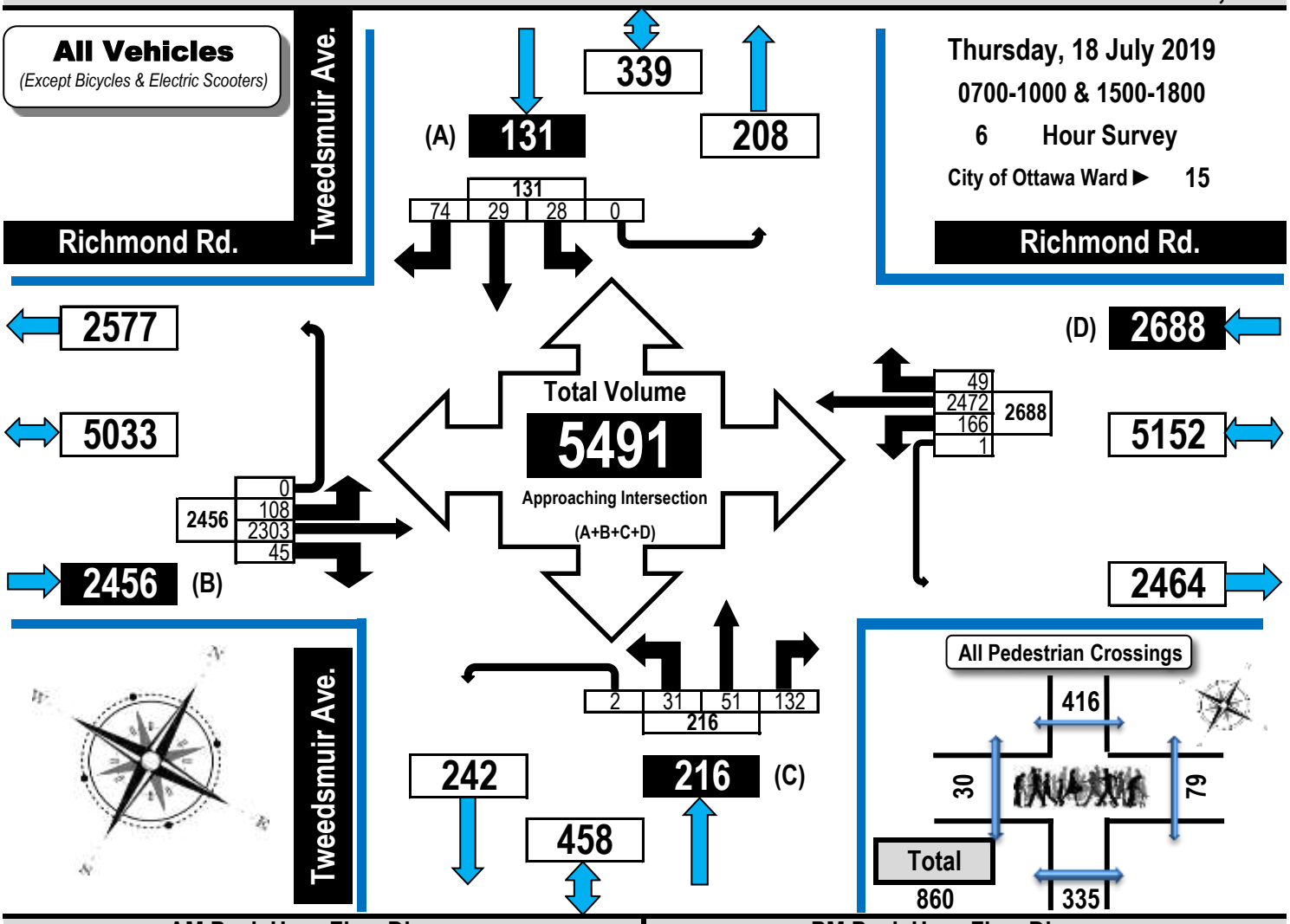
# Turning Movement Count
## Summary, AM and PM Peak Hour Flow Diagrams

Automobiles, Taxis, Light Trucks, Vans, SUV's, Motorcycles, Heavy Trucks, Buses, and School Buses

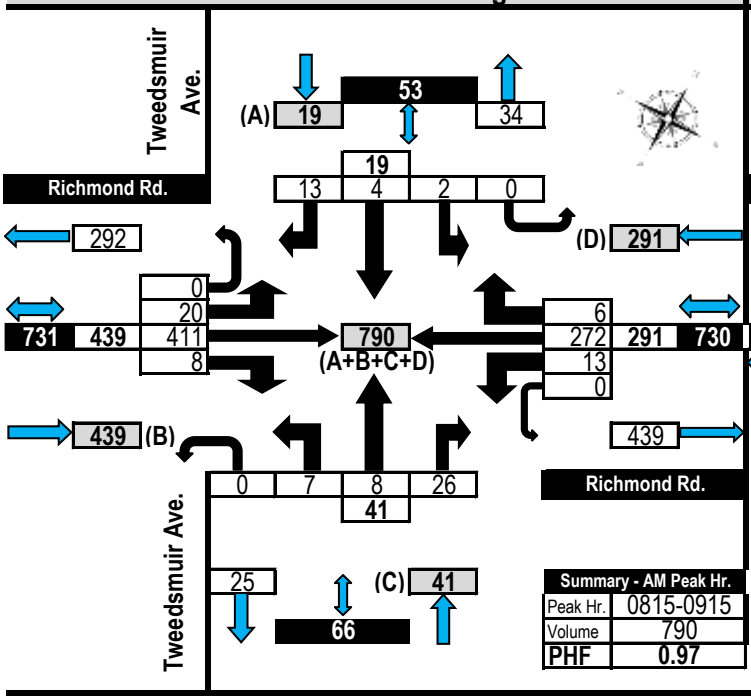
## Richmond Road & Tweedsmuir Avenue — Ottawa, ON

**All Vehicles**
*(Except Bicycles & Electric Scooters)*

**Thursday, 18 July 2019**
**0700-1000 & 1500-1800**
**6 Hour Survey**
**City of Ottawa Ward ▶ 15**

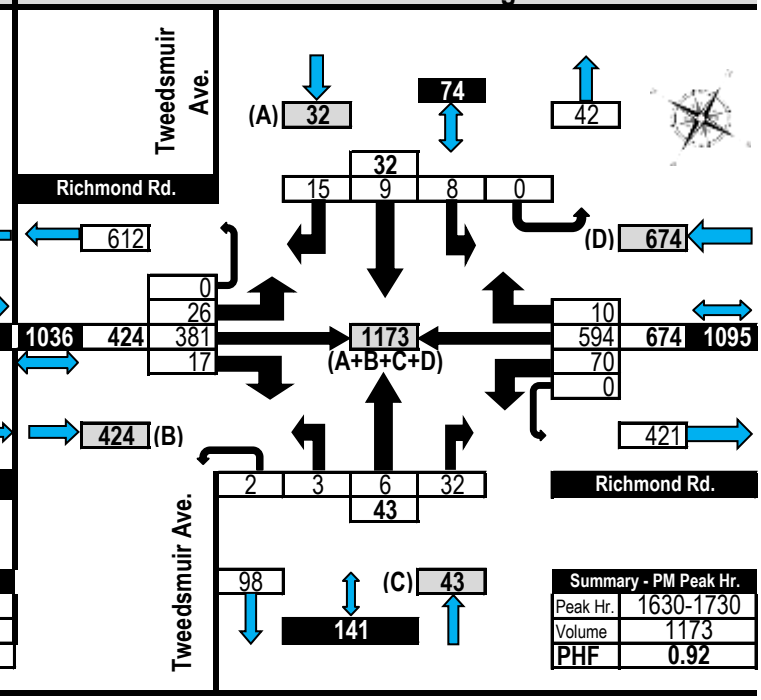



### AM Peak Hour Flow Diagram




| Summary - AM Peak Hr. | |
|---|---|
| Peak Hr. | 0815-0915 |
| Volume | 790 |
| PHF | 0.97 |

### PM Peak Hour Flow Diagram




| Summary - PM Peak Hr. | |
|---|---|
| Peak Hr. | 1630-1730 |
| Volume | 1173 |
| PHF | 0.92 |

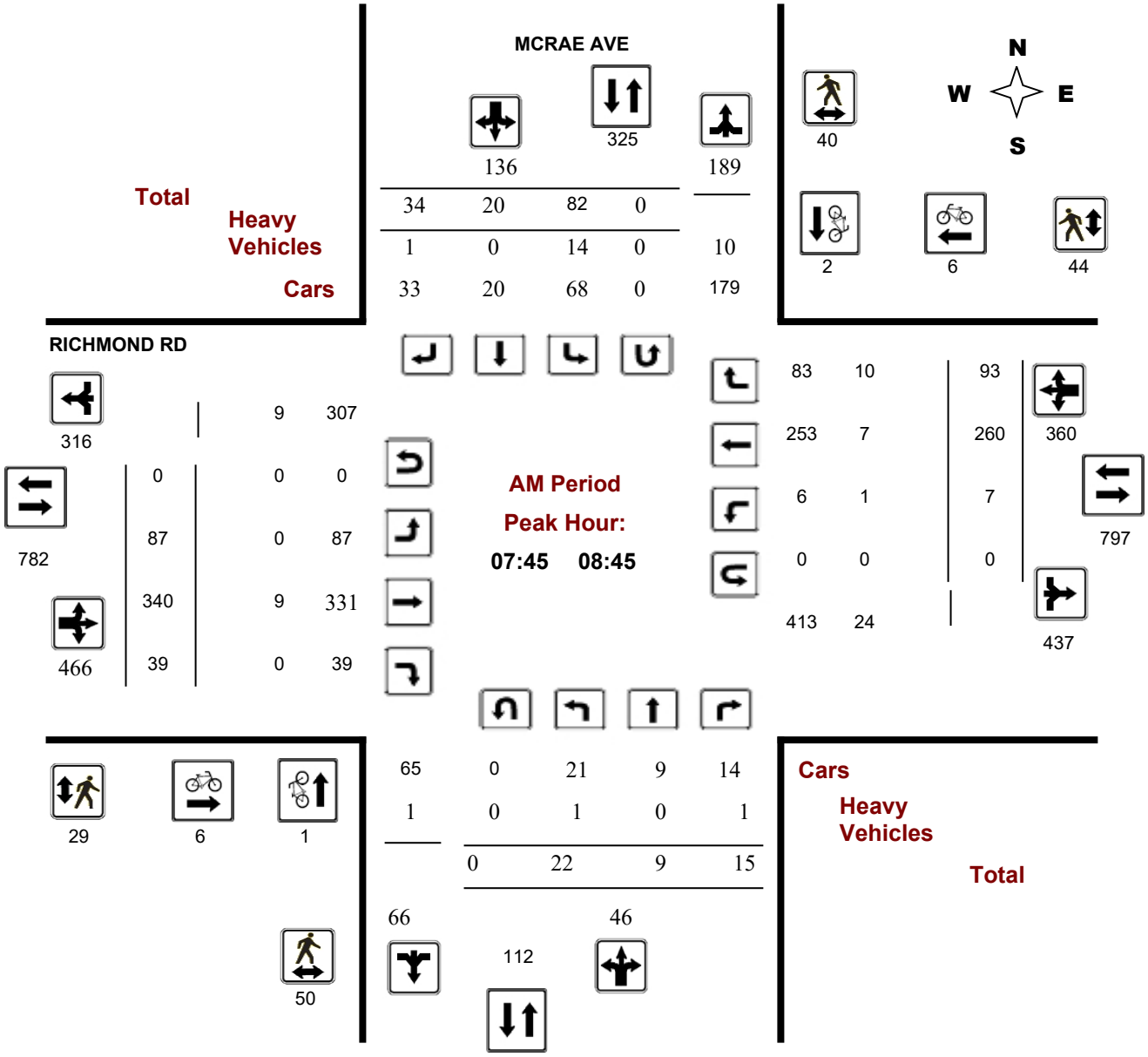
# Transportation Services - Traffic Services

## Turning Movement Count - Full Study Peak Hour Diagram

## MCRAE AVE @ RICHMOND RD

**Survey Date:** Thursday, April 20, 2017
**Start Time:** 07:00

**WO No:** 36957
**Device:** Miovision




**Comments**

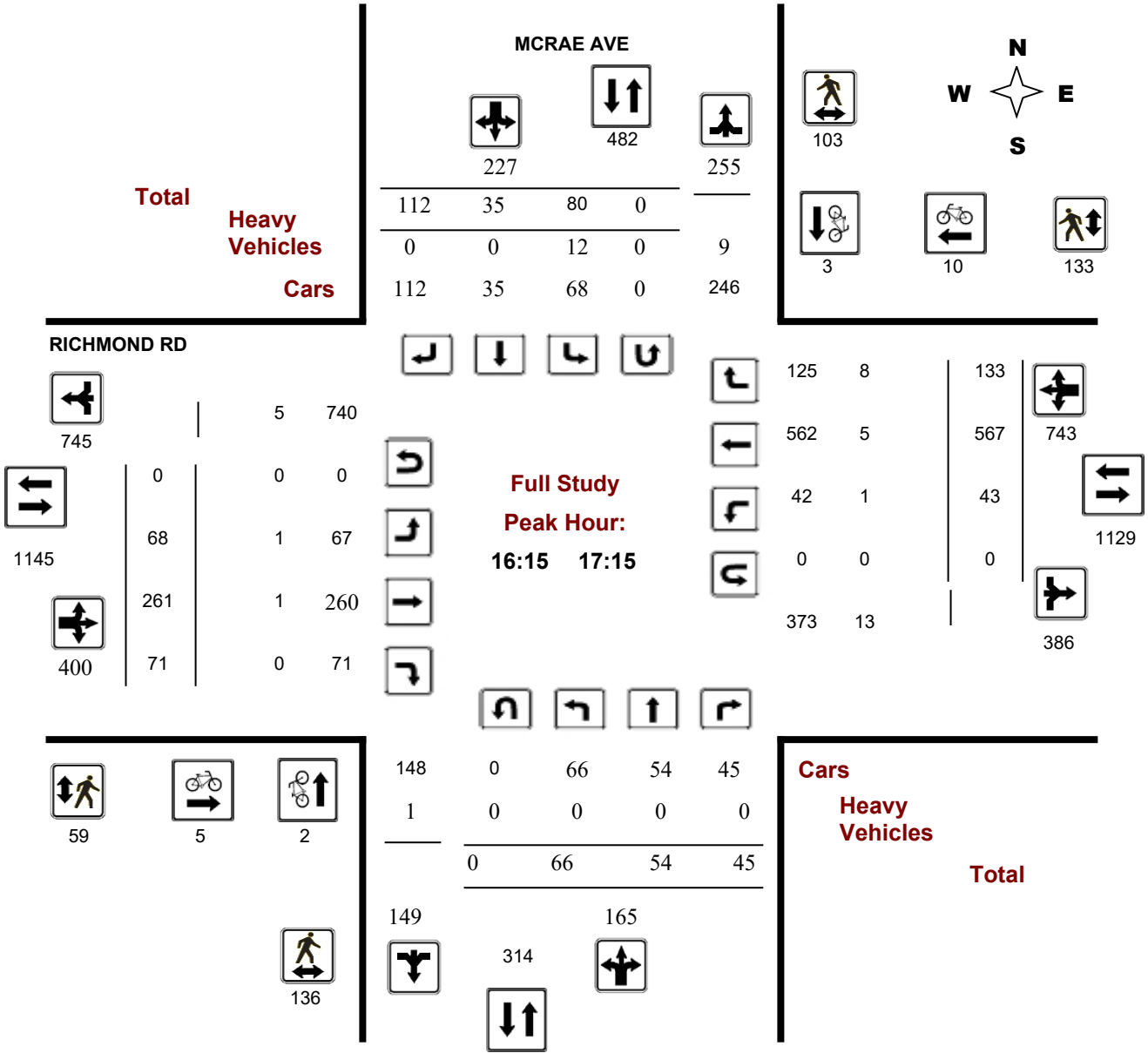
# Transportation Services - Traffic Services

## Turning Movement Count - Full Study Peak Hour Diagram

## MCRAE AVE @ RICHMOND RD

**Survey Date:** Thursday, April 20, 2017
**Start Time:** 07:00

**WO No:** 36957
**Device:** Miovision




**Comments**

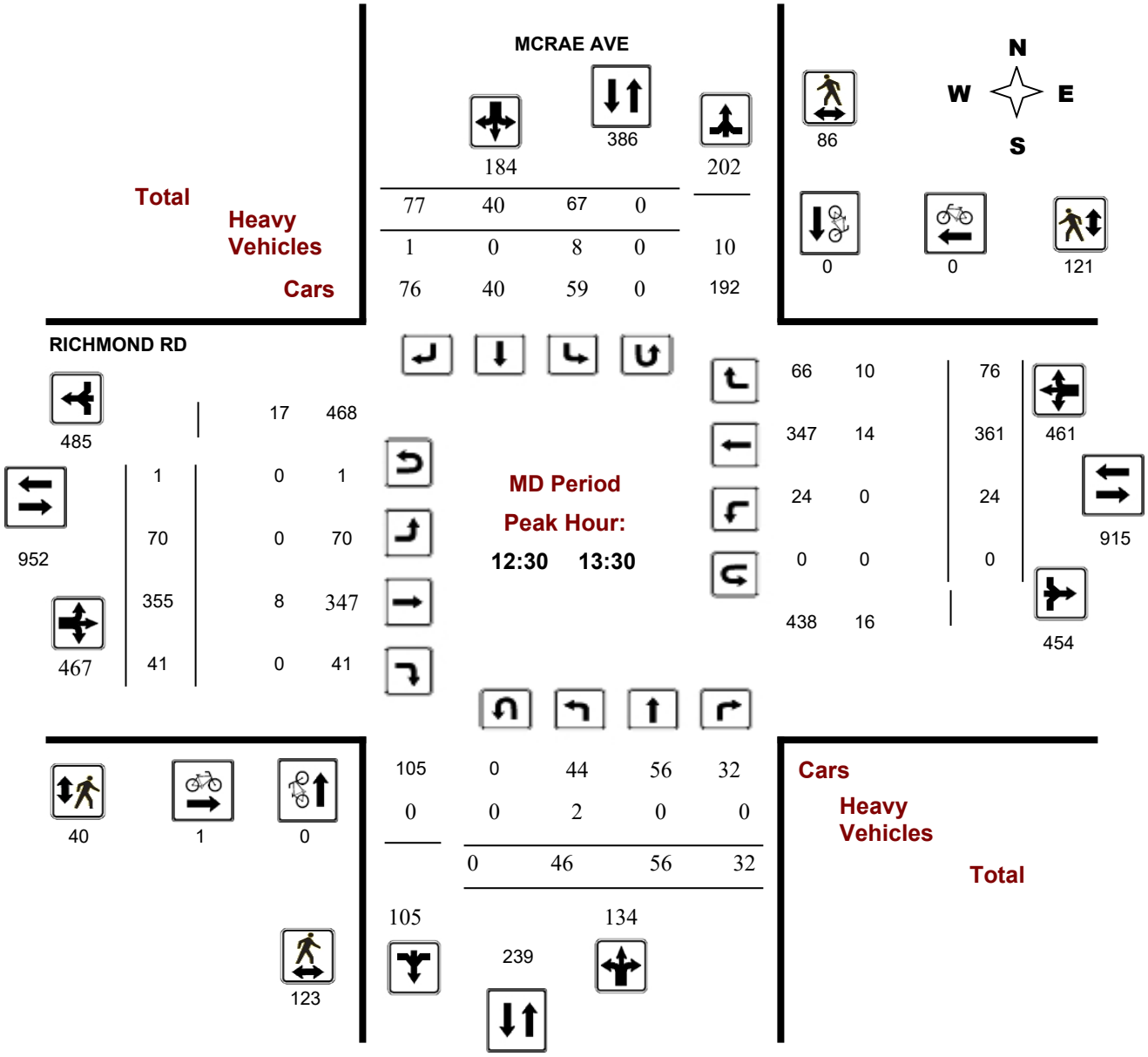
# Transportation Services - Traffic Services

## Turning Movement Count - Full Study Peak Hour Diagram

## MCRAE AVE @ RICHMOND RD

**Survey Date:** Thursday, April 20, 2017
**Start Time:** 07:00

**WO No:** 36957
**Device:** Miovision




**Comments**

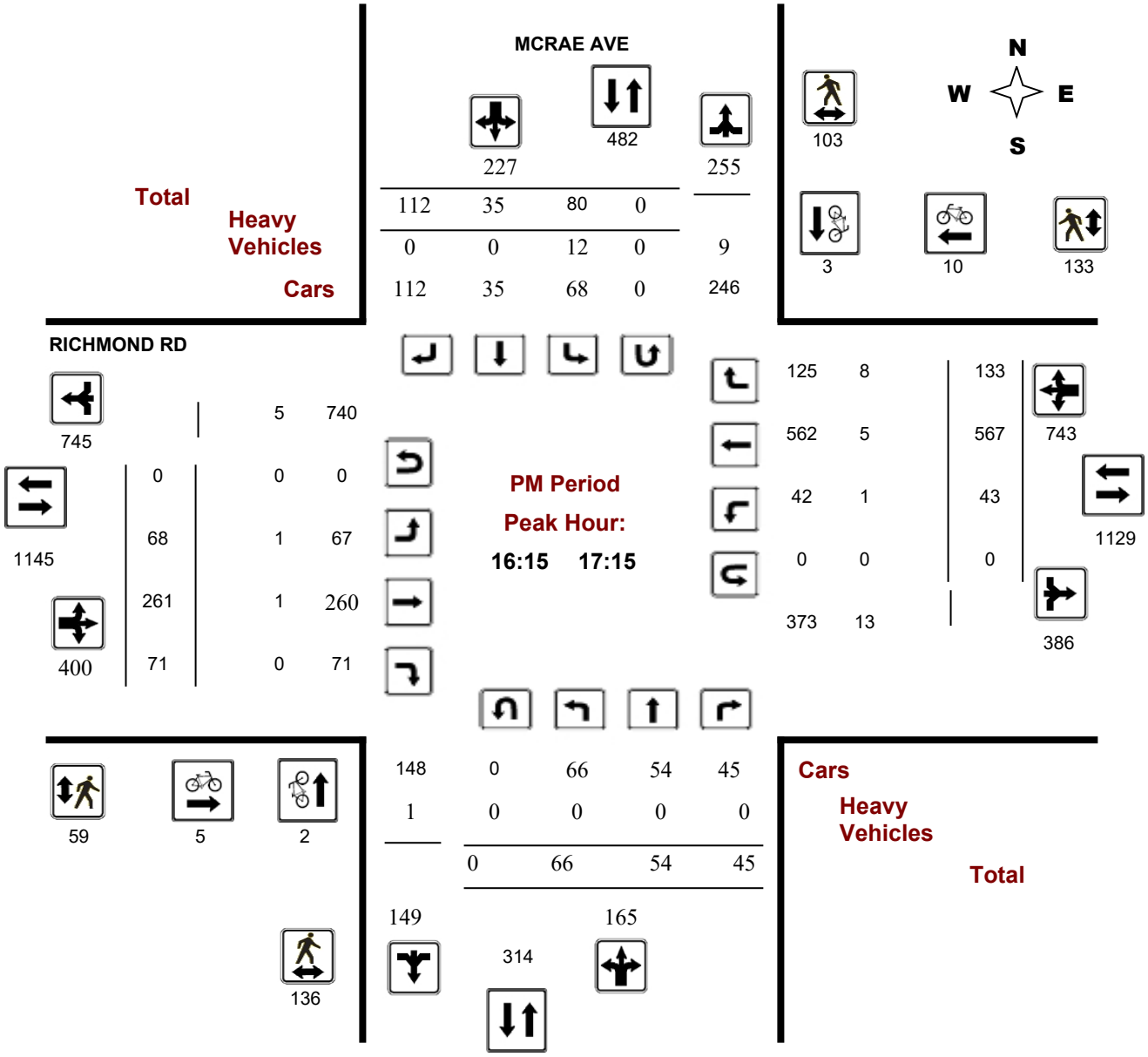
# Transportation Services - Traffic Services

## Turning Movement Count - Full Study Peak Hour Diagram

## MCRAE AVE @ RICHMOND RD

**Survey Date:** Thursday, April 20, 2017
**Start Time:** 07:00

**WO No:** 36957
**Device:** Miovision




**Comments**

# Transportation Services - Traffic Services

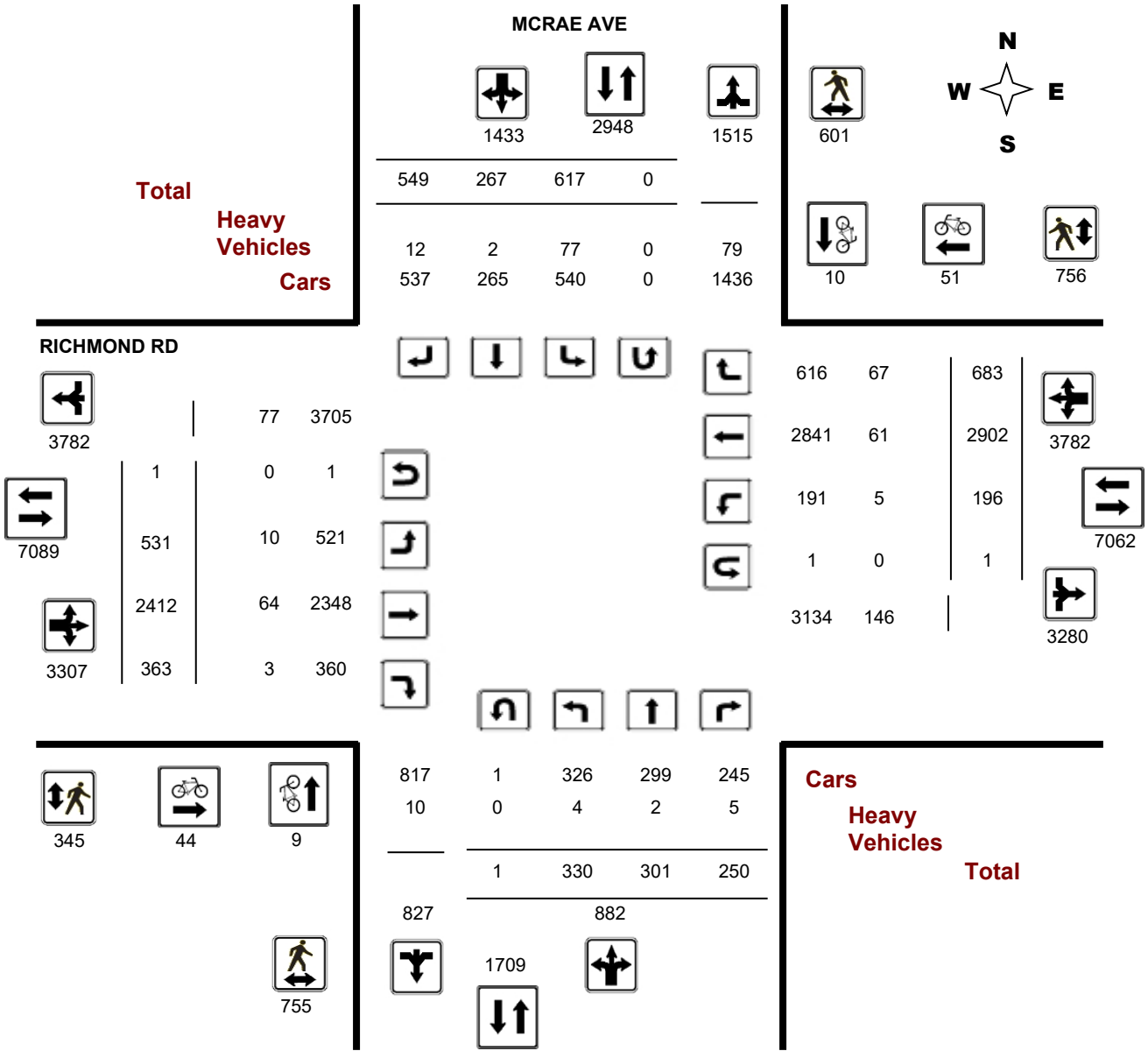
## Turning Movement Count - Full Study Diagram

## MCRAE AVE @ RICHMOND RD

**Survey Date:** Thursday, April 20, 2017

**WO#:** 36957

**Device:** Miovision




**Comments**

# Transportation Services - Traffic Services

**Work Order** 36957

## Turning Movement Count - Full Study Summary Report

## MCRAE AVE @ RICHMOND RD

**Survey Date:** Thursday, April 20, 2017

**Total Observed U-Turns**

Northbound: 1 Southbound: 0

Eastbound: 1 Westbound: 1

**AADT Factor** .90

### Full Study

| | MCRAE AVE | | | | | | | | | RICHMOND RD | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Northbound | | | | Southbound | | | | | Eastbound | | | | Westbound | | | | | |
| Period | LT | ST | RT | **NB TOT** | LT | ST | RT | **SB TOT** | **STR TOT** | LT | ST | RT | **EB TOT** | LT | ST | RT | **WB TOT** | **STR TOT** | **Grand Total** |
| 07:00 08:00 | 17 | 6 | 12 | **35** | 61 | 16 | 25 | **102** | **137** | 67 | 310 | 29 | **406** | 6 | 194 | 67 | **267** | **673** | **810** |
| 08:00 09:00 | 19 | 12 | 12 | **43** | 88 | 19 | 41 | **148** | **191** | 80 | 318 | 36 | **434** | 7 | 252 | 93 | **352** | **786** | **977** |
| 09:00 10:00 | 25 | 18 | 11 | **54** | 53 | 31 | 41 | **125** | **179** | 65 | 277 | 34 | **376** | 14 | 273 | 66 | **353** | **729** | **908** |
| 11:30 12:30 | 43 | 36 | 46 | **125** | 82 | 37 | 72 | **191** | **316** | 68 | 327 | 52 | **447** | 31 | 353 | 68 | **452** | **899** | **1215** |
| 12:30 13:30 | 46 | 56 | 32 | **134** | 67 | 40 | 77 | **184** | **318** | 70 | 355 | 41 | **466** | 24 | 361 | 76 | **461** | **927** | **1245** |
| 15:00 16:00 | 53 | 51 | 42 | **146** | 87 | 33 | 84 | **204** | **350** | 54 | 284 | 50 | **388** | 32 | 423 | 77 | **532** | **920** | **1270** |
| 16:00 17:00 | 65 | 54 | 50 | **169** | 82 | 37 | 106 | **225** | **394** | 59 | 255 | 63 | **377** | 43 | 528 | 137 | **708** | **1085** | **1479** |
| 17:00 18:00 | 62 | 68 | 45 | **175** | 97 | 54 | 103 | **254** | **429** | 68 | 286 | 58 | **412** | 39 | 518 | 99 | **656** | **1068** | **1497** |
| **Sub Total** | 330 | 301 | 250 | **881** | 617 | 267 | 549 | **1433** | **2314** | 531 | 2412 | 363 | **3306** | 196 | 2902 | 683 | **3781** | **7087** | **9401** |
| **U Turns** | | | | **1** | | | | **0** | **1** | | | | **1** | | | | **1** | **2** | **3** |
| **Total** | 330 | 301 | 250 | **882** | 617 | 267 | 549 | **1433** | **2315** | 531 | 2412 | 363 | **3307** | 196 | 2902 | 683 | **3782** | **7089** | **9404** |
| **EQ 12Hr** | 459 | 418 | 348 | **1226** | 858 | 371 | 763 | **1992** | **3218** | 738 | 3353 | 505 | **4597** | 272 | 4034 | 949 | **5257** | **9854** | **13072** |
| Note: These values are calculated by multiplying the totals by the appropriate expansion factor. | | | | | | | | | | | | | **1.39** | | | | | | |
| **AVG 12Hr** | 413 | 377 | 313 | **1103** | 772 | 334 | 687 | **1793** | **2896** | 664 | 3017 | 454 | **4137** | 245 | 3630 | 854 | **4731** | **8868** | **11764** |
| Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor. | | | | | | | | | | | | | **.90** | | | | | | |
| **AVG 24Hr** | 541 | 493 | 410 | **1445** | 1011 | 438 | 900 | **2348** | **3793** | 870 | 3953 | 595 | **5420** | 321 | 4756 | 1119 | **6198** | **11618** | **15411** |
| Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor. | | | | | | | | | | | | | **1.31** | | | | | | |

**Comments:**

Note: U-Turns provided for approach totals. Refer to 'U-Turn' Report for specific breakdown.

# Transportation Services - Traffic Services

W.O. 36957

## Turning Movement Count - 15 Minute Summary Report

## MCRAE AVE @ RICHMOND RD

**Survey Date:** Thursday, April 20, 2017

**Total Observed U-Turns**

Northbound: 1 Southbound: 0

Eastbound: 1 Westbound: 1

| | | MCRAE AVE | | | | | | | | | RICHMOND RD | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Northbound | | | | Southbound | | | | | Eastbound | | | | Westbound | | | | | |
| Time Period | | LT | ST | RT | N TOT | LT | ST | RT | S TOT | STR TOT | LT | ST | RT | E TOT | LT | ST | RT | W TOT | STR TOT | Grand Total |
| 07:00 | 07:15 | 1 | 0 | 0 | **1** | 13 | 2 | 5 | **20** | **21** | 12 | 63 | 5 | **80** | 2 | 42 | 10 | **54** | **134** | **155** |
| 07:15 | 07:30 | 5 | 3 | 0 | **8** | 11 | 1 | 7 | **19** | **27** | 15 | 65 | 6 | **86** | 2 | 36 | 15 | **53** | **139** | **166** |
| 07:30 | 07:45 | 4 | 3 | 8 | **15** | 20 | 6 | 6 | **32** | **47** | 12 | 83 | 6 | **101** | 1 | 45 | 22 | **68** | **169** | **216** |
| 07:45 | 08:00 | 7 | 0 | 4 | **11** | 17 | 7 | 7 | **31** | **42** | 28 | 99 | 12 | **139** | 1 | 71 | 20 | **92** | **231** | **273** |
| 08:00 | 08:15 | 4 | 2 | 4 | **10** | 24 | 2 | 5 | **31** | **41** | 20 | 81 | 9 | **110** | 2 | 54 | 22 | **78** | **188** | **229** |
| 08:15 | 08:30 | 4 | 3 | 3 | **10** | 22 | 3 | 12 | **37** | **47** | 18 | 78 | 10 | **106** | 2 | 63 | 29 | **94** | **200** | **247** |
| 08:30 | 08:45 | 7 | 4 | 4 | **15** | 19 | 8 | 10 | **37** | **52** | 21 | 82 | 8 | **111** | 2 | 72 | 22 | **96** | **207** | **259** |
| 08:45 | 09:00 | 4 | 3 | 1 | **8** | 23 | 6 | 14 | **43** | **51** | 21 | 77 | 9 | **107** | 1 | 63 | 20 | **84** | **191** | **242** |
| 09:00 | 09:15 | 6 | 3 | 2 | **11** | 15 | 7 | 9 | **31** | **42** | 20 | 79 | 7 | **106** | 4 | 50 | 16 | **70** | **176** | **218** |
| 09:15 | 09:30 | 3 | 3 | 3 | **9** | 16 | 6 | 18 | **40** | **49** | 16 | 61 | 8 | **85** | 2 | 78 | 18 | **98** | **183** | **232** |
| 09:30 | 09:45 | 7 | 3 | 3 | **13** | 14 | 4 | 8 | **26** | **39** | 17 | 69 | 11 | **97** | 2 | 71 | 12 | **85** | **182** | **221** |
| 09:45 | 10:00 | 9 | 9 | 3 | **21** | 8 | 14 | 6 | **28** | **49** | 12 | 68 | 8 | **88** | 6 | 74 | 20 | **100** | **188** | **237** |
| 11:30 | 11:45 | 12 | 8 | 16 | **36** | 23 | 7 | 17 | **47** | **83** | 20 | 83 | 13 | **116** | 9 | 80 | 17 | **106** | **222** | **305** |
| 11:45 | 12:00 | 11 | 5 | 9 | **25** | 12 | 9 | 15 | **36** | **61** | 16 | 90 | 14 | **120** | 8 | 94 | 13 | **115** | **235** | **296** |
| 12:00 | 12:15 | 10 | 10 | 10 | **30** | 17 | 12 | 20 | **49** | **79** | 15 | 81 | 14 | **110** | 9 | 89 | 22 | **120** | **230** | **309** |
| 12:15 | 12:30 | 10 | 13 | 11 | **34** | 30 | 9 | 20 | **59** | **93** | 17 | 73 | 11 | **101** | 5 | 90 | 16 | **111** | **212** | **305** |
| 12:30 | 12:45 | 12 | 15 | 6 | **33** | 22 | 10 | 25 | **57** | **90** | 23 | 77 | 13 | **113** | 6 | 89 | 12 | **107** | **220** | **310** |
| 12:45 | 13:00 | 7 | 14 | 15 | **36** | 7 | 10 | 17 | **34** | **70** | 10 | 88 | 11 | **109** | 4 | 95 | 19 | **118** | **227** | **297** |
| 13:00 | 13:15 | 12 | 17 | 4 | **33** | 16 | 6 | 18 | **40** | **73** | 17 | 87 | 7 | **112** | 8 | 86 | 20 | **114** | **226** | **299** |
| 13:15 | 13:30 | 15 | 10 | 7 | **32** | 22 | 14 | 17 | **53** | **85** | 20 | 103 | 10 | **133** | 6 | 91 | 25 | **122** | **255** | **340** |
| 15:00 | 15:15 | 12 | 16 | 11 | **39** | 18 | 11 | 16 | **45** | **84** | 16 | 78 | 12 | **106** | 3 | 93 | 18 | **114** | **220** | **304** |
| 15:15 | 15:30 | 18 | 10 | 7 | **35** | 24 | 8 | 18 | **50** | **85** | 13 | 78 | 12 | **103** | 8 | 87 | 18 | **113** | **216** | **301** |
| 15:30 | 15:45 | 13 | 8 | 10 | **31** | 19 | 6 | 25 | **50** | **81** | 14 | 70 | 10 | **94** | 11 | 124 | 24 | **159** | **253** | **334** |
| 15:45 | 16:00 | 10 | 17 | 14 | **41** | 26 | 8 | 25 | **59** | **100** | 11 | 58 | 16 | **85** | 10 | 119 | 17 | **146** | **231** | **331** |
| 16:00 | 16:15 | 13 | 17 | 12 | **42** | 30 | 10 | 20 | **60** | **102** | 12 | 60 | 13 | **85** | 11 | 116 | 24 | **152** | **237** | **339** |
| 16:15 | 16:30 | 13 | 12 | 11 | **36** | 13 | 9 | 28 | **50** | **86** | 15 | 59 | 10 | **84** | 13 | 149 | 50 | **212** | **296** | **382** |
| 16:30 | 16:45 | 19 | 8 | 11 | **38** | 15 | 9 | 31 | **55** | **93** | 13 | 73 | 16 | **102** | 11 | 130 | 35 | **176** | **278** | **371** |
| 16:45 | 17:00 | 20 | 17 | 16 | **53** | 24 | 9 | 27 | **60** | **113** | 19 | 63 | 24 | **106** | 8 | 133 | 28 | **169** | **275** | **388** |
| 17:00 | 17:15 | 14 | 17 | 7 | **38** | 28 | 8 | 26 | **62** | **100** | 21 | 66 | 21 | **108** | 11 | 155 | 20 | **186** | **294** | **394** |
| 17:15 | 17:30 | 13 | 15 | 16 | **45** | 25 | 10 | 26 | **61** | **106** | 13 | 69 | 11 | **93** | 6 | 135 | 26 | **167** | **260** | **366** |
| 17:30 | 17:45 | 10 | 17 | 8 | **35** | 19 | 21 | 27 | **67** | **102** | 19 | 79 | 13 | **111** | 9 | 133 | 27 | **169** | **280** | **382** |
| 17:45 | 18:00 | 25 | 19 | 14 | **58** | 25 | 15 | 24 | **64** | **122** | 15 | 72 | 13 | **100** | 13 | 95 | 26 | **134** | **234** | **356** |
| TOTAL: | | 330 | 301 | 250 | **882** | 617 | 267 | 549 | **1433** | **2315** | 531 | 2412 | 363 | **3307** | 196 | 2902 | 683 | **3782** | **7089** | **9404** |

Note: U-Turns are included in Totals.

**Comment:**

# Transportation Services - Traffic Services

## Turning Movement Count - Cyclist Volume Report

**Work Order**
**36957**

## MCRAE AVE @ RICHMOND RD

**Count Date:** Thursday, April 20, 2017 **Start Time:** 07:00

| | MCRAE AVE | | | RICHMOND RD | | | |
|---|---|---|---|---|---|---|---|
| Time Period | Northbound | Southbound | **Street Total** | Eastbound | Westbound | **Street Total** | **Grand Total** |
| 07:00 08:00 | 1 | 1 | **2** | 12 | 4 | **16** | **18** |
| 08:00 09:00 | 2 | 1 | **3** | 7 | 8 | **15** | **18** |
| 09:00 10:00 | 2 | 0 | **2** | 4 | 6 | **10** | **12** |
| 11:30 12:30 | 0 | 1 | **1** | 3 | 1 | **4** | **5** |
| 12:30 13:30 | 0 | 0 | **0** | 1 | 0 | **1** | **1** |
| 15:00 16:00 | 0 | 2 | **2** | 5 | 5 | **10** | **12** |
| 16:00 17:00 | 2 | 1 | **3** | 8 | 10 | **18** | **21** |
| 17:00 18:00 | 2 | 4 | **6** | 4 | 17 | **21** | **27** |
| Total ..... | 9 | 10 | **19** | 44 | 51 | **95** | **114** |

**Comment:**

Note: These volumes consists of bicycles only (no mopeds or motorcycles) and ARE NOT included in the Turning Movement Count Summary.

# Transportation Services - Traffic Services

**W.O.** 36957

## Turning Movement Count - Heavy Vehicle Report

## MCRAE AVE @ RICHMOND RD

**Survey Date:** Thursday, April 20, 2017

| | | MCRAE AVE | | | | | | | | | RICHMOND RD | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Northbound | | | | Southbound | | | | | Eastbound | | | | Westbound | | | | | |
| Time Period | | LT | ST | RT | N TOT | LT | ST | RT | S TOT | STR TOT | LT | ST | RT | E TOT | LT | ST | RT | W TOT | STR TOT | Grand Total |
| 07:00 | 08:00 | 0 | 0 | 0 | **0** | 10 | 0 | 2 | **12** | **12** | 1 | 10 | 0 | **11** | 1 | 7 | 10 | **18** | **29** | **41** |
| 08:00 | 09:00 | 1 | 0 | 1 | **2** | 14 | 0 | 1 | **15** | **17** | 0 | 10 | 0 | **10** | 1 | 6 | 13 | **20** | **30** | **47** |
| 09:00 | 10:00 | 0 | 1 | 0 | **1** | 9 | 1 | 3 | **13** | **14** | 4 | 8 | 1 | **13** | 0 | 7 | 7 | **14** | **27** | **41** |
| 11:30 | 12:30 | 1 | 0 | 3 | **4** | 7 | 1 | 2 | **10** | **14** | 4 | 18 | 1 | **23** | 2 | 14 | 7 | **23** | **46** | **60** |
| 12:30 | 13:30 | 2 | 0 | 0 | **2** | 8 | 0 | 1 | **9** | **11** | 0 | 8 | 0 | **8** | 0 | 14 | 10 | **24** | **32** | **43** |
| 15:00 | 16:00 | 0 | 0 | 1 | **1** | 9 | 0 | 3 | **12** | **13** | 0 | 8 | 0 | **8** | 0 | 5 | 6 | **11** | **19** | **32** |
| 16:00 | 17:00 | 0 | 1 | 0 | **1** | 11 | 0 | 0 | **11** | **12** | 1 | 0 | 1 | **2** | 1 | 4 | 7 | **12** | **14** | **26** |
| 17:00 | 18:00 | 0 | 0 | 0 | **0** | 9 | 0 | 0 | **9** | **9** | 0 | 2 | 0 | **2** | 0 | 4 | 7 | **11** | **13** | **22** |
| **Sub Total** | | 4 | 2 | 5 | **11** | 77 | 2 | 12 | **91** | **102** | 10 | 64 | 3 | **77** | 5 | 61 | 67 | **133** | **210** | **312** |
| **U-Turns (Heavy Vehicles)** | | | | | **0** | | | | **0** | **0** | | | | **0** | | | | **0** | **0** | **0** |
| **Total** | | 4 | 2 | 5 | **0** | 77 | 2 | 12 | **91** | **102** | 10 | 64 | 3 | **77** | 5 | 61 | 67 | **133** | **210** | **312** |

Heavy Vehicles include Buses, Single-Unit Trucks and Articulated Trucks. Further, they ARE included in the Turning Movement Count Summary.

# Transportation Services - Traffic Services

**Work Order**
**36957**

## Turning Movement Count - Pedestrian Volume Report

### MCRAE AVE @ RICHMOND RD

**Count Date:** Thursday, April 20, 2017 **Start Time:** 07:00

| Time Period | NB Approach (E or W Crossing) | SB Approach (E or W Crossing) | Total | EB Approach (N or S Crossing) | WB Approach (N or S Crossing) | Total | Grand Total |
|---|---|---|---|---|---|---|---|
| 07:00 07:15 | 7 | 1 | **8** | 5 | 3 | **8** | **16** |
| 07:15 07:30 | 2 | 6 | **8** | 5 | 2 | **7** | **15** |
| 07:30 07:45 | 8 | 7 | **15** | 7 | 9 | **16** | **31** |
| 07:45 08:00 | 17 | 8 | **25** | 16 | 14 | **30** | **55** |
| 07:00 08:00 | 34 | 22 | **56** | 33 | 28 | **61** | **117** |
| 08:00 08:15 | 14 | 12 | **26** | 5 | 13 | **18** | **44** |
| 08:15 08:30 | 10 | 11 | **21** | 5 | 8 | **13** | **34** |
| 08:30 08:45 | 9 | 9 | **18** | 3 | 9 | **12** | **30** |
| 08:45 09:00 | 12 | 17 | **29** | 9 | 21 | **30** | **59** |
| 08:00 09:00 | 45 | 49 | **94** | 22 | 51 | **73** | **167** |
| 09:00 09:15 | 19 | 4 | **23** | 2 | 8 | **10** | **33** |
| 09:15 09:30 | 12 | 6 | **18** | 2 | 18 | **20** | **38** |
| 09:30 09:45 | 13 | 19 | **32** | 3 | 14 | **17** | **49** |
| 09:45 10:00 | 13 | 25 | **38** | 0 | 20 | **20** | **58** |
| 09:00 10:00 | 57 | 54 | **111** | 7 | 60 | **67** | **178** |
| 11:30 11:45 | 42 | 19 | **61** | 9 | 31 | **40** | **101** |
| 11:45 12:00 | 21 | 20 | **41** | 11 | 27 | **38** | **79** |
| 12:00 12:15 | 19 | 25 | **44** | 7 | 24 | **31** | **75** |
| 12:15 12:30 | 21 | 34 | **55** | 10 | 34 | **44** | **99** |
| 11:30 12:30 | 103 | 98 | **201** | 37 | 116 | **153** | **354** |
| 12:30 12:45 | 42 | 31 | **73** | 12 | 34 | **46** | **119** |
| 12:45 13:00 | 37 | 17 | **54** | 9 | 29 | **38** | **92** |
| 13:00 13:15 | 21 | 18 | **39** | 8 | 32 | **40** | **79** |
| 13:15 13:30 | 23 | 20 | **43** | 11 | 26 | **37** | **80** |
| 12:30 13:30 | 123 | 86 | **209** | 40 | 121 | **161** | **370** |
| 15:00 15:15 | 16 | 20 | **36** | 6 | 23 | **29** | **65** |
| 15:15 15:30 | 43 | 24 | **67** | 20 | 33 | **53** | **120** |
| 15:30 15:45 | 27 | 15 | **42** | 6 | 22 | **28** | **70** |
| 15:45 16:00 | 30 | 26 | **56** | 11 | 36 | **47** | **103** |
| 15:00 16:00 | 116 | 85 | **201** | 43 | 114 | **157** | **358** |
| 16:00 16:15 | 26 | 25 | **51** | 10 | 42 | **52** | **103** |
| 16:15 16:30 | 32 | 21 | **53** | 9 | 41 | **50** | **103** |
| 16:30 16:45 | 39 | 25 | **64** | 14 | 36 | **50** | **114** |
| 16:45 17:00 | 30 | 29 | **59** | 12 | 23 | **35** | **94** |
| 16:00 17:00 | 127 | 100 | **227** | 45 | 142 | **187** | **414** |
| 17:00 17:15 | 35 | 28 | **63** | 24 | 33 | **57** | **120** |
| 17:15 17:30 | 41 | 26 | **67** | 36 | 40 | **76** | **143** |
| 17:30 17:45 | 28 | 30 | **58** | 34 | 27 | **61** | **119** |
| 17:45 18:00 | 46 | 23 | **69** | 24 | 24 | **48** | **117** |
| 17:00 18:00 | 150 | 107 | **257** | 118 | 124 | **242** | **499** |
| Total ..... | 755 | 601 | **1356** | 345 | 756 | **1101** | **2457** |

**Comment:**

# Transportation Services - Traffic Services

**Work Order**
36957

## Turning Movement Count - 15 Min U-Turn Total Report

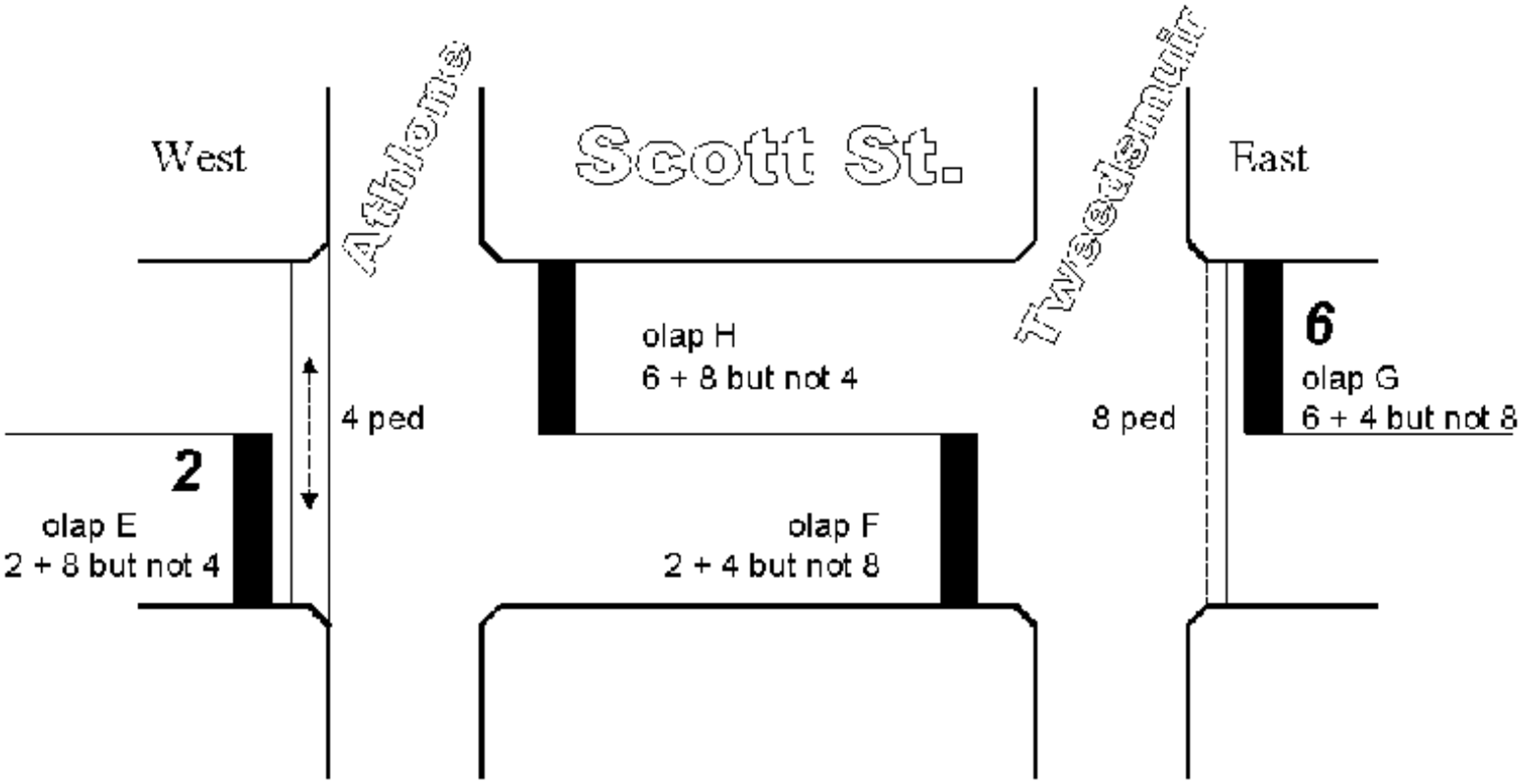
## MCRAE AVE @ RICHMOND RD

**Survey Date:** Thursday, April 20, 2017

| Time Period | | Northbound U-Turn Total | Southbound U-Turn Total | Eastbound U-Turn Total | Westbound U-Turn Total | Total |
|---|---|---|---|---|---|---|
| 07:00 | 07:15 | 0 | 0 | 0 | 0 | 0 |
| 07:15 | 07:30 | 0 | 0 | 0 | 0 | 0 |
| 07:30 | 07:45 | 0 | 0 | 0 | 0 | 0 |
| 07:45 | 08:00 | 0 | 0 | 0 | 0 | 0 |
| 08:00 | 08:15 | 0 | 0 | 0 | 0 | 0 |
| 08:15 | 08:30 | 0 | 0 | 0 | 0 | 0 |
| 08:30 | 08:45 | 0 | 0 | 0 | 0 | 0 |
| 08:45 | 09:00 | 0 | 0 | 0 | 0 | 0 |
| 09:00 | 09:15 | 0 | 0 | 0 | 0 | 0 |
| 09:15 | 09:30 | 0 | 0 | 0 | 0 | 0 |
| 09:30 | 09:45 | 0 | 0 | 0 | 0 | 0 |
| 09:45 | 10:00 | 0 | 0 | 0 | 0 | 0 |
| 11:30 | 11:45 | 0 | 0 | 0 | 0 | 0 |
| 11:45 | 12:00 | 0 | 0 | 0 | 0 | 0 |
| 12:00 | 12:15 | 0 | 0 | 0 | 0 | 0 |
| 12:15 | 12:30 | 0 | 0 | 0 | 0 | 0 |
| 12:30 | 12:45 | 0 | 0 | 0 | 0 | 0 |
| 12:45 | 13:00 | 0 | 0 | 0 | 0 | 0 |
| 13:00 | 13:15 | 0 | 0 | 1 | 0 | 1 |
| 13:15 | 13:30 | 0 | 0 | 0 | 0 | 0 |
| 15:00 | 15:15 | 0 | 0 | 0 | 0 | 0 |
| 15:15 | 15:30 | 0 | 0 | 0 | 0 | 0 |
| 15:30 | 15:45 | 0 | 0 | 0 | 0 | 0 |
| 15:45 | 16:00 | 0 | 0 | 0 | 0 | 0 |
| 16:00 | 16:15 | 0 | 0 | 0 | 1 | 1 |
| 16:15 | 16:30 | 0 | 0 | 0 | 0 | 0 |
| 16:30 | 16:45 | 0 | 0 | 0 | 0 | 0 |
| 16:45 | 17:00 | 0 | 0 | 0 | 0 | 0 |
| 17:00 | 17:15 | 0 | 0 | 0 | 0 | 0 |
| 17:15 | 17:30 | 1 | 0 | 0 | 0 | 1 |
| 17:30 | 17:45 | 0 | 0 | 0 | 0 | 0 |
| 17:45 | 18:00 | 0 | 0 | 0 | 0 | 0 |
| Total | | 1 | 0 | 1 | 1 | 3 |

**Scott St & Tweedsmuir/Athlone (int #5781)** 09-Jul-2019

The one MS3200 controller provides phasing for these 2 intersections (both are Intersection Ped Signals).




**NOTES:**

1. When the NS ped at Athlone (4 ped) is actuated, Olap F and G have a green display. Olap E and H have a red display.
2. When the NS ped at Tweedsmuir (8 ped) is actuated, Olap E and H have a green display. Olap F and G have a red display.
3. When both NS peds are actuated, all Olaps have a red display.

**TIMING:**

Please see excel file for Timing info.

# Traffic Signal Timing

*City of Ottawa, Transportation Services Department*

**Traffic Signal Operations Unit**

| | | | | | |
|---|---|---|---|---|---|
| **Intersection:** | **Main:** | Scott | **Side:** | Tweedsmuir/Athlone | |
| **Controller:** | **MS-3200** | | **TSD:** | 5781 | |
| **Author:** | Matthew Anderson | | **Date:** | 11-Jul-2019 | |

## Existing Timing Plans†

| | **Plan** | | | | | **Ped Minimum Time** | | |
|---|---|---|---|---|---|---|---|---|
| | **AM Peak** 1 | **Off Peak** 2 | **PM Peak** 3 | **Night** 4 | **Weekend** 5 | ***Walk*** | ***DW*** | ***A+R*** |
| **Cycle** | FREE | FREE | FREE | FREE | FREE | | | |
| **Offset** | X | X | X | X | X | | | |
| EB Thru | min=30.8 | min=30.8 | min=30.8 | min=30.8 | min=30.8 | - | - | 3.3+2.5 |
| WB Thru | min=30.8 | min=30.8 | min=30.8 | min=30.8 | min=30.8 | - | - | 3.3+2.5 |
| West Walk | max=24.0 | max=24.0 | max=24.0 | max=24.0 | max=24.0 | 7 | 11 | 3.0+1.0 |
| East Walk | max=24.0 | max=24.0 | max=24.0 | max=24.0 | max=24.0 | 7 | 11 | 3.0+1.0 |

**NOTE:**

Please see attached PDF file for detailed signal phasing information.

## Schedule

**Weekday**

| Time | Plan |
|---|---|
| 0:15 | 4 |
| 6:30 | 1 |
| 9:30 | 2 |
| 15:00 | 3 |
| 18:30 | 2 |
| 21:30 | 4 |

**Weekend**

| Time | Plan |
|---|---|
| 0:15 | 4 |
| 6:30 | 2 |
| 11:00 | 5 |
| 19:30 | 2 |
| 22:00 | 4 |

## Notes

†: Time for each direction includes amber and all red intervals

‡: Start of first phase should be used as reference point for offset

Asterisk (*) Indicates actuated phase

(fp): Fully Protected Left Turn

◄·····► Pedestrian signal

Cost is $57.63 ($51 + HST)

# Traffic Signal Timing

*City of Ottawa, Transportation Services Department*

**Traffic Signal Operations Unit**

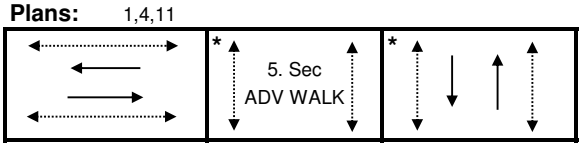
| | | | | | |
|---|---|---|---|---|---|
| **Intersection:** | **Main:** | Richmond | **Side:** | McRae | |
| **Controller:** | **MS-3200** | | **TSD:** | 6589 | |
| **Author:** | Jean Nabolle | | **Date:** | 11-Jul-2019 | |

## Existing Timing Plans†

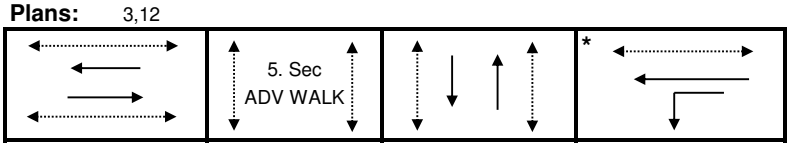
| | **Plan** | | | | | | | **Ped Minimum Time** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **AM Peak** | **Evening** | **PM Peak** | **Night** | **Weekend** | **AM Heavy** | **Off Peak** | ***Walk*** | ***DW*** | ***A+R*** |
| | 1 | 2 | 3 | 4 | 5 | 11 | 12 | | | |
| **Cycle** | 75 | 80 | 85 | 65 | 80 | 75 | 75 | | | |
| **Offset** | X | X | 1 | X | X | 16 | X | | | |
| EB Thru | 48 | 35 | 40 | 35 | 35 | 48 | 35 | 9 | 20 | 3.3+2.9 |
| WB Thru | 48 | 35 | 51 | 35 | 48 | 48 | 48 | 9 | 20 | 3.3+2.9 |
| NB Thru | 27 | 32 | 34 | 30 | 32 | 27 | 27 | 7 | 13 | 3.3+2.2 |
| SB Thru | 27 | 32 | 34 | 30 | 32 | 27 | 27 | 7 | 13 | 3.3+2.2 |
| *WB Left* | - | 13 | 11 | - | 13 | - | 13 | - | - | 3.3+2.8 |

## Phasing Sequence‡

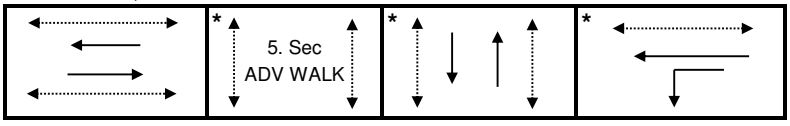
**Plans:** 1,4,11




**Plans:** 3,12




**Plans:** 2,5




## Schedule

**Weekday**

| Time | Plan |
|---|---|
| 0:15 | 4 |
| 6:30 | 1 |
| 7:30 | 11 |
| 9:30 | 12 |
| 15:00 | 3 |
| 18:30 | 2 |
| 22:30 | 4 |

**Saturday**

| Time | Plan |
|---|---|
| 0:15 | 4 |
| 6:30 | 2 |
| 9:00 | 5 |
| 18:30 | 2 |
| 22:30 | 4 |

**Sunday**

| Time | Plan |
|---|---|
| 0:15 | 4 |
| 6:30 | 2 |
| 9:00 | 5 |
| 18:00 | 2 |
| 22:30 | 4 |

## Notes

†: Time for each direction includes amber and all red intervals

‡: Start of first phase should be used as reference point for offset

Asterisk (*) Indicates actuated phase

(fp): Fully Protected Left Turn

◄·····► Pedestrian signal

Cost is $57.63 ($51 + HST)

# Appendix C

Collision Data

| Accident Date | Accident Year | Accident Time | Location | Environment Condition | Light | Traffic Control | Classification Of Accident | Initial Impact Type | Road Surface Condition |
|---|---|---|---|---|---|---|---|---|---|
| 2013-02-01 | 2013 | 1:56:00 PM | MCRAE AVE @ SCOTT ST | 01 - Clear | 01 - Daylight | 02 - Stop sign | 03 - P.D. only | 03 - Rear end | 01 - Dry |
| 2013-06-15 | 2013 | 9:20:00 AM | MCRAE AVE @ SCOTT ST | 01 - Clear | 01 - Daylight | 02 - Stop sign | 03 - P.D. only | 03 - Rear end | 01 - Dry |
| 2014-11-23 | 2014 | 1:30:00 PM | MCRAE AVE @ SCOTT ST | 01 - Clear | 01 - Daylight | 02 - Stop sign | 03 - P.D. only | 03 - Rear end | 01 - Dry |
| 2015-02-05 | 2015 | 1:15:00 PM | MCRAE AVE @ SCOTT ST | 01 - Clear | 01 - Daylight | 02 - Stop sign | 03 - P.D. only | 02 - Angle | 02 - Wet |
| 2016-09-02 | 2016 | 10:10:00 AM | MCRAE AVE @ SCOTT ST | 01 - Clear | 01 - Daylight | 02 - Stop sign | 03 - P.D. only | 02 - Angle | 01 - Dry |
| 2016-08-08 | 2016 | 1:00:00 PM | MCRAE AVE @ SCOTT ST | 01 - Clear | 01 - Daylight | 02 - Stop sign | 03 - P.D. only | 02 - Angle | 01 - Dry |
| 2017-06-05 | 2017 | 1:09:00 PM | MCRAE AVE @ SCOTT ST | 01 - Clear | 01 - Daylight | 02 - Stop sign | 02 - Non-fatal injury | 02 - Angle | 01 - Dry |

| Accident Date | Accident Year | Accident Time | Location | Environment Condition | Light | Traffic Control | Classification Of Accident | Initial Impact Type | Road Surface Condition |
|---|---|---|---|---|---|---|---|---|---|
| 2014-03-02 | 2014 | 4:00:00 PM | TWEEDSMUIR AVE @ SCOTT ST | 01 - Clear | 01 - Daylight | 01 - Traffic signal | 03 - P.D. only | 03 - Rear end | 02 - Wet |
| 2015-06-21 | 2015 | 12:50:00 PM | TWEEDSMUIR AVE @ SCOTT ST | 01 - Clear | 01 - Daylight | 01 - Traffic signal | 03 - P.D. only | 03 - Rear end | 01 - Dry |
| 2016-10-03 | 2016 | 8:03:00 AM | TWEEDSMUIR AVE @ SCOTT ST | 01 - Clear | 01 - Daylight | 01 - Traffic signal | 02 - Non-fatal injury | 03 - Rear end | 01 - Dry |
| 2016-06-09 | 2016 | 12:15:00 PM | TWEEDSMUIR AVE @ SCOTT ST | 01 - Clear | 01 - Daylight | 01 - Traffic signal | 03 - P.D. only | 02 - Angle | 01 - Dry |

| Accident Date | Accident Year | Accident Time | Location | Environment Condition | Light | Traffic Control | Classification Of Accident | Initial Impact Type | Road Surface Condition |
|---|---|---|---|---|---|---|---|---|---|
| 2013-03-26 | 2013 | 3:27:00 PM | MCRAE AVE @ RICHMOND RD | 01 - Clear | 01 - Daylight | 01 - Traffic signal | 03 - P.D. only | 05 - Turning movement | 01 - Dry |
| 2013-06-01 | 2013 | 6:12:00 PM | MCRAE AVE @ RICHMOND RD | 02 - Rain | 01 - Daylight | 01 - Traffic signal | 03 - P.D. only | 03 - Rear end | 02 - Wet |
| 2013-09-12 | 2013 | 6:00:00 PM | MCRAE AVE @ RICHMOND RD | 02 - Rain | 01 - Daylight | 01 - Traffic signal | 03 - P.D. only | 03 - Rear end | 02 - Wet |
| 2013-11-17 | 2013 | 5:16:00 PM | MCRAE AVE @ RICHMOND RD | 01 - Clear | 07 - Dark | 01 - Traffic signal | 02 - Non-fatal injury | 07 - SMV other | 02 - Wet |
| 2014-08-26 | 2014 | 6:41:00 PM | MCRAE AVE @ RICHMOND RD | 01 - Clear | 01 - Daylight | 01 - Traffic signal | 03 - P.D. only | 03 - Rear end | 01 - Dry |
| 2014-11-04 | 2014 | 5:46:00 PM | MCRAE AVE @ RICHMOND RD | 03 - Snow | 07 - Dark | 01 - Traffic signal | 03 - P.D. only | 03 - Rear end | 02 - Wet |
| 2015-08-29 | 2015 | 8:15:00 AM | MCRAE AVE @ RICHMOND RD | 01 - Clear | 01 - Daylight | 01 - Traffic signal | 03 - P.D. only | 03 - Rear end | 01 - Dry |
| 2015-12-12 | 2015 | 8:55:00 AM | MCRAE AVE @ RICHMOND RD | 01 - Clear | 01 - Daylight | 01 - Traffic signal | 03 - P.D. only | 02 - Angle | 01 - Dry |
| 2017-07-15 | 2017 | 1:28:00 PM | MCRAE AVE @ RICHMOND RD | 01 - Clear | 01 - Daylight | 01 - Traffic signal | 02 - Non-fatal injury | 07 - SMV other | 01 - Dry |
| 2017-01-30 | 2017 | 1:48:00 PM | MCRAE AVE @ RICHMOND RD | 01 - Clear | 01 - Daylight | 01 - Traffic signal | 02 - Non-fatal injury | 07 - SMV other | 01 - Dry |
| 2017-12-23 | 2017 | 3:30:00 PM | MCRAE AVE @ RICHMOND RD | 03 - Snow | 01 - Daylight | 01 - Traffic signal | 03 - P.D. only | 03 - Rear end | 03 - Loose snow |

| Accident Date | Accident Year | Accident Time | Location | Environment Condition | Light | Traffic Control | Classification Of Accident | Initial Impact Type | Road Surface Condition |
|---|---|---|---|---|---|---|---|---|---|
| 2013-11-30 | 2013 | 9:19:00 AM | RICHMOND RD @ TWEEDSMUIR AVE | 01 - Clear | 01 - Daylight | 02 - Stop sign | 03 - P.D. only | 06 - SMV unattended vehicle | 02 - Wet |
| 2015-08-22 | 2015 | 2:58:00 PM | RICHMOND RD @ TWEEDSMUIR AVE | 02 - Rain | 01 - Daylight | 02 - Stop sign | 02 - Non-fatal injury | 07 - SMV other | 02 - Wet |
| 2015-06-10 | 2015 | 12:17:00 PM | RICHMOND RD @ TWEEDSMUIR AVE | 01 - Clear | 01 - Daylight | 02 - Stop sign | 02 - Non-fatal injury | 05 - Turning movement | 01 - Dry |
| 2015-03-03 | 2015 | 6:55:00 PM | RICHMOND RD @ TWEEDSMUIR AVE | 03 - Snow | 07 - Dark | 02 - Stop sign | 03 - P.D. only | 02 - Angle | 05 - Packed snow |
| 2017-09-16 | 2017 | 6:42:00 PM | RICHMOND RD @ TWEEDSMUIR AVE | 01 - Clear | 01 - Daylight | 02 - Stop sign | 03 - P.D. only | 02 - Angle | 01 - Dry |

| LOCATION & GEOID | TOTAL_COLLISIONS | TOTAL_CYCLIST_COLLISIONS | TOTAL_PEDESTRIAN_COLLISIONS |
|---|---|---|---|
| MCRAE AVE @ SCOTT ST (0006868) | 7 | 0 | 0 |
| TWEEDSMUIR AVE @ SCOTT ST (0006371) | 4 | 0 | 0 |
| MCRAE AVE @ RICHMOND RD (0006867) | 11 | 0 | 3 |
| RICHMOND RD @ TWEEDSMUIR AVE (0006681) | 5 | 1 | 0 |

# Appendix D

TDM Checklists

# TDM Measures Checklist:
*Residential Developments (multi-family, condominium or subdivision)*

***Legend***

BASIC — The measure is generally feasible and effective, and in most cases would benefit the development and its users

BETTER — The measure could maximize support for users of sustainable modes, and optimize development performance

★ — The measure is one of the most dependably effective tools to encourage the use of sustainable modes

| | | TDM measures: *Residential developments* | Check if proposed & add descriptions |
|---|---|---|---|
| | **1.** | **TDM PROGRAM MANAGEMENT** | |
| | **1.1** | **Program coordinator** | |
| BASIC ★ | 1.1.1 | Designate an internal coordinator, or contract with an external coordinator | ☑ |
| | **1.2** | **Travel surveys** | |
| BETTER | 1.2.1 | Conduct periodic surveys to identify travel-related behaviours, attitudes, challenges and solutions, and to track progress | ☐ |
| | **2.** | **WALKING AND CYCLING** | |
| | **2.1** | **Information on walking/cycling routes & destinations** | |
| BASIC | 2.1.1 | Display local area maps with walking/cycling access routes and key destinations at major entrances *(multi-family, condominium)* | ☑ |
| | **2.2** | **Bicycle skills training** | |
| BETTER | 2.2.1 | Offer on-site cycling courses for residents, or subsidize off-site courses | ☐ |

| | | | TDM measures: *Residential developments* | Check if proposed & add descriptions |
|---|---|---|---|---|
| | | **3.** | **TRANSIT** | |
| | | **3.1** | **Transit information** | |
| BASIC | | 3.1.1 | Display relevant transit schedules and route maps at entrances *(multi-family, condominium)* | ☑ |
| BETTER | | 3.1.2 | Provide real-time arrival information display at entrances *(multi-family, condominium)* | ☐ |
| | | **3.2** | **Transit fare incentives** | |
| BASIC | ★ | 3.2.1 | Offer PRESTO cards preloaded with one monthly transit pass on residence purchase/move-in, to encourage residents to use transit | ☐ |
| BETTER | | 3.2.2 | Offer at least one year of free monthly transit passes on residence purchase/move-in | ☐ |
| | | **3.3** | **Enhanced public transit service** | |
| BETTER | ★ | 3.3.1 | Contract with OC Transpo to provide early transit services until regular services are warranted by occupancy levels *(subdivision)* | ☐ |
| | | **3.4** | **Private transit service** | |
| BETTER | | 3.4.1 | Provide shuttle service for seniors homes or lifestyle communities (e.g. scheduled mall or supermarket runs) | ☐ |
| | | **4.** | **CARSHARING & BIKESHARING** | |
| | | **4.1** | **Bikeshare stations & memberships** | |
| BETTER | | 4.1.1 | Contract with provider to install on-site bikeshare station (*multi-family)* | ☐ |
| BETTER | | 4.1.2 | Provide residents with bikeshare memberships, either free or subsidized *(multi-family)* | ☐ |
| | | **4.2** | **Carshare vehicles & memberships** | |
| BETTER | | 4.2.1 | Contract with provider to install on-site carshare vehicles and promote their use by residents | ☑ |
| BETTER | | 4.2.2 | Provide residents with carshare memberships, either free or subsidized | ☐ |
| | | **5.** | **PARKING** | |
| | | **5.1** | **Priced parking** | |
| BASIC | ★ | 5.1.1 | Unbundle parking cost from purchase price *(condominium)* | ☐ |
| BASIC | ★ | 5.1.2 | Unbundle parking cost from monthly rent *(multi-family)* | ☑ |

| | | | TDM measures: *Residential developments* | Check if proposed & add descriptions |
|---|---|---|---|---|
| | | **6.** | **TDM MARKETING & COMMUNICATIONS** | |
| | | **6.1** | **Multimodal travel information** | |
| BASIC | ★ | 6.1.1 | Provide a multimodal travel option information package to new residents | ☐ |
| | | **6.2** | **Personalized trip planning** | |
| BETTER | ★ | 6.2.1 | Offer personalized trip planning to new residents | ☐ |

# TDM-Supportive Development Design and Infrastructure Checklist:
*Residential Developments (multi-family or condominium)*

***Legend***

| | |
|---|---|
| REQUIRED | The Official Plan or Zoning By-law provides related guidance that must be followed |
| BASIC | The measure is generally feasible and effective, and in most cases would benefit the development and its users |
| BETTER | The measure could maximize support for users of sustainable modes, and optimize development performance |

| | | TDM-supportive design & infrastructure measures: *Residential developments* | Check if completed & add descriptions, explanations or plan/drawing references |
|---|---|---|---|
| | **1.** | **WALKING & CYCLING: ROUTES** | |
| | **1.1** | **Building location & access points** | |
| BASIC | 1.1.1 | Locate building close to the street, and do not locate parking areas between the street and building entrances | ☑ |
| BASIC | 1.1.2 | Locate building entrances in order to minimize walking distances to sidewalks and transit stops/stations | ☑ |
| BASIC | 1.1.3 | Locate building doors and windows to ensure visibility of pedestrians from the building, for their security and comfort | ☑ |
| | **1.2** | **Facilities for walking & cycling** | |
| REQUIRED | 1.2.1 | Provide convenient, direct access to stations or major stops along rapid transit routes within 600 metres; minimize walking distances from buildings to rapid transit; provide pedestrian-friendly, weather-protected (where possible) environment between rapid transit accesses and building entrances; ensure quality linkages from sidewalks through building entrances to integrated stops/stations *(see Official Plan policy 4.3.3)* | ☑ |
| REQUIRED | 1.2.2 | Provide safe, direct and attractive pedestrian access from public sidewalks to building entrances through such measures as: reducing distances between public sidewalks and major building entrances; providing walkways from public streets to major building entrances; within a site, providing walkways along the front of adjoining buildings, between adjacent buildings, and connecting areas where people may congregate, such as courtyards and transit stops; and providing weather protection through canopies, colonnades, and other design elements wherever possible *(see Official Plan policy 4.3.12)* | ☑ |

| | | TDM-supportive design & infrastructure measures: *Residential developments* | Check if completed & add descriptions, explanations or plan/drawing references |
|---|---|---|---|
| REQUIRED | 1.2.3 | Provide sidewalks of smooth, well-drained walking surfaces of contrasting materials or treatments to differentiate pedestrian areas from vehicle areas, and provide marked pedestrian crosswalks at intersection sidewalks *(see Official Plan policy 4.3.10)* | ☑ |
| REQUIRED | 1.2.4 | Make sidewalks and open space areas easily accessible through features such as gradual grade transition, depressed curbs at street corners and convenient access to extra-wide parking spaces and ramps *(see Official Plan policy 4.3.10)* | ☑ |
| REQUIRED | 1.2.5 | Include adequately spaced inter-block/street cycling and pedestrian connections to facilitate travel by active transportation. Provide links to the existing or planned network of public sidewalks, multi-use pathways and on-road cycle routes. Where public sidewalks and multi-use pathways intersect with roads, consider providing traffic control devices to give priority to cyclists and pedestrians *(see Official Plan policy 4.3.11)* | ☑ |
| BASIC | 1.2.6 | Provide safe, direct and attractive walking routes from building entrances to nearby transit stops | ☐ |
| BASIC | 1.2.7 | Ensure that walking routes to transit stops are secure, visible, lighted, shaded and wind-protected wherever possible | ☐ |
| BASIC | 1.2.8 | Design roads used for access or circulation by cyclists using a target operating speed of no more than 30 km/h, or provide a separated cycling facility | ☐ |
| | **1.3** | **Amenities for walking & cycling** | |
| BASIC | 1.3.1 | Provide lighting, landscaping and benches along walking and cycling routes between building entrances and streets, sidewalks and trails | ☑ |
| BASIC | 1.3.2 | Provide wayfinding signage for site access (where required, e.g. when multiple buildings or entrances exist) and egress (where warranted, such as when directions to reach transit stops/stations, trails or other common destinations are not obvious) | ☐ |

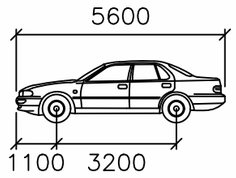
| | | TDM-supportive design & infrastructure measures: *Residential developments* | Check if completed & add descriptions, explanations or plan/drawing references |
|---|---|---|---|
| | **2.** | **WALKING & CYCLING: END-OF-TRIP FACILITIES** | |
| | **2.1** | **Bicycle parking** | |
| REQUIRED | 2.1.1 | Provide bicycle parking in highly visible and lighted areas, sheltered from the weather wherever possible *(see Official Plan policy 4.3.6)* | ☑ |
| REQUIRED | 2.1.2 | Provide the number of bicycle parking spaces specified for various land uses in different parts of Ottawa; provide convenient access to main entrances or well-used areas *(see Zoning By-law Section 111)* | ☑ |
| REQUIRED | 2.1.3 | Ensure that bicycle parking spaces and access aisles meet minimum dimensions; that no more than 50% of spaces are vertical spaces; and that parking racks are securely anchored *(see Zoning By-law Section 111)* | ☑ |
| BASIC | 2.1.4 | Provide bicycle parking spaces equivalent to the expected number of resident-owned bicycles, plus the expected peak number of visitor cyclists | ☐ |
| | **2.2** | **Secure bicycle parking** | |
| REQUIRED | 2.2.1 | Where more than 50 bicycle parking spaces are provided for a single residential building, locate at least 25% of spaces within a building/structure, a secure area (e.g. supervised parking lot or enclosure) or bicycle lockers *(see Zoning By-law Section 111)* | ☑ |
| BETTER | 2.2.2 | Provide secure bicycle parking spaces equivalent to at least the number of units at condominiums or multi-family residential developments | ☐ |
| | **2.3** | **Bicycle repair station** | |
| BETTER | 2.3.1 | Provide a permanent bike repair station, with commonly used tools and an air pump, adjacent to the main bicycle parking area (or secure bicycle parking area, if provided) | ☑ |
| | **3.** | **TRANSIT** | |
| | **3.1** | **Customer amenities** | |
| BASIC | 3.1.1 | Provide shelters, lighting and benches at any on-site transit stops | ☐ |
| BASIC | 3.1.2 | Where the site abuts an off-site transit stop and insufficient space exists for a transit shelter in the public right-of-way, protect land for a shelter and/or install a shelter | ☐ |
| BETTER | 3.1.3 | Provide a secure and comfortable interior waiting area by integrating any on-site transit stops into the building | ☐ |

| | | TDM-supportive design & infrastructure measures: *Residential developments* | Check if completed & add descriptions, explanations or plan/drawing references |
|---|---|---|---|
| | **4.** | **RIDESHARING** | |
| | **4.1** | **Pick-up & drop-off facilities** | |
| BASIC | 4.1.1 | Provide a designated area for carpool drivers (plus taxis and ride-hailing services) to drop off or pick up passengers without using fire lanes or other no-stopping zones | ☑ |
| | **5.** | **CARSHARING & BIKESHARING** | |
| | **5.1** | **Carshare parking spaces** | |
| BETTER | 5.1.1 | Provide up to three carshare parking spaces in an R3, R4 or R5 Zone for specified residential uses *(see Zoning By-law Section 94)* | ☐ |
| | **5.2** | **Bikeshare station location** | |
| BETTER | 5.2.1 | Provide a designated bikeshare station area near a major building entrance, preferably lighted and sheltered with a direct walkway connection | ☐ |
| | **6.** | **PARKING** | |
| | **6.1** | **Number of parking spaces** | |
| REQUIRED | 6.1.1 | Do not provide more parking than permitted by zoning, nor less than required by zoning, unless a variance is being applied for | ☑ |
| BASIC | 6.1.2 | Provide parking for long-term and short-term users that is consistent with mode share targets, considering the potential for visitors to use off-site public parking | ☑ |
| BASIC | 6.1.3 | Where a site features more than one use, provide shared parking and reduce the cumulative number of parking spaces accordingly *(see Zoning By-law Section 104)* | ☐ |
| BETTER | 6.1.4 | Reduce the minimum number of parking spaces required by zoning by one space for each 13 square metres of gross floor area provided as shower rooms, change rooms, locker rooms and other facilities for cyclists in conjunction with bicycle parking *(see Zoning By-law Section 111)* | ☐ |
| | **6.2** | **Separate long-term & short-term parking areas** | |
| BETTER | 6.2.1 | Provide separate areas for short-term and long-term parking (using signage or physical barriers) to permit access controls and simplify enforcement (i.e. to discourage residents from parking in visitor spaces, and vice versa) | ☑ |

# Appendix E

Turning Templates


Notes:




P

| | mm |
|---|---|
| Width | : 2000 |
| Track | : 2000 |
| Lock to Lock Time | : 6.0 |
| Steering Angle | : 35.9 |

| REV: | DESCRIPTION: | BY: | DATE: |
|---|---|---|---|
| | | | |

STATUS:

CGH Transportation
13 Markham Ave
Ottawa, ON
K2G 3Z1
(343) 999-9117

CLIENT: GWL Realty Advisors

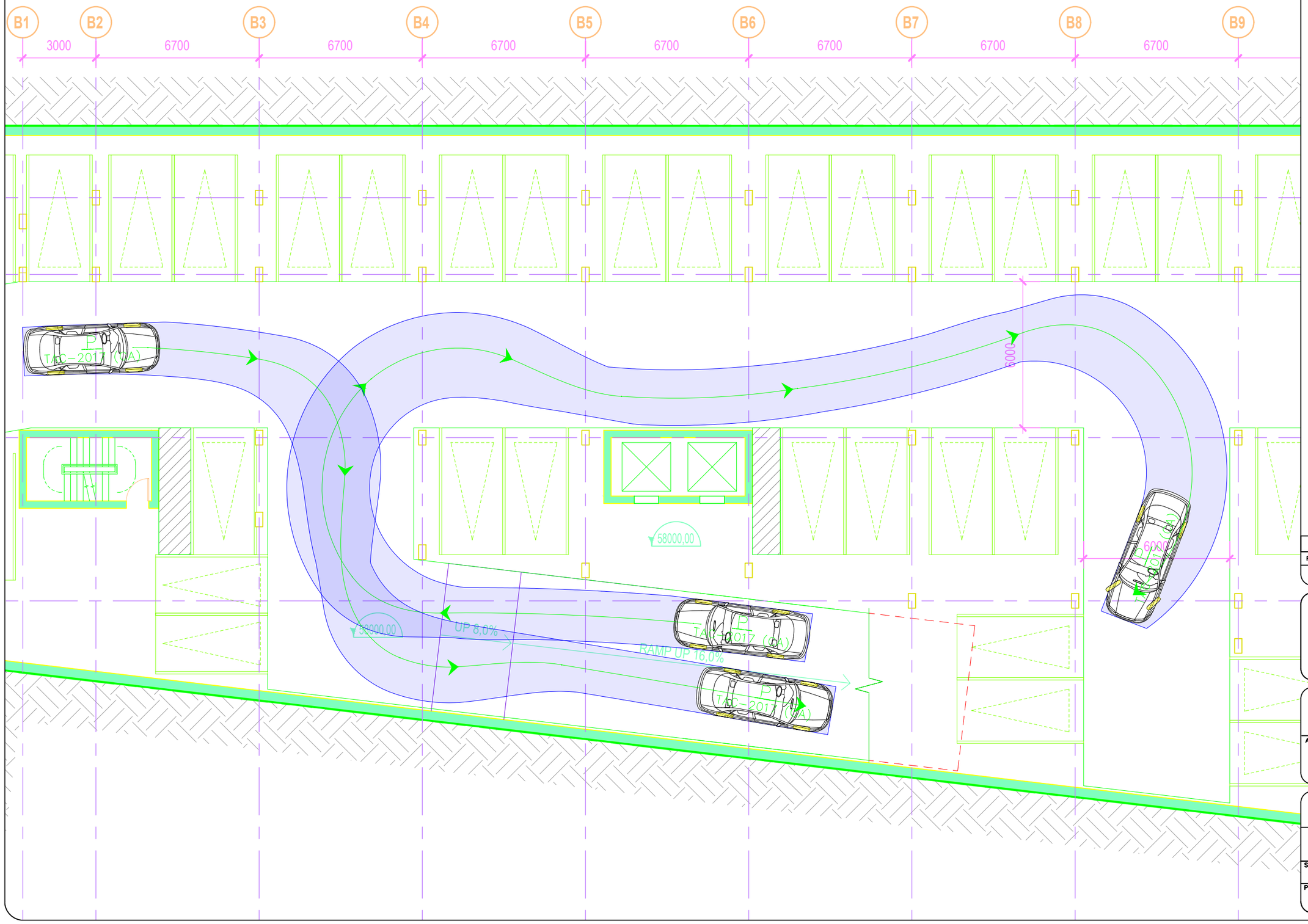
ARCHITECT: NEUF Architect(e)s

SITE: 320 McRae Avenue

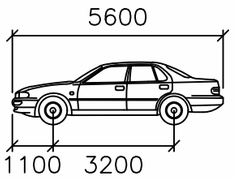
TITLE: P1 Corner Templates

| SCALE AT A3: | DATE: | DRAWN: | CHECKED: |
|---|---|---|---|
| NTS | 2020/01/31 | JK | MC |

| PROJECT NO: | DRAWING NO: | REVISION: |
|---|---|---|
| 2019-29 | 002 | - |




Notes:




P

| | mm |
|---|---|
| Width | : 2000 |
| Track | : 2000 |
| Lock to Lock Time | : 6.0 |
| Steering Angle | : 35.9 |

| REV: | DESCRIPTION: | BY: | DATE: |
|---|---|---|---|
| | | | |

STATUS:


CGH Transportation
13 Markham Ave
Ottawa, ON
K2G 3Z1
(343) 999-9117


CLIENT: GWL Realty Advisors

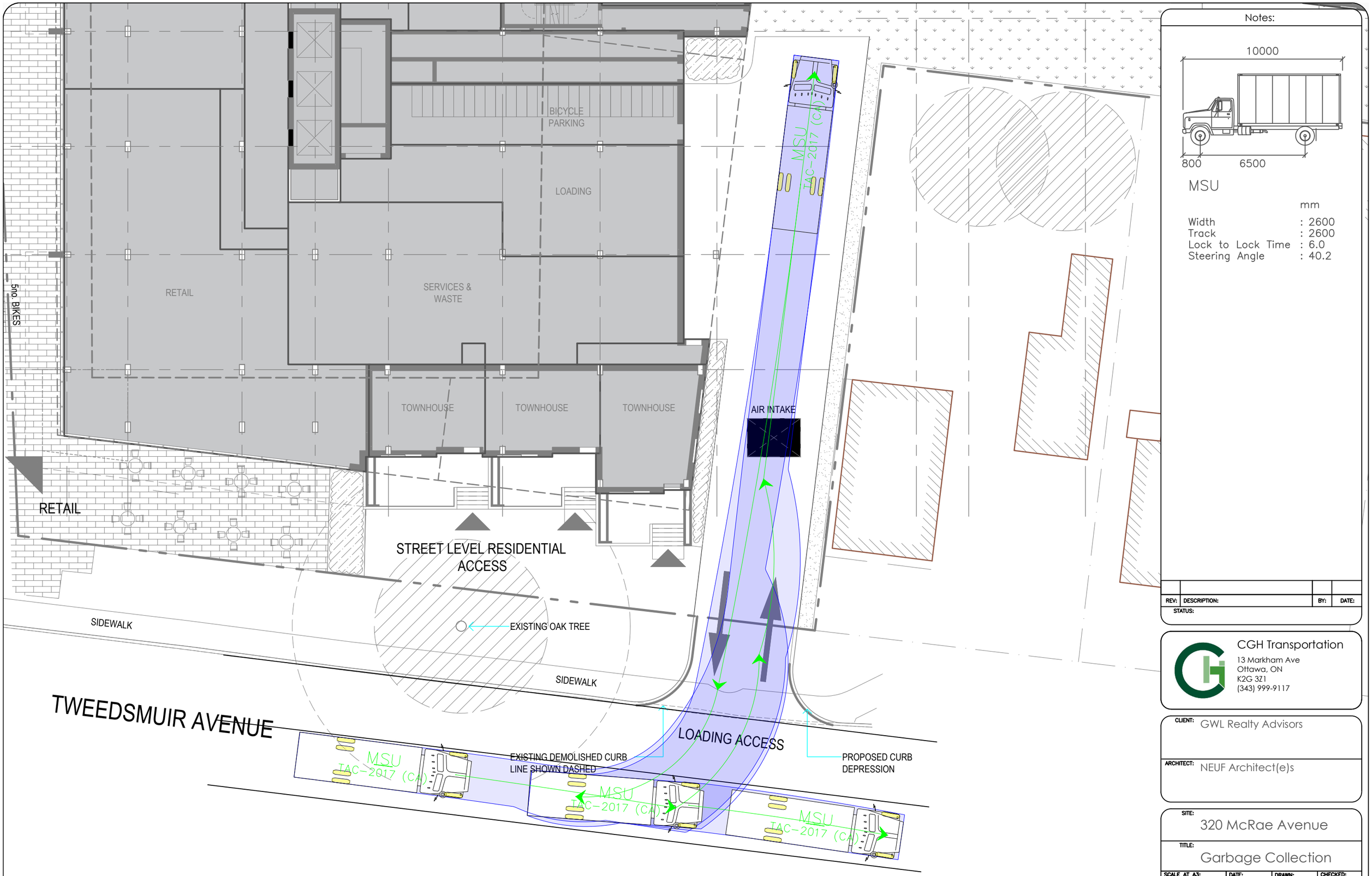
ARCHITECT: NEUF Architect(e)s

SITE: 320 McRae Avenue

TITLE: P2 Corner Templates

| SCALE AT A3: | DATE: | DRAWN: | CHECKED: |
|---|---|---|---|
| NTS | 20/01/31 | JK | MC |

| PROJECT NO: | DRAWING NO: | REVISION: |
|---|---|---|
| 2019-29 | 003 | - |




Notes:




MSU

| | mm |
|---|---|
| Width | : 2600 |
| Track | : 2600 |
| Lock to Lock Time | : 6.0 |
| Steering Angle | : 40.2 |

| REV: | DESCRIPTION: | BY: | DATE: |
|---|---|---|---|
| | | | |

STATUS:

CGH Transportation
13 Markham Ave
Ottawa, ON
K2G 3Z1
(343) 999-9117

CLIENT: GWL Realty Advisors

ARCHITECT: NEUF Architect(e)s

SITE: 320 McRae Avenue

TITLE: Garbage Collection

| SCALE AT A3: | DATE: | DRAWN: | CHECKED: |
|---|---|---|---|
| NTS | 2020/01/31 | JK | MC |

| PROJECT NO: | DRAWING NO: | REVISION: |
|---|---|---|
| 2019-29 | 001 | - |

# Appendix F

MMLOS Worksheets

# Multi-Modal Level of Service - Segments Form

| | | | |
|---|---|---|---|
| **Consultant** | CGH Transportation | **Project** | 2019-29 |
| **Scenario** | All | **Date** | 20-01-2020 |
| **Comments** | | | |
| | | | |

| SEGMENTS | | Segment | Tweedsmuir Ave | McRae Ave | Scott St |
|---|---|---|---|---|---|
| | | | 1 | 2 | 3 |
| Pedestrian | Sidewalk Width<br>Boulevard Width | - | 1.5 m<br>> 2 m | 1.5 m<br>< 0.5 m | 1.8 m<br>< 0.5 m |
| | Avg Daily Curb Lane Traffic Volume | | ≤ 3000 | ≤ 3000 | > 3000 |
| | Operating Speed<br>On-Street Parking | | > 50 to 60 km/h<br>yes | > 50 to 60 km/h<br>yes | > 50 to 60 km/h<br>yes |
| | **Exposure to Traffic PLoS** | | **C** | **F** | **D** |
| | Effective Sidewalk Width | | | | |
| | Pedestrian Volume | | | | |
| | **Crowding PLoS** | | - | - | - |
| | **Level of Service** | | **-** | **-** | **-** |
| Bicycle | Type of Cycling Facility | - | Mixed Traffic | Mixed Traffic | Parking beside Bike Lane |
| | Number of Travel Lanes | | ≤ 2 (no centreline) | ≤ 2 (no centreline) | 1 each direction |
| | Operating Speed | | ≥ 50 to 60 km/h | ≥ 50 to 60 km/h | >50 to <70 km/h |
| | **# of Lanes & Operating Speed LoS** | | **D** | **D** | **D** |
| | Bike Lane (+ Parking Lane) Width | | | | ≤ 4 m biking + parking width |
| | **Bike Lane Width LoS** | | - | - | **C** |
| | Bike Lane Blockages | | | | Frequent |
| | **Blockage LoS** | | - | - | **C** |
| | Median Refuge Width (no median = < 1.8 m) | | | | |
| | No. of Lanes at Unsignalized Crossing | | | | |
| | Sidestreet Operating Speed | | | | |
| | **Unsignalized Crossing - Lowest LoS** | | - | - | - |
| | **Level of Service** | | **-** | **-** | **-** |
| Transit | Facility Type | E | | Mixed Traffic | Mixed Traffic |
| | Friction or Ratio Transit:Posted Speed | | | Vt/Vp ≥ 0.8 | Vt/Vp ≤ 0.6 |
| | **Level of Service** | | **-** | **D** | **E** |
| Truck | Truck Lane Width | F | | ≤ 3.0 m | > 3.7 m |
| | Travel Lanes per Direction | | | 1 | 1 |
| | **Level of Service** | | **-** | **F** | **B** |
| Auto | **Level of Service** | **Not Applicable** | | | |

## Multi-Modal Level of Service - Intersections Form

| | | | |
|---|---|---|---|
| **Consultant** | **CGH Transportation** | **Project** | **2019-29** |
| **Scenario** | **All Horizons-AM** | **Date** | **22-01-2020** |
| **Comments** | | | |

| INTERSECTIONS | | McRae Avenue and Richmond Road | | | | Tweedsmuir Avenue and Scott Street | | | |
|---|---|---|---|---|---|---|---|---|---|
| | **Crossing Side** | **NORTH** | **SOUTH** | **EAST** | **WEST** | **NORTH** | **SOUTH** | **EAST** | **WEST** |
| **Pedestrian** | Lanes | 0 - 2 | 3 | 4 | 5 | 0 - 2 | 0 - 2 | 0 - 2 | |
| | Median | No Median - 2.4 m | No Median - 2.4 m | No Median - 2.4 m | No Median - 2.4 m | No Median - 2.4 m | No Median - 2.4 m | No Median - 2.4 m | |
| | Conflicting Left Turns | Permissive | Permissive | Permissive | Permissive | Permissive | Permissive | Permissive | |
| | Conflicting Right Turns | Permissive or yield control | Permissive or yield control | Permissive or yield control | Permissive or yield control | No right turn | Permissive or yield control | Permissive or yield control | |
| | Right Turns on Red (RToR) ? | RTOR allowed | RTOR allowed | RTOR allowed | RTOR allowed | RTOR allowed | RTOR allowed | RTOR prohibited | |
| | Ped Signal Leading Interval? | No | No | Yes | Yes | No | No | Yes | |
| | Right Turn Channel | No Channel | No Channel | No Channel | No Channel | No Channel | No Channel | No Channel | |
| | Corner Radius | 5-10m | 10-15m | 10-15m | 10-15m | 5-10m | 5-10m | 5-10m | |
| | Crosswalk Type | Std transverse markings | Std transverse markings | Std transverse markings | Std transverse markings | Std transverse markings | Std transverse markings | Std transverse markings | |
| | **PETSI Score** | **86** | **70** | **55** | **39** | **91** | **86** | **91** | |
| | **Ped. Exposure to Traffic LoS** | **B** | **C** | **D** | **E** | **A** | **B** | **A** | **-** |
| | Cycle Length | | | | | | | | |
| | Effective Walk Time | | | | | | | | |
| | **Average Pedestrian Delay** | | | | | | | | |
| | **Pedestrian Delay LoS** | - | - | - | - | - | - | - | - |
| | **Level of Service** | **B** | **C** | **D** | **E** | **A** | **B** | **A** | **-** |
| | | **E** | | | | **B** | | | |
| **Approach From** | | **NORTH** | **SOUTH** | **EAST** | **WEST** | **NORTH** | **SOUTH** | **EAST** | **WEST** |
| **Bicycle** | Bicycle Lane Arrangement on Approach | Mixed Traffic | Mixed Traffic | Mixed Traffic | Mixed Traffic | | Mixed Traffic | Curb Bike Lane, Cycletrack or MUP | |
| | Right Turn Lane Configuration | > 50 m | > 50 m | > 50 m | > 50 m | | > 50 m | Not Applicable | |
| | Right Turning Speed | ≤ 25 km/h | ≤ 25 km/h | ≤ 25 km/h | ≤ 25 km/h | | ≤ 25 km/h | Not Applicable | |
| | **Cyclist relative to RT motorists** | **F** | **F** | **F** | **F** | **-** | **F** | **Not Applicable** | |
| | **Separated or Mixed Traffic** | **Mixed Traffic** | **Mixed Traffic** | **Mixed Traffic** | **Mixed Traffic** | **-** | **Mixed Traffic** | **Separated** | |
| | Left Turn Approach | No lane crossed | No lane crossed | No lane crossed | No lane crossed | | No lane crossed | No lane crossed | |
| | Operating Speed | > 40 to ≤ 50 km/h | > 40 to ≤ 50 km/h | > 50 to < 60 km/h | > 50 to < 60 km/h | | > 40 to ≤ 50 km/h | > 50 to < 60 km/h | |
| | **Left Turning Cyclist** | **B** | **B** | **C** | **C** | **-** | **B** | **C** | **-** |
| | **Level of Service** | **F** | **F** | **F** | **F** | **-** | **F** | **C** | **-** |
| | | **F** | | | | **F** | | | |
| **Transit** | Average Signal Delay | ≤ 40 sec | ≤ 20 sec | ≤ 20 sec | ≤ 20 sec | | | ≤ 10 sec | ≤ 20 sec |
| | **Level of Service** | **E** | **C** | **C** | **C** | **-** | **-** | **B** | **C** |
| | | **E** | | | | **C** | | | |
| **Truck** | Effective Corner Radius | 10 - 15 m | 10 - 15 m | 10 - 15 m | 10 - 15 m | < 10 m | < 10 m | | < 10 m |
| | Number of Receiving Lanes on Departure from Intersection | 1 | ≥ 2 | 1 | 1 | 1 | 1 | | 1 |
| | **Level of Service** | **E** | **B** | **E** | **E** | **F** | **F** | **-** | **F** |
| | | **E** | | | | **F** | | | |
| **Auto** | Volume to Capacity Ratio | 0.61 - 0.70 | | | | 0.0 - 0.60 | | | |
| | **Level of Service** | **B** | | | | **A** | | | |

## Multi-Modal Level of Service - Intersections Form

| | | | |
|---|---|---|---|
| **Consultant** | **CGH Transportation** | **Project** | **2019-29** |
| **Scenario** | **All Horizons-PM** | **Date** | **22-01-2020** |
| **Comments** | | | |

| INTERSECTIONS | | McRae Avenue and Richmond Road | | | | Tweedsmuir Avenue and Scott Street | | | |
|---|---|---|---|---|---|---|---|---|---|
| | **Crossing Side** | **NORTH** | **SOUTH** | **EAST** | **WEST** | **NORTH** | **SOUTH** | **EAST** | **WEST** |
| **Pedestrian** | Lanes | 0 - 2 | 3 | 4 | 5 | 0 - 2 | 0 - 2 | 0 - 2 | |
| | Median | No Median - 2.4 m | No Median - 2.4 m | No Median - 2.4 m | No Median - 2.4 m | No Median - 2.4 m | No Median - 2.4 m | No Median - 2.4 m | |
| | Conflicting Left Turns | Permissive | Permissive | Permissive | Permissive | Permissive | Permissive | Permissive | |
| | Conflicting Right Turns | Permissive or yield control | Permissive or yield control | Permissive or yield control | Permissive or yield control | No right turn | Permissive or yield control | Permissive or yield control | |
| | Right Turns on Red (RToR) ? | RTOR allowed | RTOR allowed | RTOR allowed | RTOR allowed | RTOR allowed | RTOR allowed | RTOR prohibited | |
| | Ped Signal Leading Interval? | No | No | Yes | Yes | No | No | Yes | |
| | Right Turn Channel | No Channel | No Channel | No Channel | No Channel | No Channel | No Channel | No Channel | |
| | Corner Radius | 5-10m | 10-15m | 10-15m | 10-15m | 5-10m | 5-10m | 5-10m | |
| | Crosswalk Type | Std transverse markings | Std transverse markings | Std transverse markings | Std transverse markings | Std transverse markings | Std transverse markings | Std transverse markings | |
| | **PETSI Score** | **86** | **70** | **55** | **39** | **91** | **86** | **91** | |
| | **Ped. Exposure to Traffic LoS** | **B** | **C** | **D** | **E** | **A** | **B** | **A** | **-** |
| | Cycle Length | | | | | | | | |
| | Effective Walk Time | | | | | | | | |
| | **Average Pedestrian Delay** | | | | | | | | |
| | **Pedestrian Delay LoS** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** |
| | **Level of Service** | **B** | **C** | **D** | **E** | **A** | **B** | **A** | **-** |
| | | **E** | | | | **B** | | | |
| | **Approach From** | **NORTH** | **SOUTH** | **EAST** | **WEST** | **NORTH** | **SOUTH** | **EAST** | **WEST** |
| **Bicycle** | Bicycle Lane Arrangement on Approach | Mixed Traffic | Mixed Traffic | Mixed Traffic | Mixed Traffic | | Mixed Traffic | Curb Bike Lane, Cycletrack or MUP | |
| | Right Turn Lane Configuration | > 50 m | > 50 m | > 50 m | > 50 m | | > 50 m | Not Applicable | |
| | Right Turning Speed | ≤ 25 km/h | ≤ 25 km/h | ≤ 25 km/h | ≤ 25 km/h | | ≤ 25 km/h | Not Applicable | |
| | **Cyclist relative to RT motorists** | **F** | **F** | **F** | **F** | **-** | **F** | **Not Applicable** | |
| | **Separated or Mixed Traffic** | **Mixed Traffic** | **Mixed Traffic** | **Mixed Traffic** | **Mixed Traffic** | **-** | **Mixed Traffic** | **Separated** | |
| | Left Turn Approach | No lane crossed | No lane crossed | No lane crossed | No lane crossed | | No lane crossed | No lane crossed | |
| | Operating Speed | > 40 to ≤ 50 km/h | > 40 to ≤ 50 km/h | > 50 to < 60 km/h | > 50 to < 60 km/h | | > 40 to ≤ 50 km/h | > 50 to < 60 km/h | |
| | **Left Turning Cyclist** | **B** | **B** | **C** | **C** | **-** | **B** | **C** | **-** |
| | **Level of Service** | **F** | **F** | **F** | **F** | **-** | **F** | **C** | **-** |
| | | **F** | | | | **F** | | | |
| **Transit** | Average Signal Delay | > 40 sec | ≤ 20 sec | ≤ 30 sec | ≤ 30 sec | | | ≤ 20 sec | ≤ 20 sec |
| | **Level of Service** | **F** | **C** | **D** | **D** | **-** | **-** | **C** | **C** |
| | | **F** | | | | **C** | | | |
| **Truck** | Effective Corner Radius | 10 - 15 m | 10 - 15 m | 10 - 15 m | 10 - 15 m | < 10 m | < 10 m | | < 10 m |
| | Number of Receiving Lanes on Departure from Intersection | 1 | ≥ 2 | 1 | 1 | 1 | 1 | | 1 |
| | **Level of Service** | **E** | **B** | **E** | **E** | **F** | **F** | **-** | **F** |
| | | **E** | | | | **F** | | | |
| **Auto** | Volume to Capacity Ratio | 0.81 - 0.90 | | | | 0.0 - 0.60 | | | |
| | **Level of Service** | **D** | | | | **A** | | | |

# Appendix G

Signal Warrants

McRae Avenue & Scott Street
2022 FT

**Justification #7**

| Justification | Description | Minimum Requirement 1 Lane Highway | | Minimum Requirement 2 or More Lanes | | Compliance Sectional | | Compliance Entire % | Signal |
|---|---|---|---|---|---|---|---|---|---|
| | | Free Flow | Restr. Flow | Free Flow | Restr. Flow | Numerical | % | | |
| 1. Minimum Vehicular Volume | A. Vehicle volume, all approaches (average hour) | 480 | 720 | 600 | 900 | 613 | 85% | 59% | No |
| | B. Vehicle volume, along minor streets (average hour) | 120 | 170 | 120 | 170 | 101 | 59% | | |
| 2. Delay to Cross Traffic | A. Vehicle volumes, major street (average hour) | 480 | 720 | 600 | 900 | 513 | 71% | 17% | No |
| | B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour) | 50 | 75 | 50 | 75 | 13 | 17% | | |

Notes
1. Refer to OTM Book 12, pg 88, Nov 2007
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4
4. T-intersection factor corrected, applies only to 1B

McRae Avenue & Scott Street
2027 FT

**Justification #7**

| Justification | Description | Minimum Requirement 1 Lane Highway | | Minimum Requirement 2 or More Lanes | | Compliance Sectional | | Compliance Entire % | Signal |
|---|---|---|---|---|---|---|---|---|---|
| | | Free Flow | Restr. Flow | Free Flow | Restr. Flow | Numerical | % | | |
| 1. Minimum Vehicular Volume | A. Vehicle volume, all approaches (average hour) | 480 | 720 | 600 | 900 | 657 | 91% | 59% | No |
| | B. Vehicle volume, along minor streets (average hour) | 120 | 170 | 120 | 170 | 100 | 59% | | |
| 2. Delay to Cross Traffic | A. Vehicle volumes, major street (average hour) | 480 | 720 | 600 | 900 | 557 | 77% | 18% | No |
| | B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour) | 50 | 75 | 50 | 75 | 14 | 18% | | |

Notes
1. Refer to OTM Book 12, pg 88, Nov 2007
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4
4. T-intersection factor corrected, applies only to 1B

Tweedsmuir Avenue and Richmond Road
2022 FT

**Justification #7**

| Justification | Description | Minimum Requirement 1 Lane Highway | | Minimum Requirement 2 or More Lanes | | Compliance Sectional | | Compliance Entire % | Signal |
|---|---|---|---|---|---|---|---|---|---|
| | | Free Flow | Restr. Flow | Free Flow | Restr. Flow | Numerical | % | | |
| 1. Minimum Vehicular Volume | A. Vehicle volume, all approaches (average hour) | 480 | 720 | 600 | 900 | 545 | 76% | 23% | No |
| | B. Vehicle volume, along minor streets (average hour) | 120 | 170 | 120 | 170 | 39 | 23% | | |
| 2. Delay to Cross Traffic | A. Vehicle volumes, major street (average hour) | 480 | 720 | 600 | 900 | 506 | 70% | 11% | No |
| | B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour) | 50 | 75 | 50 | 75 | 9 | 11% | | |

Notes
1. Refer to OTM Book 12, pg 88, Nov 2007
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4
4. T-intersection factor corrected, applies only to 1B

Tweedsmuir Avenue and Richmond Road
2027 FT

**Justification #7**

| Justification | Description | Minimum Requirement 1 Lane Highway | | Minimum Requirement 2 or More Lanes | | Compliance Sectional | | Compliance Entire % | Signal |
|---|---|---|---|---|---|---|---|---|---|
| | | Free Flow | Restr. Flow | Free Flow | Restr. Flow | Numerical | % | | |
| 1. Minimum Vehicular Volume | A. Vehicle volume, all approaches (average hour) | 480 | 720 | 600 | 900 | 587 | 82% | 24% | No |
| | B. Vehicle volume, along minor streets (average hour) | 120 | 170 | 120 | 170 | 40 | 24% | | |
| 2. Delay to Cross Traffic | A. Vehicle volumes, major street (average hour) | 480 | 720 | 600 | 900 | 547 | 76% | 13% | No |
| | B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour) | 50 | 75 | 50 | 75 | 10 | 13% | | |

Notes
1. Refer to OTM Book 12, pg 88, Nov 2007
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4
4. T-intersection factor corrected, applies only to 1B

McRae Ave & Site Access #1
2022 FT

**Justification #7**

| Justification | Description | Minimum Requirement 1 Lane Highway | | Minimum Requirement 2 or More Lanes | | Compliance Sectional | | Compliance Entire % | Signal |
|---|---|---|---|---|---|---|---|---|---|
| | | Free Flow | Restr. Flow | Free Flow | Restr. Flow | Numerical | % | | |
| 1. Minimum Vehicular Volume | A. Vehicle volume, all approaches (average hour) | 480 | 720 | 600 | 900 | 222 | 31% | 30% | No |
| | B. Vehicle volume, along minor streets (average hour) | 120 | 170 | 120 | 170 | 50 | 30% | | |
| 2. Delay to Cross Traffic | A. Vehicle volumes, major street (average hour) | 480 | 720 | 600 | 900 | 188 | 26% | 16% | No |
| | B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour) | 50 | 75 | 50 | 75 | 12 | 16% | | |

Notes
1. Refer to OTM Book 12, pg 88, Nov 2007
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4
4. T-intersection factor corrected, applies only to 1B

McRae Ave & Site Access #1
2027 FT

**Justification #7**

| Justification | Description | Minimum Requirement 1 Lane Highway | | Minimum Requirement 2 or More Lanes | | Compliance Sectional | | Compliance Entire % | Signal |
|---|---|---|---|---|---|---|---|---|---|
| | | Free Flow | Restr. Flow | Free Flow | Restr. Flow | Numerical | % | | |
| 1. Minimum Vehicular Volume | A. Vehicle volume, all approaches (average hour) | 480 | 720 | 600 | 900 | 195 | 27% | 9% | No |
| | B. Vehicle volume, along minor streets (average hour) | 120 | 170 | 120 | 170 | 15 | 9% | | |
| 2. Delay to Cross Traffic | A. Vehicle volumes, major street (average hour) | 480 | 720 | 600 | 900 | 185 | 26% | 5% | No |
| | B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour) | 50 | 75 | 50 | 75 | 4 | 5% | | |

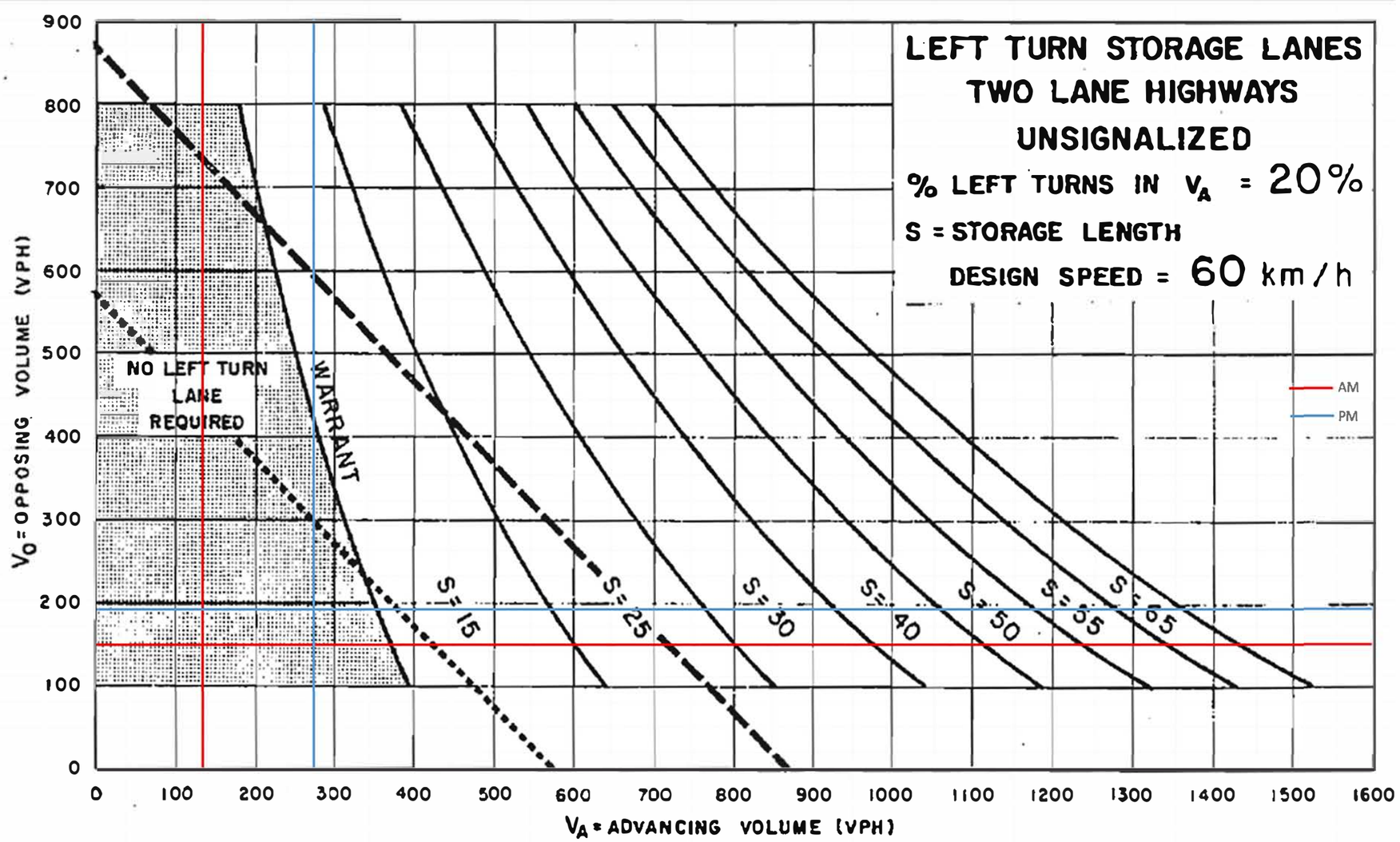
Notes
1. Refer to OTM Book 12, pg 88, Nov 2007
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4
4. T-intersection factor corrected, applies only to 1B

# Appendix H

Left-turn Lane Warrants

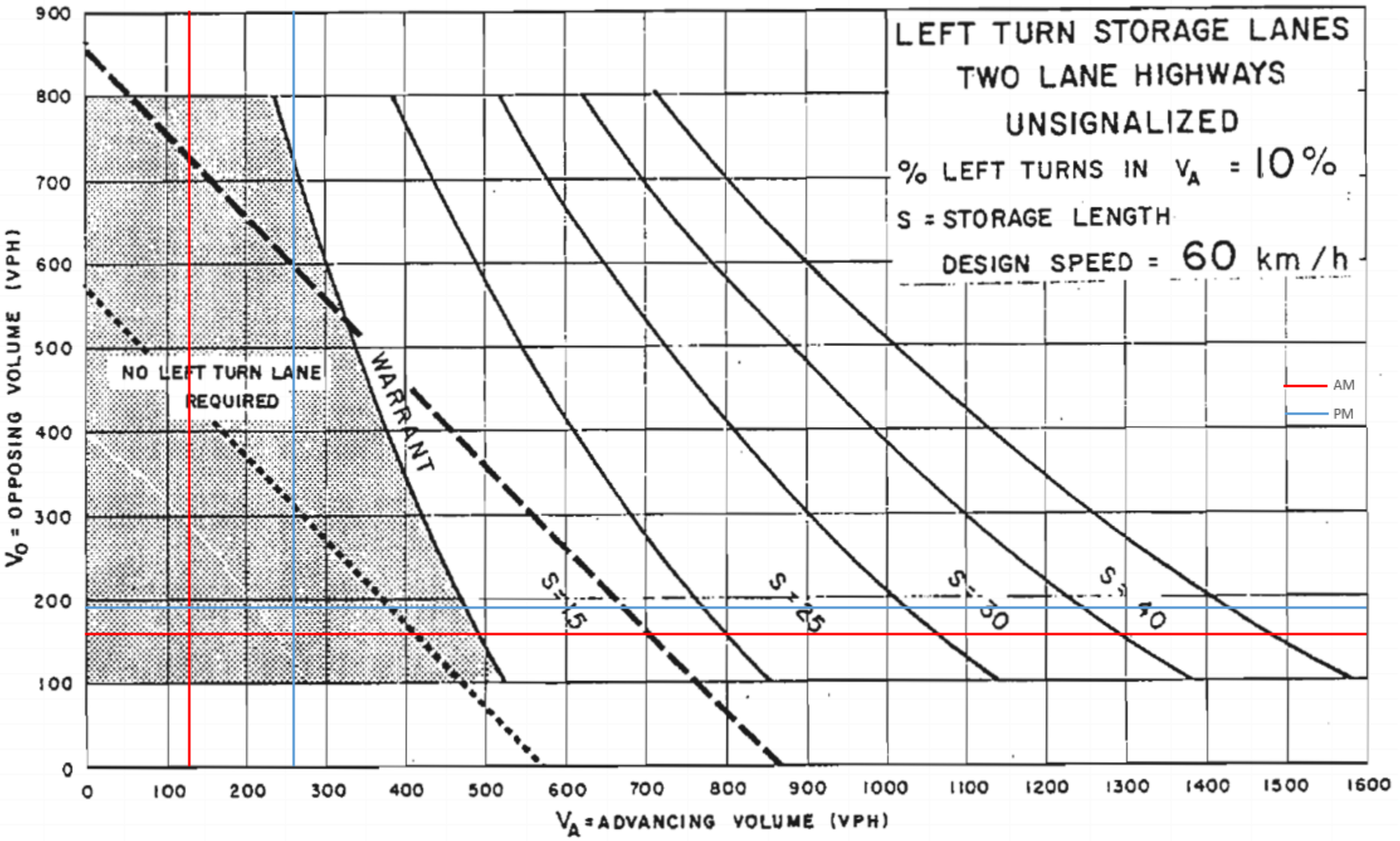
## 2022 FT

| Design Speed | | Northbound Left | | | | | | Yes | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 60 | km/h | | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR | %Left Turn | Volume Advancing | Volume Opposing |
| | | AM | 29 | | 54 | | | | 19 | 114 | | | 142 | 10 | 14.3% | 133 | 152 |
| | | PM | 18 | | 33 | | | | 50 | 223 | | | 167 | 27 | 18.3% | 273 | 194 |


LEFT TURN STORAGE LANES
TWO LANE HIGHWAYS
UNSIGNALIZED
% LEFT TURNS IN $V_A$ = 20%
S = STORAGE LENGTH
DESIGN SPEED = 60 km/h
NO LEFT TURN LANE REQUIRED
WARRANT
S= 15
S= 25
S= 30
S= 40
S= 50
S= 55
S= 65
AM
PM
$V_O$ = OPPOSING VOLUME (VPH)
$V_A$ = ADVANCING VOLUME (VPH)
900
800
700
600
500
400
300
200
100
0
0
100
200
300
400
500
600
700
800
900
1000
1100
1200
1300
1400
1500
1600

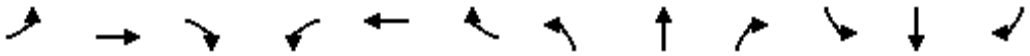
## 2027 FT

| Design Speed | | Northbound Left | | | | | | Yes | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 60 | km/h | | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR | %Left Turn | Volume Advancing | Volume Opposing |
| | | AM | 8 | | 16 | | | | 6 | 124 | | | 155 | 3 | 4.6% | 130 | 158 |
| | | PM | 6 | | 10 | | | | 16 | 245 | | | 182 | 8 | 6.1% | 261 | 190 |


LEFT TURN STORAGE LANES
TWO LANE HIGHWAYS
UNSIGNALIZED
% LEFT TURNS IN $V_A$ = 10%
S = STORAGE LENGTH
DESIGN SPEED = 60 km/h
NO LEFT TURN LANE REQUIRED
WARRANT
S=15
S=25
S=30
S=40
AM
PM
$V_O$ = OPPOSING VOLUME (VPH)
$V_A$ = ADVANCING VOLUME (VPH)
900
800
700
600
500
400
300
200
100
0
0
100
200
300
400
500
600
700
800
900
1000
1100
1200
1300
1400
1500
1600

# Appendix I

2019 Existing Conditions Synchro Worksheets



| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 0 | 475 | 3 | 10 | 263 | 5 | 3 | 0 | 34 | 6 | 0 | 0 |
| Future Volume (vph) | 0 | 475 | 3 | 10 | 263 | 5 | 3 | 0 | 34 | 6 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| 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 |
| Frt | | 0.999 | | | 0.997 | | | 0.875 | | | | |
| Flt Protected | | | | | 0.998 | | | 0.996 | | | 0.950 | |
| Satd. Flow (prot) | 0 | 1569 | 0 | 0 | 1534 | 0 | 0 | 1369 | 0 | 0 | 761 | 0 |
| Flt Permitted | | | | | 0.998 | | | 0.996 | | | 0.950 | |
| Satd. Flow (perm) | 0 | 1569 | 0 | 0 | 1534 | 0 | 0 | 1369 | 0 | 0 | 761 | 0 |
| Link Speed (k/h) | | 50 | | | 50 | | | 50 | | | 50 | |
| Link Distance (m) | | 78.0 | | | 22.1 | | | 319.9 | | | 53.1 | |
| Travel Time (s) | | 5.6 | | | 1.6 | | | 23.0 | | | 3.8 | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Heavy Vehicles (%) | 100% | 2% | 2% | 2% | 2% | 100% | 2% | 100% | 2% | 100% | 100% | 100% |
| Parking (#/hr) | | | 0 | | | 0 | | | 0 | | | 0 |
| Adj. Flow (vph) | 0 | 528 | 3 | 11 | 292 | 6 | 3 | 0 | 38 | 7 | 0 | 0 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 531 | 0 | 0 | 309 | 0 | 0 | 41 | 0 | 0 | 7 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 3.0 | | | 3.0 | | | 3.0 | | | 3.0 | |
| Two way Left Turn Lane | | | | | | | | | | | | |
| Headway Factor | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 |
| Turning Speed (k/h) | 25 | | 15 | 25 | | 15 | 25 | | 15 | 25 | | 15 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | CBD | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization | 39.5% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.9 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ⇕ | | | ⇕ | | | ⇕ | | | ⇕ | |
| Traffic Vol, veh/h | 0 | 475 | 3 | 10 | 263 | 5 | 3 | 0 | 34 | 6 | 0 | 0 |
| Future Vol, veh/h | 0 | 475 | 3 | 10 | 263 | 5 | 3 | 0 | 34 | 6 | 0 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 100 | 2 | 2 | 2 | 2 | 100 | 2 | 100 | 2 | 100 | 100 | 100 |
| Mvmt Flow | 0 | 528 | 3 | 11 | 292 | 6 | 3 | 0 | 38 | 7 | 0 | 0 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 298 | 0 | 0 | 531 | 0 | 0 | 847 | 850 | 530 | 866 | 848 | 295 |
| Stage 1 | - | - | - | - | - | - | 530 | 530 | - | 317 | 317 | - |
| Stage 2 | - | - | - | - | - | - | 317 | 320 | - | 549 | 531 | - |
| Critical Hdwy | 5.1 | - | - | 4.12 | - | - | 7.12 | 7.5 | 6.22 | 8.1 | 7.5 | 7.2 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.12 | 6.5 | - | 7.1 | 6.5 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.12 | 6.5 | - | 7.1 | 6.5 | - |
| Follow-up Hdwy | 3.1 | - | - | 2.218 | - | - | 3.518 | 4.9 | 3.318 | 4.4 | 4.9 | 4.2 |
| Pot Cap-1 Maneuver | 863 | - | - | 1036 | - | - | 282 | 211 | 549 | 189 | 212 | 562 |
| Stage 1 | - | - | - | - | - | - | 533 | 396 | - | 528 | 510 | - |
| Stage 2 | - | - | - | - | - | - | 694 | 509 | - | 380 | 396 | - |
| Platoon blocked, % | | - | - | | - | - | | | | | | |
| Mov Cap-1 Maneuver | 863 | - | - | 1036 | - | - | 279 | 208 | 549 | 174 | 209 | 562 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 279 | 208 | - | 174 | 209 | - |
| Stage 1 | - | - | - | - | - | - | 533 | 396 | - | 528 | 503 | - |
| Stage 2 | - | - | - | - | - | - | 685 | 502 | - | 354 | 396 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0 | 0.3 | 12.7 | 26.5 |
| HCM LOS | | | B | D |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 509 | 863 | - | - | 1036 | - | - | 174 |
| HCM Lane V/C Ratio | 0.081 | - | - | - | 0.011 | - | - | 0.038 |
| HCM Control Delay (s) | 12.7 | 0 | - | - | 8.5 | 0 | - | 26.5 |
| HCM Lane LOS | B | A | - | - | A | A | - | D |
| HCM 95th %tile Q(veh) | 0.3 | 0 | - | - | 0 | - | - | 0.1 |

| Lane Group | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (vph) | 490 | 25 | 98 | 265 | 13 | 73 |
| Future Volume (vph) | 490 | 25 | 98 | 265 | 13 | 73 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 0.993 | | | | 0.885 | |
| Flt Protected | | | | 0.987 | 0.993 | |
| Satd. Flow (prot) | 1560 | 0 | 0 | 1395 | 1380 | 0 |
| Flt Permitted | | | | 0.987 | 0.993 | |
| Satd. Flow (perm) | 1560 | 0 | 0 | 1395 | 1380 | 0 |
| Link Speed (k/h) | 50 | | | 50 | 50 | |
| Link Distance (m) | 57.4 | | | 138.5 | 320.9 | |
| Travel Time (s) | 4.1 | | | 10.0 | 23.1 | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Parking (#/hr) | | 0 | | 0 | | |
| Adj. Flow (vph) | 544 | 28 | 109 | 294 | 14 | 81 |
| Shared Lane Traffic (%) | | | | | | |
| Lane Group Flow (vph) | 572 | 0 | 0 | 403 | 95 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No |
| Lane Alignment | Left | Right | Left | Left | Left | Right |
| Median Width(m) | 0.0 | | | 0.0 | 3.5 | |
| Link Offset(m) | 0.0 | | | 0.0 | 0.0 | |
| Crosswalk Width(m) | 3.0 | | | 3.0 | 3.0 | |
| Two way Left Turn Lane | | | | | | |
| Headway Factor | 1.24 | 1.24 | 1.24 | 1.41 | 1.24 | 1.24 |
| Turning Speed (k/h) | | 15 | 25 | | 25 | 15 |
| Sign Control | Free | | | Free | Stop | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | CBD | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization 70.9% | | ICU Level of Service C | |
| Analysis Period (min) 15 | | | |

| Intersection | |
|---|---|
| Int Delay, s/veh | 2.3 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 490 | 25 | 98 | 265 | 13 | 73 |
| Future Vol, veh/h | 490 | 25 | 98 | 265 | 13 | 73 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 544 | 28 | 109 | 294 | 14 | 81 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 572 | 0 | 1070 | 558 |
| Stage 1 | - | - | - | - | 558 | - |
| Stage 2 | - | - | - | - | 512 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 1001 | - | 245 | 529 |
| Stage 1 | - | - | - | - | 573 | - |
| Stage 2 | - | - | - | - | 602 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1001 | - | 213 | 529 |
| Mov Cap-2 Maneuver | - | - | - | - | 213 | - |
| Stage 1 | - | - | - | - | 573 | - |
| Stage 2 | - | - | - | - | 524 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 2.4 | 15.7 |
| HCM LOS | | | C |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | 432 | - | - | 1001 | - |
| HCM Lane V/C Ratio | 0.221 | - | - | 0.109 | - |
| HCM Control Delay (s) | 15.7 | - | - | 9 | 0 |
| HCM Lane LOS | C | - | - | A | A |
| HCM 95th %tile Q(veh) | 0.8 | - | - | 0.4 | - |

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 20 | 411 | 8 | 13 | 272 | 6 | 7 | 8 | 26 | 2 | 4 | 13 |
| Future Volume (vph) | 20 | 411 | 8 | 13 | 272 | 6 | 7 | 8 | 26 | 2 | 4 | 13 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Storage Length (m) | 0.0 | | 0.0 | 0.0 | | 10.0 | 0.0 | | 0.0 | 0.0 | | 0.0 |
| Storage Lanes | 0 | | 0 | 0 | | 1 | 0 | | 0 | 0 | | 0 |
| Taper Length (m) | 15.0 | | | 15.0 | | | 15.0 | | | 15.0 | | |
| 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 |
| Frt | | 0.998 | | | | 0.850 | | 0.915 | | | 0.905 | |
| Flt Protected | | 0.998 | | | 0.998 | | | 0.991 | | | 0.995 | |
| Satd. Flow (prot) | 0 | 1564 | 0 | 0 | 1567 | 1201 | 0 | 1424 | 0 | 0 | 1414 | 0 |
| Flt Permitted | | 0.998 | | | 0.998 | | | 0.991 | | | 0.995 | |
| Satd. Flow (perm) | 0 | 1564 | 0 | 0 | 1567 | 1201 | 0 | 1424 | 0 | 0 | 1414 | 0 |
| Link Speed (k/h) | | 50 | | | 50 | | | 50 | | | 50 | |
| Link Distance (m) | | 72.3 | | | 104.2 | | | 72.7 | | | 319.9 | |
| Travel Time (s) | | 5.2 | | | 7.5 | | | 5.2 | | | 23.0 | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Parking (#/hr) | | | 0 | | | 0 | | | 0 | | | 0 |
| Adj. Flow (vph) | 22 | 457 | 9 | 14 | 302 | 7 | 8 | 9 | 29 | 2 | 4 | 14 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 488 | 0 | 0 | 316 | 7 | 0 | 46 | 0 | 0 | 20 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(m) | | 3.5 | | | 3.5 | | | 0.0 | | | 0.0 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 3.0 | | | 3.0 | | | 3.0 | | | 3.0 | |
| Two way Left Turn Lane | | | | | | | | | | | | |
| Headway Factor | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.41 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 |
| Turning Speed (k/h) | 25 | | 15 | 25 | | 15 | 25 | | 15 | 25 | | 15 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | CBD | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization 56.2% | | ICU Level of Service B | |
| Analysis Period (min) 15 | | | |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.4 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 20 | 411 | 8 | 13 | 272 | 6 | 7 | 8 | 26 | 2 | 4 | 13 |
| Future Vol, veh/h | 20 | 411 | 8 | 13 | 272 | 6 | 7 | 8 | 26 | 2 | 4 | 13 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | 100 | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 22 | 457 | 9 | 14 | 302 | 7 | 8 | 9 | 29 | 2 | 4 | 14 |

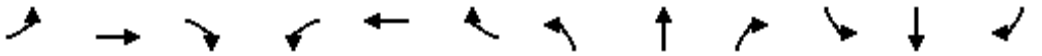
| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 309 | 0 | 0 | 466 | 0 | 0 | 849 | 843 | 462 | 855 | 840 | 302 |
| Stage 1 | - | - | - | - | - | - | 506 | 506 | - | 330 | 330 | - |
| Stage 2 | - | - | - | - | - | - | 343 | 337 | - | 525 | 510 | - |
| Critical Hdwy | 4.12 | - | - | 4.12 | - | - | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Follow-up Hdwy | 2.218 | - | - | 2.218 | - | - | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 |
| Pot Cap-1 Maneuver | 1252 | - | - | 1095 | - | - | 281 | 300 | 600 | 278 | 302 | 738 |
| Stage 1 | - | - | - | - | - | - | 549 | 540 | - | 683 | 646 | - |
| Stage 2 | - | - | - | - | - | - | 672 | 641 | - | 536 | 538 | - |
| Platoon blocked, % | | - | - | | - | - | | | | | | |
| Mov Cap-1 Maneuver | 1252 | - | - | 1095 | - | - | 264 | 288 | 600 | 251 | 290 | 738 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 264 | 288 | - | 251 | 290 | - |
| Stage 1 | - | - | - | - | - | - | 536 | 527 | - | 667 | 636 | - |
| Stage 2 | - | - | - | - | - | - | 644 | 631 | - | 490 | 525 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0.4 | 0.4 | 14.6 | 12.8 |
| HCM LOS | | | B | B |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 420 | 1252 | - | - | 1095 | - | - | 483 |
| HCM Lane V/C Ratio | 0.108 | 0.018 | - | - | 0.013 | - | - | 0.044 |
| HCM Control Delay (s) | 14.6 | 7.9 | 0 | - | 8.3 | 0 | - | 12.8 |
| HCM Lane LOS | B | A | A | - | A | A | - | B |
| HCM 95th %tile Q(veh) | 0.4 | 0.1 | - | - | 0 | - | - | 0.1 |

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 91 | 354 | 41 | 7 | 271 | 97 | 23 | 9 | 16 | 85 | 21 | 35 |
| Future Volume (vph) | 91 | 354 | 41 | 7 | 271 | 97 | 23 | 9 | 16 | 85 | 21 | 35 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Storage Length (m) | 45.0 | | 0.0 | 60.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 |
| Storage Lanes | 1 | | 0 | 1 | | 0 | 1 | | 0 | 0 | | 0 |
| Taper Length (m) | 30.0 | | | 55.0 | | | 15.0 | | | 15.0 | | |
| 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 |
| Frt | | 0.984 | | | 0.960 | | | 0.904 | | | 0.966 | |
| Flt Protected | 0.950 | | | 0.950 | | | 0.950 | | | | 0.971 | |
| Satd. Flow (prot) | 1492 | 1545 | 0 | 1492 | 1508 | 0 | 1492 | 1420 | 0 | 0 | 1473 | 0 |
| Flt Permitted | 0.507 | | | 0.486 | | | 0.671 | | | | 0.799 | |
| Satd. Flow (perm) | 796 | 1545 | 0 | 763 | 1508 | 0 | 1054 | 1420 | 0 | 0 | 1212 | 0 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | 13 | | | 39 | | | 18 | | | 21 | |
| Link Speed (k/h) | | 50 | | | 50 | | | 50 | | | 50 | |
| Link Distance (m) | | 104.2 | | | 101.3 | | | 60.6 | | | 320.9 | |
| Travel Time (s) | | 7.5 | | | 7.3 | | | 4.4 | | | 23.1 | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Parking (#/hr) | | | 0 | | | 0 | | | | | | |
| Adj. Flow (vph) | 101 | 393 | 46 | 8 | 301 | 108 | 26 | 10 | 18 | 94 | 23 | 39 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 101 | 439 | 0 | 8 | 409 | 0 | 26 | 28 | 0 | 0 | 156 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(m) | | 3.5 | | | 3.5 | | | 3.5 | | | 3.5 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 3.0 | | | 3.0 | | | 3.0 | | | 3.0 | |
| Two way Left Turn Lane | | | | | | | | | | | | |
| Headway Factor | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 |
| Turning Speed (k/h) | 25 | | 15 | 25 | | 15 | 25 | | 15 | 25 | | 15 |
| Number of Detectors | 1 | 2 | | 1 | 2 | | 1 | 2 | | 1 | 2 | |
| Detector Template | Left | Thru | | Left | Thru | | Left | Thru | | Left | Thru | |
| Leading Detector (m) | 2.0 | 10.0 | | 2.0 | 10.0 | | 2.0 | 10.0 | | 2.0 | 10.0 | |
| Trailing Detector (m) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Position(m) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Size(m) | 2.0 | 0.6 | | 2.0 | 0.6 | | 2.0 | 0.6 | | 2.0 | 0.6 | |
| Detector 1 Type | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Queue (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Delay (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 2 Position(m) | | 9.4 | | | 9.4 | | | 9.4 | | | 9.4 | |
| Detector 2 Size(m) | | 0.6 | | | 0.6 | | | 0.6 | | | 0.6 | |
| Detector 2 Type | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 8 | | | 4 | |

| Lane Group | Ø3 | Ø7 |
|---|---|---|
| Lane Configurations | | |
| Traffic Volume (vph) | | |
| Future Volume (vph) | | |
| Ideal Flow (vphpl) | | |
| Storage Length (m) | | |
| Storage Lanes | | |
| Taper Length (m) | | |
| Lane Util. Factor | | |
| Frt | | |
| Flt Protected | | |
| Satd. Flow (prot) | | |
| Flt Permitted | | |
| Satd. Flow (perm) | | |
| Right Turn on Red | | |
| Satd. Flow (RTOR) | | |
| Link Speed (k/h) | | |
| Link Distance (m) | | |
| Travel Time (s) | | |
| Peak Hour Factor | | |
| Parking (#/hr) | | |
| Adj. Flow (vph) | | |
| Shared Lane Traffic (%) | | |
| Lane Group Flow (vph) | | |
| Enter Blocked Intersection | | |
| Lane Alignment | | |
| Median Width(m) | | |
| Link Offset(m) | | |
| Crosswalk Width(m) | | |
| Two way Left Turn Lane | | |
| Headway Factor | | |
| Turning Speed (k/h) | | |
| Number of Detectors | | |
| Detector Template | | |
| Leading Detector (m) | | |
| Trailing Detector (m) | | |
| Detector 1 Position(m) | | |
| Detector 1 Size(m) | | |
| Detector 1 Type | | |
| Detector 1 Channel | | |
| Detector 1 Extend (s) | | |
| Detector 1 Queue (s) | | |
| Detector 1 Delay (s) | | |
| Detector 2 Position(m) | | |
| Detector 2 Size(m) | | |
| Detector 2 Type | | |
| Detector 2 Channel | | |
| Detector 2 Extend (s) | | |
| Turn Type | | |
| Protected Phases | 3 | 7 |



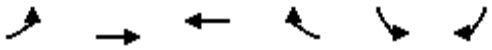
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Permitted Phases | 2 | | | 6 | | | 8 | | | 4 | | |
| Detector Phase | 2 | 2 | | 6 | 6 | | 8 | 8 | | 4 | 4 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 10.0 | 10.0 | | 10.0 | 10.0 | |
| Minimum Split (s) | 24.2 | 24.2 | | 24.2 | 24.2 | | 22.0 | 22.0 | | 22.0 | 22.0 | |
| Total Split (s) | 48.0 | 48.0 | | 48.0 | 48.0 | | 22.0 | 22.0 | | 22.0 | 22.0 | |
| Total Split (%) | 64.0% | 64.0% | | 64.0% | 64.0% | | 29.3% | 29.3% | | 29.3% | 29.3% | |
| Maximum Green (s) | 41.8 | 41.8 | | 41.8 | 41.8 | | 16.5 | 16.5 | | 16.5 | 16.5 | |
| Yellow Time (s) | 3.3 | 3.3 | | 3.3 | 3.3 | | 3.3 | 3.3 | | 3.3 | 3.3 | |
| All-Red Time (s) | 2.9 | 2.9 | | 2.9 | 2.9 | | 2.2 | 2.2 | | 2.2 | 2.2 | |
| Lost Time Adjust (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | | 0.0 | |
| Total Lost Time (s) | 6.2 | 6.2 | | 6.2 | 6.2 | | 5.5 | 5.5 | | | 5.5 | |
| Lead/Lag | | | | | | | Lag | Lag | | Lag | Lag | |
| Lead-Lag Optimize? | | | | | | | Yes | Yes | | Yes | Yes | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Recall Mode | C-Max | C-Max | | C-Max | C-Max | | None | None | | None | None | |
| Walk Time (s) | 7.0 | 7.0 | | 7.0 | 7.0 | | 5.5 | 5.5 | | 5.5 | 5.5 | |
| Flash Dont Walk (s) | 11.0 | 11.0 | | 11.0 | 11.0 | | 11.0 | 11.0 | | 11.0 | 11.0 | |
| Pedestrian Calls (#/hr) | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Act Effct Green (s) | 49.1 | 49.1 | | 49.1 | 49.1 | | 14.2 | 14.2 | | | 14.2 | |
| Actuated g/C Ratio | 0.65 | 0.65 | | 0.65 | 0.65 | | 0.19 | 0.19 | | | 0.19 | |
| v/c Ratio | 0.19 | 0.43 | | 0.02 | 0.41 | | 0.13 | 0.10 | | | 0.63 | |
| Control Delay | 7.4 | 8.5 | | 6.1 | 7.8 | | 24.6 | 14.1 | | | 35.2 | |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | | 0.0 | |
| Total Delay | 7.4 | 8.5 | | 6.1 | 7.8 | | 24.6 | 14.1 | | | 35.2 | |
| LOS | A | A | | A | A | | C | B | | | D | |
| Approach Delay | | 8.3 | | | 7.7 | | | 19.1 | | | 35.2 | |
| Approach LOS | | A | | | A | | | B | | | D | |
| Queue Length 50th (m) | 4.7 | 24.2 | | 0.3 | 20.1 | | 3.1 | 1.2 | | | 17.8 | |
| Queue Length 95th (m) | 14.0 | 53.6 | | 2.1 | 46.5 | | 8.4 | 6.6 | | | 32.4 | |
| Internal Link Dist (m) | | 80.2 | | | 77.3 | | | 36.6 | | | 296.9 | |
| Turn Bay Length (m) | 45.0 | | | 60.0 | | | | | | | | |
| Base Capacity (vph) | 521 | 1016 | | 499 | 1000 | | 241 | 339 | | | 294 | |
| 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 | 0.19 | 0.43 | | 0.02 | 0.41 | | 0.11 | 0.08 | | | 0.53 | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | CBD | | |
| Cycle Length: 75 | | | |
| Actuated Cycle Length: 75 | | | |
| Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green | | | |
| Natural Cycle: 60 | | | |
| Control Type: Actuated-Coordinated | | | |
| Maximum v/c Ratio: 0.63 | | | |
| Intersection Signal Delay: 12.2 | | Intersection LOS: B | |
| Intersection Capacity Utilization 60.5% | | ICU Level of Service B | |
| Analysis Period (min) 15 | | | |

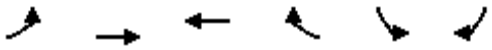
Splits and Phases: 4: McRae Ave & Richmond Rd

| Lane Group | Ø3 | Ø7 |
|---|---|---|
| Permitted Phases | | |
| Detector Phase | | |
| Switch Phase | | |
| Minimum Initial (s) | 3.0 | 3.0 |
| Minimum Split (s) | 5.0 | 5.0 |
| Total Split (s) | 5.0 | 5.0 |
| Total Split (%) | 7% | 7% |
| Maximum Green (s) | 3.0 | 3.0 |
| Yellow Time (s) | 2.0 | 2.0 |
| All-Red Time (s) | 0.0 | 0.0 |
| Lost Time Adjust (s) | | |
| Total Lost Time (s) | | |
| Lead/Lag | Lead | Lead |
| Lead-Lag Optimize? | Yes | Yes |
| Vehicle Extension (s) | 3.0 | 3.0 |
| Recall Mode | None | None |
| Walk Time (s) | | |
| Flash Dont Walk (s) | | |
| Pedestrian Calls (#/hr) | | |
| Act Effct Green (s) | | |
| Actuated g/C Ratio | | |
| v/c Ratio | | |
| Control Delay | | |
| Queue Delay | | |
| Total Delay | | |
| LOS | | |
| Approach Delay | | |
| Approach LOS | | |
| Queue Length 50th (m) | | |
| Queue Length 95th (m) | | |
| Internal Link Dist (m) | | |
| Turn Bay Length (m) | | |
| Base Capacity (vph) | | |
| Starvation Cap Reductn | | |
| Spillback Cap Reductn | | |
| Storage Cap Reductn | | |
| Reduced v/c Ratio | | |

| Intersection Summary |
|---|



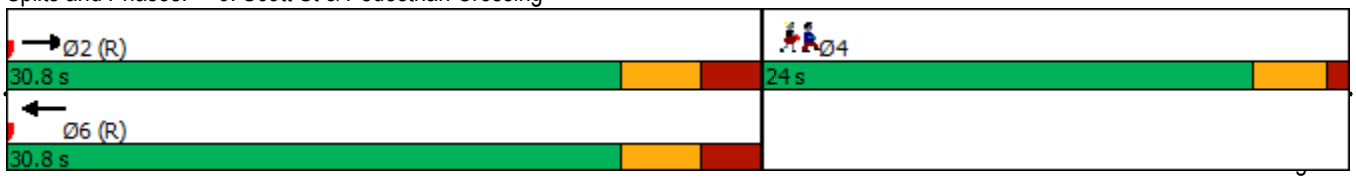
| Lane Group | EBL | EBT | WBT | WBR | SBL | SBR | Ø4 |
|---|---|---|---|---|---|---|---|
| Lane Configurations | | ↑ | ↑ | | | | |
| Traffic Volume (vph) | 0 | 515 | 278 | 0 | 0 | 0 | |
| Future Volume (vph) | 0 | 515 | 278 | 0 | 0 | 0 | |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| Frt | | | | | | | |
| Flt Protected | | | | | | | |
| Satd. Flow (prot) | 0 | 1745 | 1745 | 0 | 0 | 0 | |
| Flt Permitted | | | | | | | |
| Satd. Flow (perm) | 0 | 1745 | 1745 | 0 | 0 | 0 | |
| Right Turn on Red | | | | No | | Yes | |
| Satd. Flow (RTOR) | | | | | | | |
| Link Speed (k/h) | | 50 | 50 | | 50 | | |
| Link Distance (m) | | 22.1 | 57.4 | | 18.9 | | |
| Travel Time (s) | | 1.6 | 4.1 | | 1.4 | | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | |
| Adj. Flow (vph) | 0 | 572 | 309 | 0 | 0 | 0 | |
| Shared Lane Traffic (%) | | | | | | | |
| Lane Group Flow (vph) | 0 | 572 | 309 | 0 | 0 | 0 | |
| Enter Blocked Intersection | No | No | No | No | No | No | |
| Lane Alignment | Left | Left | Left | Right | Left | Right | |
| Median Width(m) | | 0.0 | 0.0 | | 0.0 | | |
| Link Offset(m) | | 0.0 | 0.0 | | 0.0 | | |
| Crosswalk Width(m) | | 3.0 | 3.0 | | 3.0 | | |
| Two way Left Turn Lane | | | | | | | |
| Headway Factor | 1.09 | 1.09 | 1.09 | 1.09 | 1.09 | 1.09 | |
| Turning Speed (k/h) | 25 | | | 15 | 25 | 15 | |
| Number of Detectors | | 2 | 2 | | | | |
| Detector Template | | Thru | Thru | | | | |
| Leading Detector (m) | | 10.0 | 10.0 | | | | |
| Trailing Detector (m) | | 0.0 | 0.0 | | | | |
| Detector 1 Position(m) | | 0.0 | 0.0 | | | | |
| Detector 1 Size(m) | | 0.6 | 0.6 | | | | |
| Detector 1 Type | | Cl+Ex | Cl+Ex | | | | |
| Detector 1 Channel | | | | | | | |
| Detector 1 Extend (s) | | 0.0 | 0.0 | | | | |
| Detector 1 Queue (s) | | 0.0 | 0.0 | | | | |
| Detector 1 Delay (s) | | 0.0 | 0.0 | | | | |
| Detector 2 Position(m) | | 9.4 | 9.4 | | | | |
| Detector 2 Size(m) | | 0.6 | 0.6 | | | | |
| Detector 2 Type | | Cl+Ex | Cl+Ex | | | | |
| Detector 2 Channel | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | 0.0 | | | | |
| Turn Type | | NA | NA | | | | |
| Protected Phases | | 2 | 6 | | | | 4 |
| Permitted Phases | | | | | | | |
| Detector Phase | | 2 | 6 | | | | |
| Switch Phase | | | | | | | |
| Minimum Initial (s) | | 5.0 | 5.0 | | | | 10.0 |

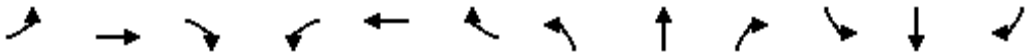


| Lane Group | EBL | EBT | WBT | WBR | SBL | SBR | Ø4 |
|---|---|---|---|---|---|---|---|
| Minimum Split (s) | | 23.8 | 23.8 | | | | 22.0 |
| Total Split (s) | | 30.8 | 30.8 | | | | 24.0 |
| Total Split (%) | | 56.2% | 56.2% | | | | 44% |
| Maximum Green (s) | | 25.0 | 25.0 | | | | 20.0 |
| Yellow Time (s) | | 3.3 | 3.3 | | | | 3.0 |
| All-Red Time (s) | | 2.5 | 2.5 | | | | 1.0 |
| Lost Time Adjust (s) | | 0.0 | 0.0 | | | | |
| Total Lost Time (s) | | 5.8 | 5.8 | | | | |
| Lead/Lag | | | | | | | |
| Lead-Lag Optimize? | | | | | | | |
| Vehicle Extension (s) | | 3.0 | 3.0 | | | | 3.0 |
| Recall Mode | | C-Max | C-Max | | | | None |
| Walk Time (s) | | 7.0 | 7.0 | | | | 7.0 |
| Flash Dont Walk (s) | | 11.0 | 11.0 | | | | 11.0 |
| Pedestrian Calls (#/hr) | | 0 | 0 | | | | 122 |
| Act Effct Green (s) | | 32.6 | 32.6 | | | | |
| Actuated g/C Ratio | | 0.59 | 0.59 | | | | |
| v/c Ratio | | 0.55 | 0.30 | | | | |
| Control Delay | | 12.3 | 9.1 | | | | |
| Queue Delay | | 0.0 | 0.0 | | | | |
| Total Delay | | 12.3 | 9.1 | | | | |
| LOS | | B | A | | | | |
| Approach Delay | | 12.3 | 9.1 | | | | |
| Approach LOS | | B | A | | | | |
| Queue Length 50th (m) | | 39.2 | 17.3 | | | | |
| Queue Length 95th (m) | | 68.5 | 31.3 | | | | |
| Internal Link Dist (m) | | 0.1 | 33.4 | | 0.1 | | |
| Turn Bay Length (m) | | | | | | | |
| Base Capacity (vph) | | 1036 | 1036 | | | | |
| Starvation Cap Reductn | | 0 | 0 | | | | |
| Spillback Cap Reductn | | 0 | 0 | | | | |
| Storage Cap Reductn | | 0 | 0 | | | | |
| Reduced v/c Ratio | | 0.55 | 0.30 | | | | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Cycle Length: 54.8 | | | |
| Actuated Cycle Length: 54.8 | | | |
| Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green | | | |
| Natural Cycle: 55 | | | |
| Control Type: Actuated-Coordinated | | | |
| Maximum v/c Ratio: 0.55 | | | |
| Intersection Signal Delay: 11.2 | | Intersection LOS: B | |
| Intersection Capacity Utilization 33.4% | | ICU Level of Service A | |
| Analysis Period (min) 15 | | | |

Splits and Phases: 6: Scott St & Pedestrian Crossing





| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 0 | 402 | 7 | 14 | 444 | 5 | 10 | 0 | 30 | 5 | 0 | 1 |
| Future Volume (vph) | 0 | 402 | 7 | 14 | 444 | 5 | 10 | 0 | 30 | 5 | 0 | 1 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| 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 |
| Frt | | 0.998 | | | 0.998 | | | 0.899 | | | 0.981 | |
| Flt Protected | | | | | 0.998 | | | 0.988 | | | 0.959 | |
| Satd. Flow (prot) | 0 | 1567 | 0 | 0 | 1547 | 0 | 0 | 1395 | 0 | 0 | 754 | 0 |
| Flt Permitted | | | | | 0.998 | | | 0.988 | | | 0.959 | |
| Satd. Flow (perm) | 0 | 1567 | 0 | 0 | 1547 | 0 | 0 | 1395 | 0 | 0 | 754 | 0 |
| Link Speed (k/h) | | 50 | | | 50 | | | 50 | | | 50 | |
| Link Distance (m) | | 78.0 | | | 22.1 | | | 319.9 | | | 53.1 | |
| Travel Time (s) | | 5.6 | | | 1.6 | | | 23.0 | | | 3.8 | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Heavy Vehicles (%) | 100% | 2% | 2% | 2% | 2% | 100% | 2% | 100% | 2% | 100% | 100% | 100% |
| Parking (#/hr) | | | 0 | | | 0 | | | 0 | | | 0 |
| Adj. Flow (vph) | 0 | 447 | 8 | 16 | 493 | 6 | 11 | 0 | 33 | 6 | 0 | 1 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 455 | 0 | 0 | 515 | 0 | 0 | 44 | 0 | 0 | 7 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 3.0 | | | 3.0 | | | 3.0 | | | 3.0 | |
| Two way Left Turn Lane | | | | | | | | | | | | |
| Headway Factor | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 |
| Turning Speed (k/h) | 25 | | 15 | 25 | | 15 | 25 | | 15 | 25 | | 15 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | CBD | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization 51.0% | | ICU Level of Service A | |
| Analysis Period (min) 15 | | | |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ⇕ | | | ⇕ | | | ⇕ | | | ⇕ | |
| Traffic Vol, veh/h | 0 | 402 | 7 | 14 | 444 | 5 | 10 | 0 | 30 | 5 | 0 | 1 |
| Future Vol, veh/h | 0 | 402 | 7 | 14 | 444 | 5 | 10 | 0 | 30 | 5 | 0 | 1 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 100 | 2 | 2 | 2 | 2 | 100 | 2 | 100 | 2 | 100 | 100 | 100 |
| Mvmt Flow | 0 | 447 | 8 | 16 | 493 | 6 | 11 | 0 | 33 | 6 | 0 | 1 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 499 | 0 | 0 | 455 | 0 | 0 | 980 | 982 | 451 | 996 | 983 | 496 |
| Stage 1 | - | - | - | - | - | - | 451 | 451 | - | 528 | 528 | - |
| Stage 2 | - | - | - | - | - | - | 529 | 531 | - | 468 | 455 | - |
| Critical Hdwy | 5.1 | - | - | 4.12 | - | - | 7.12 | 7.5 | 6.22 | 8.1 | 7.5 | 7.2 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.12 | 6.5 | - | 7.1 | 6.5 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.12 | 6.5 | - | 7.1 | 6.5 | - |
| Follow-up Hdwy | 3.1 | - | - | 2.218 | - | - | 3.518 | 4.9 | 3.318 | 4.4 | 4.9 | 4.2 |
| Pot Cap-1 Maneuver | 705 | - | - | 1106 | - | - | 229 | 172 | 608 | 150 | 172 | 419 |
| Stage 1 | - | - | - | - | - | - | 588 | 435 | - | 392 | 397 | - |
| Stage 2 | - | - | - | - | - | - | 533 | 396 | - | 427 | 433 | - |
| Platoon blocked, % | | - | - | | - | - | | | | | | |
| Mov Cap-1 Maneuver | 705 | - | - | 1106 | - | - | 225 | 169 | 608 | 140 | 169 | 419 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 225 | 169 | - | 140 | 169 | - |
| Stage 1 | - | - | - | - | - | - | 588 | 435 | - | 392 | 389 | - |
| Stage 2 | - | - | - | - | - | - | 521 | 388 | - | 404 | 433 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0 | 0.3 | 14.4 | 28.9 |
| HCM LOS | | | B | D |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 427 | 705 | - | - | 1106 | - | - | 157 |
| HCM Lane V/C Ratio | 0.104 | - | - | - | 0.014 | - | - | 0.042 |
| HCM Control Delay (s) | 14.4 | 0 | - | - | 8.3 | 0 | - | 28.9 |
| HCM Lane LOS | B | A | - | - | A | A | - | D |
| HCM 95th %tile Q(veh) | 0.3 | 0 | - | - | 0 | - | - | 0.1 |

| Lane Group | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (vph) | 399 | 39 | 95 | 430 | 30 | 168 |
| Future Volume (vph) | 399 | 39 | 95 | 430 | 30 | 168 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 0.988 | | | | 0.885 | |
| Flt Protected | | | | 0.991 | 0.993 | |
| Satd. Flow (prot) | 1552 | 0 | 0 | 1401 | 1380 | 0 |
| Flt Permitted | | | | 0.991 | 0.993 | |
| Satd. Flow (perm) | 1552 | 0 | 0 | 1401 | 1380 | 0 |
| Link Speed (k/h) | 50 | | | 50 | 50 | |
| Link Distance (m) | 57.4 | | | 138.5 | 320.9 | |
| Travel Time (s) | 4.1 | | | 10.0 | 23.1 | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Parking (#/hr) | | 0 | | 0 | | |
| Adj. Flow (vph) | 443 | 43 | 106 | 478 | 33 | 187 |
| Shared Lane Traffic (%) | | | | | | |
| Lane Group Flow (vph) | 486 | 0 | 0 | 584 | 220 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No |
| Lane Alignment | Left | Right | Left | Left | Left | Right |
| Median Width(m) | 0.0 | | | 0.0 | 3.5 | |
| Link Offset(m) | 0.0 | | | 0.0 | 0.0 | |
| Crosswalk Width(m) | 3.0 | | | 3.0 | 3.0 | |
| Two way Left Turn Lane | | | | | | |
| Headway Factor | 1.24 | 1.24 | 1.24 | 1.41 | 1.24 | 1.24 |
| Turning Speed (k/h) | | 15 | 25 | | 25 | 15 |
| Sign Control | Free | | | Free | Stop | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | CBD | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization 84.2% | | ICU Level of Service E | |
| Analysis Period (min) 15 | | | |

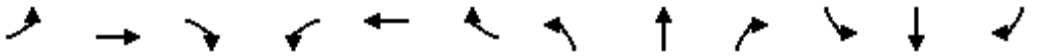
| Intersection | |
|---|---|
| Int Delay, s/veh | 4.2 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 399 | 39 | 95 | 430 | 30 | 168 |
| Future Vol, veh/h | 399 | 39 | 95 | 430 | 30 | 168 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 443 | 43 | 106 | 478 | 33 | 187 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 486 | 0 | 1155 | 465 |
| Stage 1 | - | - | - | - | 465 | - |
| Stage 2 | - | - | - | - | 690 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 1077 | - | 218 | 597 |
| Stage 1 | - | - | - | - | 632 | - |
| Stage 2 | - | - | - | - | 498 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1077 | - | 189 | 597 |
| Mov Cap-2 Maneuver | - | - | - | - | 189 | - |
| Stage 1 | - | - | - | - | 632 | - |
| Stage 2 | - | - | - | - | 431 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 1.6 | 20.4 |
| HCM LOS | | | C |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | 450 | - | - | 1077 | - |
| HCM Lane V/C Ratio | 0.489 | - | - | 0.098 | - |
| HCM Control Delay (s) | 20.4 | - | - | 8.7 | 0 |
| HCM Lane LOS | C | - | - | A | A |
| HCM 95th %tile Q(veh) | 2.6 | - | - | 0.3 | - |



| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 26 | 381 | 17 | 70 | 594 | 10 | 3 | 6 | 32 | 8 | 9 | 15 |
| Future Volume (vph) | 26 | 381 | 17 | 70 | 594 | 10 | 3 | 6 | 32 | 8 | 9 | 15 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Storage Length (m) | 0.0 | | 0.0 | 0.0 | | 10.0 | 0.0 | | 0.0 | 0.0 | | 0.0 |
| Storage Lanes | 0 | | 0 | 0 | | 1 | 0 | | 0 | 0 | | 0 |
| Taper Length (m) | 15.0 | | | 15.0 | | | 15.0 | | | 15.0 | | |
| 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 |
| Frt | | 0.995 | | | | 0.850 | | 0.894 | | | 0.936 | |
| Flt Protected | | 0.997 | | | 0.995 | | | 0.997 | | | 0.988 | |
| Satd. Flow (prot) | 0 | 1558 | 0 | 0 | 1563 | 1201 | 0 | 1400 | 0 | 0 | 1452 | 0 |
| Flt Permitted | | 0.997 | | | 0.995 | | | 0.997 | | | 0.988 | |
| Satd. Flow (perm) | 0 | 1558 | 0 | 0 | 1563 | 1201 | 0 | 1400 | 0 | 0 | 1452 | 0 |
| Link Speed (k/h) | | 50 | | | 50 | | | 50 | | | 50 | |
| Link Distance (m) | | 72.3 | | | 104.2 | | | 72.7 | | | 319.9 | |
| Travel Time (s) | | 5.2 | | | 7.5 | | | 5.2 | | | 23.0 | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Parking (#/hr) | | | 0 | | | 0 | | | 0 | | | 0 |
| Adj. Flow (vph) | 29 | 423 | 19 | 78 | 660 | 11 | 3 | 7 | 36 | 9 | 10 | 17 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 471 | 0 | 0 | 738 | 11 | 0 | 46 | 0 | 0 | 36 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(m) | | 3.5 | | | 3.5 | | | 0.0 | | | 0.0 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 3.0 | | | 3.0 | | | 3.0 | | | 3.0 | |
| Two way Left Turn Lane | | | | | | | | | | | | |
| Headway Factor | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.41 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 |
| Turning Speed (k/h) | 25 | | 15 | 25 | | 15 | 25 | | 15 | 25 | | 15 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | CBD | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization 74.0% | | ICU Level of Service D | |
| Analysis Period (min) 15 | | | |

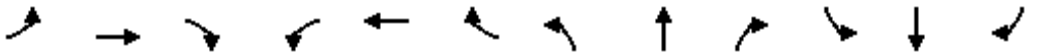
| Intersection | |
|---|---|
| Int Delay, s/veh | 2.2 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ↕ | | | ↰ | ↗ | | ↕ | | | ↕ | |
| Traffic Vol, veh/h | 26 | 381 | 17 | 70 | 594 | 10 | 3 | 6 | 32 | 8 | 9 | 15 |
| Future Vol, veh/h | 26 | 381 | 17 | 70 | 594 | 10 | 3 | 6 | 32 | 8 | 9 | 15 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | 100 | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 29 | 423 | 19 | 78 | 660 | 11 | 3 | 7 | 36 | 9 | 10 | 17 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 671 | 0 | 0 | 442 | 0 | 0 | 1326 | 1318 | 433 | 1328 | 1316 | 660 |
| Stage 1 | - | - | - | - | - | - | 491 | 491 | - | 816 | 816 | - |
| Stage 2 | - | - | - | - | - | - | 835 | 827 | - | 512 | 500 | - |
| Critical Hdwy | 4.12 | - | - | 4.12 | - | - | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Follow-up Hdwy | 2.218 | - | - | 2.218 | - | - | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 |
| Pot Cap-1 Maneuver | 919 | - | - | 1118 | - | - | 133 | 157 | 623 | 132 | 158 | 463 |
| Stage 1 | - | - | - | - | - | - | 559 | 548 | - | 371 | 391 | - |
| Stage 2 | - | - | - | - | - | - | 362 | 386 | - | 545 | 543 | - |
| Platoon blocked, % | | - | - | | - | - | | | | | | |
| Mov Cap-1 Maneuver | 919 | - | - | 1118 | - | - | 107 | 134 | 623 | 106 | 135 | 463 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 107 | 134 | - | 106 | 135 | - |
| Stage 1 | - | - | - | - | - | - | 536 | 525 | - | 355 | 348 | - |
| Stage 2 | - | - | - | - | - | - | 301 | 343 | - | 486 | 520 | - |

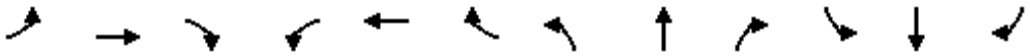
| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0.6 | 0.9 | 17.6 | 29.4 |
| HCM LOS | | | C | D |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 330 | 919 | - | - | 1118 | - | - | 183 |
| HCM Lane V/C Ratio | 0.138 | 0.031 | - | - | 0.07 | - | - | 0.194 |
| HCM Control Delay (s) | 17.6 | 9 | 0 | - | 8.5 | 0 | - | 29.4 |
| HCM Lane LOS | C | A | A | - | A | A | - | D |
| HCM 95th %tile Q(veh) | 0.5 | 0.1 | - | - | 0.2 | - | - | 0.7 |



| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 71 | 272 | 74 | 45 | 590 | 138 | 69 | 56 | 47 | 83 | 36 | 117 |
| Future Volume (vph) | 71 | 272 | 74 | 45 | 590 | 138 | 69 | 56 | 47 | 83 | 36 | 117 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Storage Length (m) | 45.0 | | 0.0 | 60.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 |
| Storage Lanes | 1 | | 0 | 1 | | 0 | 1 | | 0 | 0 | | 0 |
| Taper Length (m) | 30.0 | | | 55.0 | | | 15.0 | | | 15.0 | | |
| 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 |
| Frt | | 0.968 | | | 0.972 | | | 0.932 | | | 0.933 | |
| Flt Protected | 0.950 | | | 0.950 | | | 0.950 | | | | 0.983 | |
| Satd. Flow (prot) | 1492 | 1520 | 0 | 1492 | 1527 | 0 | 1492 | 1464 | 0 | 0 | 1440 | 0 |
| Flt Permitted | 0.284 | | | 0.431 | | | 0.487 | | | | 0.840 | |
| Satd. Flow (perm) | 446 | 1520 | 0 | 677 | 1527 | 0 | 765 | 1464 | 0 | 0 | 1231 | 0 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | 20 | | | 22 | | | 50 | | | 59 | |
| Link Speed (k/h) | | 50 | | | 50 | | | 50 | | | 50 | |
| Link Distance (m) | | 104.2 | | | 101.3 | | | 60.6 | | | 320.9 | |
| Travel Time (s) | | 7.5 | | | 7.3 | | | 4.4 | | | 23.1 | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Parking (#/hr) | | | 0 | | | 0 | | | | | | |
| Adj. Flow (vph) | 79 | 302 | 82 | 50 | 656 | 153 | 77 | 62 | 52 | 92 | 40 | 130 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 79 | 384 | 0 | 50 | 809 | 0 | 77 | 114 | 0 | 0 | 262 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(m) | | 3.5 | | | 3.5 | | | 3.5 | | | 3.5 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 3.0 | | | 3.0 | | | 3.0 | | | 3.0 | |
| Two way Left Turn Lane | | | | | | | | | | | | |
| Headway Factor | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 |
| Turning Speed (k/h) | 25 | | 15 | 25 | | 15 | 25 | | 15 | 25 | | 15 |
| Number of Detectors | 1 | 2 | | 1 | 2 | | 1 | 2 | | 1 | 2 | |
| Detector Template | Left | Thru | | Left | Thru | | Left | Thru | | Left | Thru | |
| Leading Detector (m) | 2.0 | 10.0 | | 2.0 | 10.0 | | 2.0 | 10.0 | | 2.0 | 10.0 | |
| Trailing Detector (m) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Position(m) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Size(m) | 2.0 | 0.6 | | 2.0 | 0.6 | | 2.0 | 0.6 | | 2.0 | 0.6 | |
| Detector 1 Type | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Queue (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Delay (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 2 Position(m) | | 9.4 | | | 9.4 | | | 9.4 | | | 9.4 | |
| Detector 2 Size(m) | | 0.6 | | | 0.6 | | | 0.6 | | | 0.6 | |
| Detector 2 Type | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Turn Type | Perm | NA | | pm+pt | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | 1 | 6 | | | 8 | | | 4 | |

| Lane Group | Ø3 | Ø7 |
|---|---|---|
| Lane Configurations | | |
| Traffic Volume (vph) | | |
| Future Volume (vph) | | |
| Ideal Flow (vphpl) | | |
| Storage Length (m) | | |
| Storage Lanes | | |
| Taper Length (m) | | |
| Lane Util. Factor | | |
| Frt | | |
| Flt Protected | | |
| Satd. Flow (prot) | | |
| Flt Permitted | | |
| Satd. Flow (perm) | | |
| Right Turn on Red | | |
| Satd. Flow (RTOR) | | |
| Link Speed (k/h) | | |
| Link Distance (m) | | |
| Travel Time (s) | | |
| Peak Hour Factor | | |
| Parking (#/hr) | | |
| Adj. Flow (vph) | | |
| Shared Lane Traffic (%) | | |
| Lane Group Flow (vph) | | |
| Enter Blocked Intersection | | |
| Lane Alignment | | |
| Median Width(m) | | |
| Link Offset(m) | | |
| Crosswalk Width(m) | | |
| Two way Left Turn Lane | | |
| Headway Factor | | |
| Turning Speed (k/h) | | |
| Number of Detectors | | |
| Detector Template | | |
| Leading Detector (m) | | |
| Trailing Detector (m) | | |
| Detector 1 Position(m) | | |
| Detector 1 Size(m) | | |
| Detector 1 Type | | |
| Detector 1 Channel | | |
| Detector 1 Extend (s) | | |
| Detector 1 Queue (s) | | |
| Detector 1 Delay (s) | | |
| Detector 2 Position(m) | | |
| Detector 2 Size(m) | | |
| Detector 2 Type | | |
| Detector 2 Channel | | |
| Detector 2 Extend (s) | | |
| Turn Type | | |
| Protected Phases | 3 | 7 |



| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Permitted Phases | 2 | | | 6 | | | 8 | | | 4 | | |
| Detector Phase | 2 | 2 | | 1 | 6 | | 8 | 8 | | 4 | 4 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 10.0 | 10.0 | | 10.0 | 10.0 | |
| Minimum Split (s) | 22.5 | 22.5 | | 9.5 | 22.5 | | 22.5 | 22.5 | | 22.5 | 22.5 | |
| Total Split (s) | 40.0 | 40.0 | | 11.0 | 51.0 | | 29.0 | 29.0 | | 29.0 | 29.0 | |
| Total Split (%) | 47.1% | 47.1% | | 12.9% | 60.0% | | 34.1% | 34.1% | | 34.1% | 34.1% | |
| Maximum Green (s) | 35.5 | 35.5 | | 6.5 | 46.5 | | 24.5 | 24.5 | | 24.5 | 24.5 | |
| Yellow Time (s) | 3.5 | 3.5 | | 3.5 | 3.5 | | 3.5 | 3.5 | | 3.5 | 3.5 | |
| All-Red Time (s) | 1.0 | 1.0 | | 1.0 | 1.0 | | 1.0 | 1.0 | | 1.0 | 1.0 | |
| Lost Time Adjust (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | | 0.0 | |
| Total Lost Time (s) | 4.5 | 4.5 | | 4.5 | 4.5 | | 4.5 | 4.5 | | | 4.5 | |
| Lead/Lag | Lag | Lag | | Lead | | | Lag | Lag | | Lag | Lag | |
| Lead-Lag Optimize? | Yes | Yes | | Yes | | | Yes | Yes | | Yes | Yes | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Recall Mode | C-Max | C-Max | | None | C-Max | | None | None | | None | None | |
| Walk Time (s) | 7.0 | 7.0 | | | 7.0 | | 7.0 | 7.0 | | 7.0 | 7.0 | |
| Flash Dont Walk (s) | 11.0 | 11.0 | | | 11.0 | | 11.0 | 11.0 | | 11.0 | 11.0 | |
| Pedestrian Calls (#/hr) | 0 | 0 | | | 0 | | 0 | 0 | | 0 | 0 | |
| Act Effct Green (s) | 49.6 | 49.6 | | 56.4 | 56.4 | | 19.6 | 19.6 | | | 19.6 | |
| Actuated g/C Ratio | 0.58 | 0.58 | | 0.66 | 0.66 | | 0.23 | 0.23 | | | 0.23 | |
| v/c Ratio | 0.30 | 0.43 | | 0.10 | 0.79 | | 0.44 | 0.30 | | | 0.80 | |
| Control Delay | 18.4 | 14.5 | | 7.3 | 19.8 | | 33.6 | 16.3 | | | 40.6 | |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | | 0.0 | |
| Total Delay | 18.4 | 14.5 | | 7.3 | 19.8 | | 33.6 | 16.3 | | | 40.6 | |
| LOS | B | B | | A | B | | C | B | | | D | |
| Approach Delay | | 15.1 | | | 19.1 | | | 23.3 | | | 40.6 | |
| Approach LOS | | B | | | B | | | C | | | D | |
| Queue Length 50th (m) | 6.8 | 34.2 | | 2.5 | 79.7 | | 10.7 | 8.4 | | | 31.3 | |
| Queue Length 95th (m) | 22.3 | 72.6 | | 8.2 | #195.0 | | 20.5 | 18.4 | | | 50.9 | |
| Internal Link Dist (m) | | 80.2 | | | 77.3 | | | 36.6 | | | 296.9 | |
| Turn Bay Length (m) | 45.0 | | | 60.0 | | | | | | | | |
| Base Capacity (vph) | 260 | 894 | | 514 | 1021 | | 227 | 471 | | | 407 | |
| 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 | 0.30 | 0.43 | | 0.10 | 0.79 | | 0.34 | 0.24 | | | 0.64 | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | CBD | | |
| Cycle Length: 85 | | | |
| Actuated Cycle Length: 85 | | | |
| Offset: 1 (1%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green | | | |
| Natural Cycle: 90 | | | |
| Control Type: Actuated-Coordinated | | | |
| Maximum v/c Ratio: 0.80 | | | |
| Intersection Signal Delay: 21.7 | | Intersection LOS: C | |
| Intersection Capacity Utilization 84.8% | | ICU Level of Service E | |
| Analysis Period (min) 15 | | | |

| Lane Group | Ø3 | Ø7 |
|---|---|---|
| Permitted Phases | | |
| Detector Phase | | |
| Switch Phase | | |
| Minimum Initial (s) | 3.0 | 3.0 |
| Minimum Split (s) | 5.0 | 5.0 |
| Total Split (s) | 5.0 | 5.0 |
| Total Split (%) | 6% | 6% |
| Maximum Green (s) | 3.0 | 3.0 |
| Yellow Time (s) | 2.0 | 2.0 |
| All-Red Time (s) | 0.0 | 0.0 |
| Lost Time Adjust (s) | | |
| Total Lost Time (s) | | |
| Lead/Lag | Lead | Lead |
| Lead-Lag Optimize? | Yes | Yes |
| Vehicle Extension (s) | 3.0 | 3.0 |
| Recall Mode | None | None |
| Walk Time (s) | | |
| Flash Dont Walk (s) | | |
| Pedestrian Calls (#/hr) | | |
| Act Effct Green (s) | | |
| Actuated g/C Ratio | | |
| v/c Ratio | | |
| Control Delay | | |
| Queue Delay | | |
| Total Delay | | |
| LOS | | |
| Approach Delay | | |
| Approach LOS | | |
| Queue Length 50th (m) | | |
| Queue Length 95th (m) | | |
| Internal Link Dist (m) | | |
| Turn Bay Length (m) | | |
| Base Capacity (vph) | | |
| Starvation Cap Reductn | | |
| Spillback Cap Reductn | | |
| Storage Cap Reductn | | |
| Reduced v/c Ratio | | |

| Intersection Summary |
|---|

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

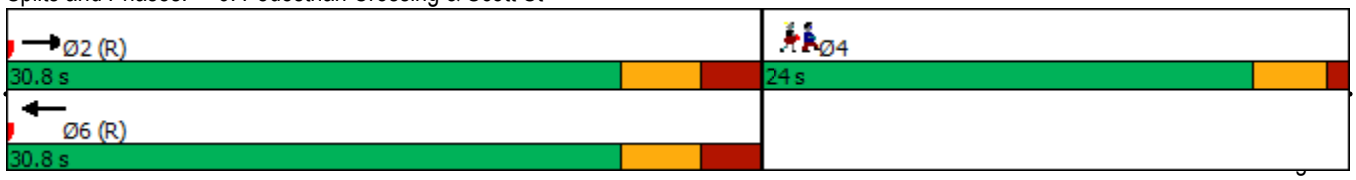
Splits and Phases: 4: McRae Ave & Richmond Rd

| Lane Group | EBT | EBR | WBL | WBT | NBL | NBR | Ø4 |
|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | |
| Traffic Volume (vph) | 437 | 0 | 0 | 463 | 0 | 0 | |
| Future Volume (vph) | 437 | 0 | 0 | 463 | 0 | 0 | |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| Frt | | | | | | | |
| Flt Protected | | | | | | | |
| Satd. Flow (prot) | 1745 | 0 | 0 | 1745 | 0 | 0 | |
| Flt Permitted | | | | | | | |
| Satd. Flow (perm) | 1745 | 0 | 0 | 1745 | 0 | 0 | |
| Right Turn on Red | | Yes | | | | Yes | |
| Satd. Flow (RTOR) | | | | | | | |
| Link Speed (k/h) | 50 | | | 50 | 50 | | |
| Link Distance (m) | 22.1 | | | 57.4 | 22.8 | | |
| Travel Time (s) | 1.6 | | | 4.1 | 1.6 | | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | |
| Adj. Flow (vph) | 486 | 0 | 0 | 514 | 0 | 0 | |
| Shared Lane Traffic (%) | | | | | | | |
| Lane Group Flow (vph) | 486 | 0 | 0 | 514 | 0 | 0 | |
| Enter Blocked Intersection | No | No | No | No | No | No | |
| Lane Alignment | Left | Right | Left | Left | Left | Right | |
| Median Width(m) | 0.0 | | | 0.0 | 0.0 | | |
| Link Offset(m) | 0.0 | | | 0.0 | 0.0 | | |
| Crosswalk Width(m) | 3.0 | | | 3.0 | 3.0 | | |
| Two way Left Turn Lane | | | | | | | |
| Headway Factor | 1.09 | 1.09 | 1.09 | 1.09 | 1.09 | 1.09 | |
| Turning Speed (k/h) | | 15 | 25 | | 25 | 15 | |
| Number of Detectors | 2 | | | 2 | | | |
| Detector Template | Thru | | | Thru | | | |
| Leading Detector (m) | 10.0 | | | 10.0 | | | |
| Trailing Detector (m) | 0.0 | | | 0.0 | | | |
| Detector 1 Position(m) | 0.0 | | | 0.0 | | | |
| Detector 1 Size(m) | 0.6 | | | 0.6 | | | |
| Detector 1 Type | Cl+Ex | | | Cl+Ex | | | |
| Detector 1 Channel | | | | | | | |
| Detector 1 Extend (s) | 0.0 | | | 0.0 | | | |
| Detector 1 Queue (s) | 0.0 | | | 0.0 | | | |
| Detector 1 Delay (s) | 0.0 | | | 0.0 | | | |
| Detector 2 Position(m) | 9.4 | | | 9.4 | | | |
| Detector 2 Size(m) | 0.6 | | | 0.6 | | | |
| Detector 2 Type | Cl+Ex | | | Cl+Ex | | | |
| Detector 2 Channel | | | | | | | |
| Detector 2 Extend (s) | 0.0 | | | 0.0 | | | |
| Turn Type | NA | | | NA | | | |
| Protected Phases | 2 | | | 6 | | | 4 |
| Permitted Phases | | | | | | | |
| Detector Phase | 2 | | | 6 | | | |
| Switch Phase | | | | | | | |
| Minimum Initial (s) | 5.0 | | | 5.0 | | | 10.0 |

| Lane Group | EBT | EBR | WBL | WBT | NBL | NBR | Ø4 |
|---|---|---|---|---|---|---|---|
| Minimum Split (s) | 23.8 | | | 23.8 | | | 22.0 |
| Total Split (s) | 30.8 | | | 30.8 | | | 24.0 |
| Total Split (%) | 56.2% | | | 56.2% | | | 44% |
| Maximum Green (s) | 25.0 | | | 25.0 | | | 20.0 |
| Yellow Time (s) | 3.3 | | | 3.3 | | | 3.0 |
| All-Red Time (s) | 2.5 | | | 2.5 | | | 1.0 |
| Lost Time Adjust (s) | 0.0 | | | 0.0 | | | |
| Total Lost Time (s) | 5.8 | | | 5.8 | | | |
| Lead/Lag | | | | | | | |
| Lead-Lag Optimize? | | | | | | | |
| Vehicle Extension (s) | 3.0 | | | 3.0 | | | 3.0 |
| Recall Mode | C-Max | | | C-Max | | | None |
| Walk Time (s) | 7.0 | | | 7.0 | | | 7.0 |
| Flash Dont Walk (s) | 11.0 | | | 11.0 | | | 11.0 |
| Pedestrian Calls (#/hr) | 0 | | | 0 | | | 187 |
| Act Effct Green (s) | 32.6 | | | 32.6 | | | |
| Actuated g/C Ratio | 0.59 | | | 0.59 | | | |
| v/c Ratio | 0.47 | | | 0.50 | | | |
| Control Delay | 11.0 | | | 11.4 | | | |
| Queue Delay | 0.0 | | | 0.0 | | | |
| Total Delay | 11.0 | | | 11.4 | | | |
| LOS | B | | | B | | | |
| Approach Delay | 11.0 | | | 11.4 | | | |
| Approach LOS | B | | | B | | | |
| Queue Length 50th (m) | 31.1 | | | 33.6 | | | |
| Queue Length 95th (m) | 54.2 | | | 58.3 | | | |
| Internal Link Dist (m) | 0.1 | | | 33.4 | 0.1 | | |
| Turn Bay Length (m) | | | | | | | |
| Base Capacity (vph) | 1036 | | | 1036 | | | |
| Starvation Cap Reductn | 0 | | | 0 | | | |
| Spillback Cap Reductn | 0 | | | 0 | | | |
| Storage Cap Reductn | 0 | | | 0 | | | |
| Reduced v/c Ratio | 0.47 | | | 0.50 | | | |

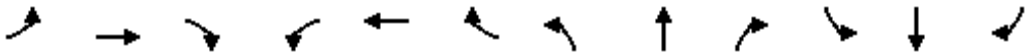
| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Cycle Length: 54.8 | | | |
| Actuated Cycle Length: 54.8 | | | |
| Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green | | | |
| Natural Cycle: 50 | | | |
| Control Type: Actuated-Coordinated | | | |
| Maximum v/c Ratio: 0.50 | | | |
| Intersection Signal Delay: 11.2 | | Intersection LOS: B | |
| Intersection Capacity Utilization 30.6% | | ICU Level of Service A | |
| Analysis Period (min) 15 | | | |

Splits and Phases: 6: Pedestrian Crossing & Scott St



# Appendix J

2022 Future Background Synchro Worksheets



| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 0 | 512 | 3 | 11 | 287 | 5 | 3 | 0 | 36 | 6 | 0 | 0 |
| Future Volume (vph) | 0 | 512 | 3 | 11 | 287 | 5 | 3 | 0 | 36 | 6 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| 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 |
| Frt | | 0.999 | | | 0.998 | | | 0.874 | | | | |
| Flt Protected | | | | | 0.998 | | | 0.997 | | | 0.950 | |
| Satd. Flow (prot) | 0 | 1569 | 0 | 0 | 1538 | 0 | 0 | 1369 | 0 | 0 | 761 | 0 |
| Flt Permitted | | | | | 0.998 | | | 0.997 | | | 0.950 | |
| Satd. Flow (perm) | 0 | 1569 | 0 | 0 | 1538 | 0 | 0 | 1369 | 0 | 0 | 761 | 0 |
| Link Speed (k/h) | | 50 | | | 50 | | | 50 | | | 50 | |
| Link Distance (m) | | 78.0 | | | 22.1 | | | 319.9 | | | 53.1 | |
| Travel Time (s) | | 5.6 | | | 1.6 | | | 23.0 | | | 3.8 | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Heavy Vehicles (%) | 100% | 2% | 2% | 2% | 2% | 100% | 2% | 100% | 2% | 100% | 100% | 100% |
| Parking (#/hr) | | | 0 | | | 0 | | | 0 | | | 0 |
| Adj. Flow (vph) | 0 | 569 | 3 | 12 | 319 | 6 | 3 | 0 | 40 | 7 | 0 | 0 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 572 | 0 | 0 | 337 | 0 | 0 | 43 | 0 | 0 | 7 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 3.0 | | | 3.0 | | | 3.0 | | | 3.0 | |
| Two way Left Turn Lane | | | | | | | | | | | | |
| Headway Factor | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 |
| Turning Speed (k/h) | 25 | | 15 | 25 | | 15 | 25 | | 15 | 25 | | 15 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | CBD | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization | 41.8% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.9 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ⇕ | | | ⇕ | | | ⇕ | | | ⇕ | |
| Traffic Vol, veh/h | 0 | 512 | 3 | 11 | 287 | 5 | 3 | 0 | 36 | 6 | 0 | 0 |
| Future Vol, veh/h | 0 | 512 | 3 | 11 | 287 | 5 | 3 | 0 | 36 | 6 | 0 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 100 | 2 | 2 | 2 | 2 | 100 | 2 | 100 | 2 | 100 | 100 | 100 |
| Mvmt Flow | 0 | 569 | 3 | 12 | 319 | 6 | 3 | 0 | 40 | 7 | 0 | 0 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 325 | 0 | 0 | 572 | 0 | 0 | 917 | 920 | 571 | 937 | 918 | 322 |
| Stage 1 | - | - | - | - | - | - | 571 | 571 | - | 346 | 346 | - |
| Stage 2 | - | - | - | - | - | - | 346 | 349 | - | 591 | 572 | - |
| Critical Hdwy | 5.1 | - | - | 4.12 | - | - | 7.12 | 7.5 | 6.22 | 8.1 | 7.5 | 7.2 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.12 | 6.5 | - | 7.1 | 6.5 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.12 | 6.5 | - | 7.1 | 6.5 | - |
| Follow-up Hdwy | 3.1 | - | - | 2.218 | - | - | 3.518 | 4.9 | 3.318 | 4.4 | 4.9 | 4.2 |
| Pot Cap-1 Maneuver | 840 | - | - | 1001 | - | - | 253 | 190 | 520 | 167 | 190 | 540 |
| Stage 1 | - | - | - | - | - | - | 506 | 377 | - | 507 | 493 | - |
| Stage 2 | - | - | - | - | - | - | 670 | 491 | - | 358 | 376 | - |
| Platoon blocked, % | | - | - | | - | - | | | | | | |
| Mov Cap-1 Maneuver | 840 | - | - | 1001 | - | - | 250 | 187 | 520 | 152 | 187 | 540 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 250 | 187 | - | 152 | 187 | - |
| Stage 1 | - | - | - | - | - | - | 506 | 377 | - | 507 | 486 | - |
| Stage 2 | - | - | - | - | - | - | 660 | 484 | - | 330 | 376 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0 | 0.3 | 13.2 | 29.8 |
| HCM LOS | | | B | D |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 480 | 840 | - | - | 1001 | - | - | 152 |
| HCM Lane V/C Ratio | 0.09 | - | - | - | 0.012 | - | - | 0.044 |
| HCM Control Delay (s) | 13.2 | 0 | - | - | 8.6 | 0 | - | 29.8 |
| HCM Lane LOS | B | A | - | - | A | A | - | D |
| HCM 95th %tile Q(veh) | 0.3 | 0 | - | - | 0 | - | - | 0.1 |

| Lane Group | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (vph) | 527 | 28 | 115 | 289 | 16 | 109 |
| Future Volume (vph) | 527 | 28 | 115 | 289 | 16 | 109 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 0.993 | | | | 0.882 | |
| Flt Protected | | | | 0.986 | 0.994 | |
| Satd. Flow (prot) | 1560 | 0 | 0 | 1394 | 1377 | 0 |
| Flt Permitted | | | | 0.986 | 0.994 | |
| Satd. Flow (perm) | 1560 | 0 | 0 | 1394 | 1377 | 0 |
| Link Speed (k/h) | 50 | | | 50 | 50 | |
| Link Distance (m) | 57.4 | | | 138.5 | 320.9 | |
| Travel Time (s) | 4.1 | | | 10.0 | 23.1 | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Parking (#/hr) | | 0 | | 0 | | |
| Adj. Flow (vph) | 586 | 31 | 128 | 321 | 18 | 121 |
| Shared Lane Traffic (%) | | | | | | |
| Lane Group Flow (vph) | 617 | 0 | 0 | 449 | 139 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No |
| Lane Alignment | Left | Right | Left | Left | Left | Right |
| Median Width(m) | 0.0 | | | 0.0 | 3.5 | |
| Link Offset(m) | 0.0 | | | 0.0 | 0.0 | |
| Crosswalk Width(m) | 3.0 | | | 3.0 | 3.0 | |
| Two way Left Turn Lane | | | | | | |
| Headway Factor | 1.24 | 1.24 | 1.24 | 1.41 | 1.24 | 1.24 |
| Turning Speed (k/h) | | 15 | 25 | | 25 | 15 |
| Sign Control | Free | | | Free | Stop | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | CBD | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization 78.8% | | ICU Level of Service D | |
| Analysis Period (min) 15 | | | |

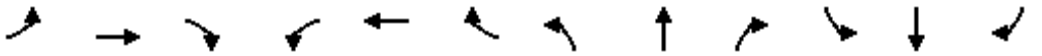
| Intersection | |
|---|---|
| Int Delay, s/veh | 3.1 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 527 | 28 | 115 | 289 | 16 | 109 |
| Future Vol, veh/h | 527 | 28 | 115 | 289 | 16 | 109 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 586 | 31 | 128 | 321 | 18 | 121 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 617 | 0 | 1179 | 602 |
| Stage 1 | - | - | - | - | 602 | - |
| Stage 2 | - | - | - | - | 577 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 963 | - | 211 | 500 |
| Stage 1 | - | - | - | - | 547 | - |
| Stage 2 | - | - | - | - | 562 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 963 | - | 177 | 500 |
| Mov Cap-2 Maneuver | - | - | - | - | 177 | - |
| Stage 1 | - | - | - | - | 547 | - |
| Stage 2 | - | - | - | - | 471 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 2.6 | 18.5 |
| HCM LOS | | | C |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | 405 | - | - | 963 | - |
| HCM Lane V/C Ratio | 0.343 | - | - | 0.133 | - |
| HCM Control Delay (s) | 18.5 | - | - | 9.3 | 0 |
| HCM Lane LOS | C | - | - | A | A |
| HCM 95th %tile Q(veh) | 1.5 | - | - | 0.5 | - |



| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 21 | 445 | 8 | 14 | 294 | 6 | 7 | 8 | 28 | 2 | 4 | 14 |
| Future Volume (vph) | 21 | 445 | 8 | 14 | 294 | 6 | 7 | 8 | 28 | 2 | 4 | 14 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Storage Length (m) | 0.0 | | 0.0 | 0.0 | | 10.0 | 0.0 | | 0.0 | 0.0 | | 0.0 |
| Storage Lanes | 0 | | 0 | 0 | | 1 | 0 | | 0 | 0 | | 0 |
| Taper Length (m) | 15.0 | | | 15.0 | | | 15.0 | | | 15.0 | | |
| 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 |
| Frt | | 0.998 | | | | 0.850 | | 0.913 | | | 0.902 | |
| Flt Protected | | 0.998 | | | 0.998 | | | 0.992 | | | 0.995 | |
| Satd. Flow (prot) | 0 | 1564 | 0 | 0 | 1567 | 1201 | 0 | 1422 | 0 | 0 | 1410 | 0 |
| Flt Permitted | | 0.998 | | | 0.998 | | | 0.992 | | | 0.995 | |
| Satd. Flow (perm) | 0 | 1564 | 0 | 0 | 1567 | 1201 | 0 | 1422 | 0 | 0 | 1410 | 0 |
| Link Speed (k/h) | | 50 | | | 50 | | | 50 | | | 50 | |
| Link Distance (m) | | 72.3 | | | 104.2 | | | 72.7 | | | 319.9 | |
| Travel Time (s) | | 5.2 | | | 7.5 | | | 5.2 | | | 23.0 | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Parking (#/hr) | | | 0 | | | 0 | | | 0 | | | 0 |
| Adj. Flow (vph) | 23 | 494 | 9 | 16 | 327 | 7 | 8 | 9 | 31 | 2 | 4 | 16 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 526 | 0 | 0 | 343 | 7 | 0 | 48 | 0 | 0 | 22 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(m) | | 3.5 | | | 3.5 | | | 0.0 | | | 0.0 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 3.0 | | | 3.0 | | | 3.0 | | | 3.0 | |
| Two way Left Turn Lane | | | | | | | | | | | | |
| Headway Factor | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.41 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 |
| Turning Speed (k/h) | 25 | | 15 | 25 | | 15 | 25 | | 15 | 25 | | 15 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | CBD | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization 59.4% | | ICU Level of Service B | |
| Analysis Period (min) 15 | | | |

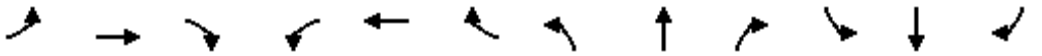
| Intersection | |
|---|---|
| Int Delay, s/veh | 1.5 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ↕ | | | ↰ | ↗ | | ↕ | | | ↕ | |
| Traffic Vol, veh/h | 21 | 445 | 8 | 14 | 294 | 6 | 7 | 8 | 28 | 2 | 4 | 14 |
| Future Vol, veh/h | 21 | 445 | 8 | 14 | 294 | 6 | 7 | 8 | 28 | 2 | 4 | 14 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | 100 | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 23 | 494 | 9 | 16 | 327 | 7 | 8 | 9 | 31 | 2 | 4 | 16 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 334 | 0 | 0 | 503 | 0 | 0 | 918 | 911 | 499 | 924 | 908 | 327 |
| Stage 1 | - | - | - | - | - | - | 545 | 545 | - | 359 | 359 | - |
| Stage 2 | - | - | - | - | - | - | 373 | 366 | - | 565 | 549 | - |
| Critical Hdwy | 4.12 | - | - | 4.12 | - | - | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Follow-up Hdwy | 2.218 | - | - | 2.218 | - | - | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 |
| Pot Cap-1 Maneuver | 1225 | - | - | 1061 | - | - | 252 | 274 | 572 | 250 | 275 | 714 |
| Stage 1 | - | - | - | - | - | - | 523 | 519 | - | 659 | 627 | - |
| Stage 2 | - | - | - | - | - | - | 648 | 623 | - | 510 | 516 | - |
| Platoon blocked, % | | - | - | | - | - | | | | | | |
| Mov Cap-1 Maneuver | 1225 | - | - | 1061 | - | - | 235 | 262 | 572 | 223 | 263 | 714 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 235 | 262 | - | 223 | 263 | - |
| Stage 1 | - | - | - | - | - | - | 509 | 506 | - | 642 | 615 | - |
| Stage 2 | - | - | - | - | - | - | 617 | 611 | - | 461 | 503 | - |

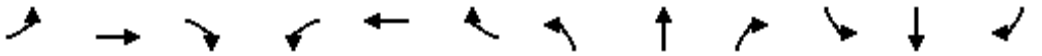
| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0.4 | 0.4 | 15.4 | 13.3 |
| HCM LOS | | | C | B |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 394 | 1225 | - | - | 1061 | - | - | 457 |
| HCM Lane V/C Ratio | 0.121 | 0.019 | - | - | 0.015 | - | - | 0.049 |
| HCM Control Delay (s) | 15.4 | 8 | 0 | - | 8.4 | 0 | - | 13.3 |
| HCM Lane LOS | C | A | A | - | A | A | - | B |
| HCM 95th %tile Q(veh) | 0.4 | 0.1 | - | - | 0 | - | - | 0.2 |



| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 106 | 379 | 43 | 8 | 301 | 126 | 24 | 10 | 17 | 97 | 22 | 43 |
| Future Volume (vph) | 106 | 379 | 43 | 8 | 301 | 126 | 24 | 10 | 17 | 97 | 22 | 43 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Storage Length (m) | 45.0 | | 0.0 | 60.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 |
| Storage Lanes | 1 | | 0 | 1 | | 0 | 1 | | 0 | 0 | | 0 |
| Taper Length (m) | 30.0 | | | 55.0 | | | 15.0 | | | 15.0 | | |
| 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 |
| Frt | | 0.985 | | | 0.956 | | | 0.905 | | | 0.964 | |
| Flt Protected | 0.950 | | | 0.950 | | | 0.950 | | | | 0.971 | |
| Satd. Flow (prot) | 1492 | 1547 | 0 | 1492 | 1501 | 0 | 1492 | 1421 | 0 | 0 | 1470 | 0 |
| Flt Permitted | 0.456 | | | 0.459 | | | 0.651 | | | | 0.799 | |
| Satd. Flow (perm) | 716 | 1547 | 0 | 721 | 1501 | 0 | 1022 | 1421 | 0 | 0 | 1210 | 0 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | 12 | | | 45 | | | 19 | | | 22 | |
| Link Speed (k/h) | | 50 | | | 50 | | | 50 | | | 50 | |
| Link Distance (m) | | 104.2 | | | 101.3 | | | 60.6 | | | 320.9 | |
| Travel Time (s) | | 7.5 | | | 7.3 | | | 4.4 | | | 23.1 | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Parking (#/hr) | | | 0 | | | 0 | | | | | | |
| Adj. Flow (vph) | 118 | 421 | 48 | 9 | 334 | 140 | 27 | 11 | 19 | 108 | 24 | 48 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 118 | 469 | 0 | 9 | 474 | 0 | 27 | 30 | 0 | 0 | 180 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(m) | | 3.5 | | | 3.5 | | | 3.5 | | | 3.5 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 3.0 | | | 3.0 | | | 3.0 | | | 3.0 | |
| Two way Left Turn Lane | | | | | | | | | | | | |
| Headway Factor | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 |
| Turning Speed (k/h) | 25 | | 15 | 25 | | 15 | 25 | | 15 | 25 | | 15 |
| Number of Detectors | 1 | 2 | | 1 | 2 | | 1 | 2 | | 1 | 2 | |
| Detector Template | Left | Thru | | Left | Thru | | Left | Thru | | Left | Thru | |
| Leading Detector (m) | 2.0 | 10.0 | | 2.0 | 10.0 | | 2.0 | 10.0 | | 2.0 | 10.0 | |
| Trailing Detector (m) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Position(m) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Size(m) | 2.0 | 0.6 | | 2.0 | 0.6 | | 2.0 | 0.6 | | 2.0 | 0.6 | |
| Detector 1 Type | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Queue (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Delay (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 2 Position(m) | | 9.4 | | | 9.4 | | | 9.4 | | | 9.4 | |
| Detector 2 Size(m) | | 0.6 | | | 0.6 | | | 0.6 | | | 0.6 | |
| Detector 2 Type | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 8 | | | 4 | |

| Lane Group | Ø3 | Ø7 |
|---|---|---|
| Lane Configurations | | |
| Traffic Volume (vph) | | |
| Future Volume (vph) | | |
| Ideal Flow (vphpl) | | |
| Storage Length (m) | | |
| Storage Lanes | | |
| Taper Length (m) | | |
| Lane Util. Factor | | |
| Frt | | |
| Flt Protected | | |
| Satd. Flow (prot) | | |
| Flt Permitted | | |
| Satd. Flow (perm) | | |
| Right Turn on Red | | |
| Satd. Flow (RTOR) | | |
| Link Speed (k/h) | | |
| Link Distance (m) | | |
| Travel Time (s) | | |
| Peak Hour Factor | | |
| Parking (#/hr) | | |
| Adj. Flow (vph) | | |
| Shared Lane Traffic (%) | | |
| Lane Group Flow (vph) | | |
| Enter Blocked Intersection | | |
| Lane Alignment | | |
| Median Width(m) | | |
| Link Offset(m) | | |
| Crosswalk Width(m) | | |
| Two way Left Turn Lane | | |
| Headway Factor | | |
| Turning Speed (k/h) | | |
| Number of Detectors | | |
| Detector Template | | |
| Leading Detector (m) | | |
| Trailing Detector (m) | | |
| Detector 1 Position(m) | | |
| Detector 1 Size(m) | | |
| Detector 1 Type | | |
| Detector 1 Channel | | |
| Detector 1 Extend (s) | | |
| Detector 1 Queue (s) | | |
| Detector 1 Delay (s) | | |
| Detector 2 Position(m) | | |
| Detector 2 Size(m) | | |
| Detector 2 Type | | |
| Detector 2 Channel | | |
| Detector 2 Extend (s) | | |
| Turn Type | | |
| Protected Phases | 3 | 7 |



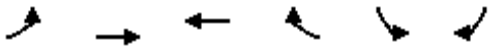
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Permitted Phases | 2 | | | 6 | | | 8 | | | 4 | | |
| Detector Phase | 2 | 2 | | 6 | 6 | | 8 | 8 | | 4 | 4 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 10.0 | 10.0 | | 10.0 | 10.0 | |
| Minimum Split (s) | 24.2 | 24.2 | | 24.2 | 24.2 | | 22.0 | 22.0 | | 22.0 | 22.0 | |
| Total Split (s) | 48.0 | 48.0 | | 48.0 | 48.0 | | 22.0 | 22.0 | | 22.0 | 22.0 | |
| Total Split (%) | 64.0% | 64.0% | | 64.0% | 64.0% | | 29.3% | 29.3% | | 29.3% | 29.3% | |
| Maximum Green (s) | 41.8 | 41.8 | | 41.8 | 41.8 | | 16.5 | 16.5 | | 16.5 | 16.5 | |
| Yellow Time (s) | 3.3 | 3.3 | | 3.3 | 3.3 | | 3.3 | 3.3 | | 3.3 | 3.3 | |
| All-Red Time (s) | 2.9 | 2.9 | | 2.9 | 2.9 | | 2.2 | 2.2 | | 2.2 | 2.2 | |
| Lost Time Adjust (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | | 0.0 | |
| Total Lost Time (s) | 6.2 | 6.2 | | 6.2 | 6.2 | | 5.5 | 5.5 | | | 5.5 | |
| Lead/Lag | | | | | | | Lag | Lag | | Lag | Lag | |
| Lead-Lag Optimize? | | | | | | | Yes | Yes | | Yes | Yes | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Recall Mode | C-Max | C-Max | | C-Max | C-Max | | None | None | | None | None | |
| Walk Time (s) | 7.0 | 7.0 | | 7.0 | 7.0 | | 5.5 | 5.5 | | 5.5 | 5.5 | |
| Flash Dont Walk (s) | 11.0 | 11.0 | | 11.0 | 11.0 | | 11.0 | 11.0 | | 11.0 | 11.0 | |
| Pedestrian Calls (#/hr) | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Act Effct Green (s) | 47.8 | 47.8 | | 47.8 | 47.8 | | 15.5 | 15.5 | | | 15.5 | |
| Actuated g/C Ratio | 0.64 | 0.64 | | 0.64 | 0.64 | | 0.21 | 0.21 | | | 0.21 | |
| v/c Ratio | 0.26 | 0.47 | | 0.02 | 0.49 | | 0.13 | 0.10 | | | 0.67 | |
| Control Delay | 9.1 | 9.8 | | 6.9 | 9.4 | | 23.4 | 13.3 | | | 36.0 | |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | | 0.0 | |
| Total Delay | 9.1 | 9.8 | | 6.9 | 9.4 | | 23.4 | 13.3 | | | 36.0 | |
| LOS | A | A | | A | A | | C | B | | | D | |
| Approach Delay | | 9.7 | | | 9.4 | | | 18.1 | | | 36.0 | |
| Approach LOS | | A | | | A | | | B | | | D | |
| Queue Length 50th (m) | 6.3 | 28.9 | | 0.4 | 27.0 | | 3.2 | 1.3 | | | 20.7 | |
| Queue Length 95th (m) | 18.0 | 61.9 | | 2.4 | 60.5 | | 8.4 | 6.7 | | | 36.8 | |
| Internal Link Dist (m) | | 80.2 | | | 77.3 | | | 36.6 | | | 296.9 | |
| Turn Bay Length (m) | 45.0 | | | 60.0 | | | | | | | | |
| Base Capacity (vph) | 456 | 990 | | 459 | 973 | | 242 | 352 | | | 304 | |
| 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 | 0.26 | 0.47 | | 0.02 | 0.49 | | 0.11 | 0.09 | | | 0.59 | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | CBD | | |
| Cycle Length: 75 | | | |
| Actuated Cycle Length: 75 | | | |
| Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green | | | |
| Natural Cycle: 60 | | | |
| Control Type: Actuated-Coordinated | | | |
| Maximum v/c Ratio: 0.67 | | | |
| Intersection Signal Delay: 13.6 | | Intersection LOS: B | |
| Intersection Capacity Utilization 66.8% | | ICU Level of Service C | |
| Analysis Period (min) 15 | | | |

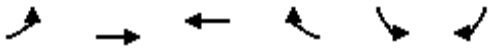
Splits and Phases: 4: McRae Ave & Richmond Rd

| Lane Group | Ø3 | Ø7 |
|---|---|---|
| Permitted Phases | | |
| Detector Phase | | |
| Switch Phase | | |
| Minimum Initial (s) | 3.0 | 3.0 |
| Minimum Split (s) | 5.0 | 5.0 |
| Total Split (s) | 5.0 | 5.0 |
| Total Split (%) | 7% | 7% |
| Maximum Green (s) | 3.0 | 3.0 |
| Yellow Time (s) | 2.0 | 2.0 |
| All-Red Time (s) | 0.0 | 0.0 |
| Lost Time Adjust (s) | | |
| Total Lost Time (s) | | |
| Lead/Lag | Lead | Lead |
| Lead-Lag Optimize? | Yes | Yes |
| Vehicle Extension (s) | 3.0 | 3.0 |
| Recall Mode | None | None |
| Walk Time (s) | | |
| Flash Dont Walk (s) | | |
| Pedestrian Calls (#/hr) | | |
| Act Effct Green (s) | | |
| Actuated g/C Ratio | | |
| v/c Ratio | | |
| Control Delay | | |
| Queue Delay | | |
| Total Delay | | |
| LOS | | |
| Approach Delay | | |
| Approach LOS | | |
| Queue Length 50th (m) | | |
| Queue Length 95th (m) | | |
| Internal Link Dist (m) | | |
| Turn Bay Length (m) | | |
| Base Capacity (vph) | | |
| Starvation Cap Reductn | | |
| Spillback Cap Reductn | | |
| Storage Cap Reductn | | |
| Reduced v/c Ratio | | |

| Intersection Summary |
|---|



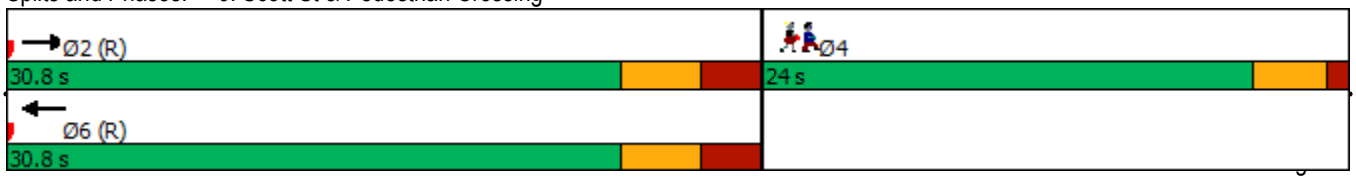
| Lane Group | EBL | EBT | WBT | WBR | SBL | SBR | Ø4 |
|---|---|---|---|---|---|---|---|
| Lane Configurations | | ↑ | ↑ | | | | |
| Traffic Volume (vph) | 0 | 554 | 303 | 0 | 0 | 0 | |
| Future Volume (vph) | 0 | 554 | 303 | 0 | 0 | 0 | |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| Frt | | | | | | | |
| Flt Protected | | | | | | | |
| Satd. Flow (prot) | 0 | 1745 | 1745 | 0 | 0 | 0 | |
| Flt Permitted | | | | | | | |
| Satd. Flow (perm) | 0 | 1745 | 1745 | 0 | 0 | 0 | |
| Right Turn on Red | | | | No | | Yes | |
| Satd. Flow (RTOR) | | | | | | | |
| Link Speed (k/h) | | 50 | 50 | | 50 | | |
| Link Distance (m) | | 22.1 | 57.4 | | 18.9 | | |
| Travel Time (s) | | 1.6 | 4.1 | | 1.4 | | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | |
| Adj. Flow (vph) | 0 | 616 | 337 | 0 | 0 | 0 | |
| Shared Lane Traffic (%) | | | | | | | |
| Lane Group Flow (vph) | 0 | 616 | 337 | 0 | 0 | 0 | |
| Enter Blocked Intersection | No | No | No | No | No | No | |
| Lane Alignment | Left | Left | Left | Right | Left | Right | |
| Median Width(m) | | 0.0 | 0.0 | | 0.0 | | |
| Link Offset(m) | | 0.0 | 0.0 | | 0.0 | | |
| Crosswalk Width(m) | | 3.0 | 3.0 | | 3.0 | | |
| Two way Left Turn Lane | | | | | | | |
| Headway Factor | 1.09 | 1.09 | 1.09 | 1.09 | 1.09 | 1.09 | |
| Turning Speed (k/h) | 25 | | | 15 | 25 | 15 | |
| Number of Detectors | | 2 | 2 | | | | |
| Detector Template | | Thru | Thru | | | | |
| Leading Detector (m) | | 10.0 | 10.0 | | | | |
| Trailing Detector (m) | | 0.0 | 0.0 | | | | |
| Detector 1 Position(m) | | 0.0 | 0.0 | | | | |
| Detector 1 Size(m) | | 0.6 | 0.6 | | | | |
| Detector 1 Type | | Cl+Ex | Cl+Ex | | | | |
| Detector 1 Channel | | | | | | | |
| Detector 1 Extend (s) | | 0.0 | 0.0 | | | | |
| Detector 1 Queue (s) | | 0.0 | 0.0 | | | | |
| Detector 1 Delay (s) | | 0.0 | 0.0 | | | | |
| Detector 2 Position(m) | | 9.4 | 9.4 | | | | |
| Detector 2 Size(m) | | 0.6 | 0.6 | | | | |
| Detector 2 Type | | Cl+Ex | Cl+Ex | | | | |
| Detector 2 Channel | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | 0.0 | | | | |
| Turn Type | | NA | NA | | | | |
| Protected Phases | | 2 | 6 | | | | 4 |
| Permitted Phases | | | | | | | |
| Detector Phase | | 2 | 6 | | | | |
| Switch Phase | | | | | | | |
| Minimum Initial (s) | | 5.0 | 5.0 | | | | 10.0 |

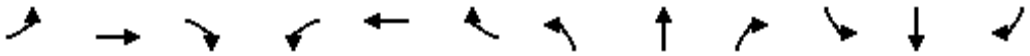


| Lane Group | EBL | EBT | WBT | WBR | SBL | SBR | Ø4 |
|---|---|---|---|---|---|---|---|
| Minimum Split (s) | | 23.8 | 23.8 | | | | 22.0 |
| Total Split (s) | | 30.8 | 30.8 | | | | 24.0 |
| Total Split (%) | | 56.2% | 56.2% | | | | 44% |
| Maximum Green (s) | | 25.0 | 25.0 | | | | 20.0 |
| Yellow Time (s) | | 3.3 | 3.3 | | | | 3.0 |
| All-Red Time (s) | | 2.5 | 2.5 | | | | 1.0 |
| Lost Time Adjust (s) | | 0.0 | 0.0 | | | | |
| Total Lost Time (s) | | 5.8 | 5.8 | | | | |
| Lead/Lag | | | | | | | |
| Lead-Lag Optimize? | | | | | | | |
| Vehicle Extension (s) | | 3.0 | 3.0 | | | | 3.0 |
| Recall Mode | | C-Max | C-Max | | | | None |
| Walk Time (s) | | 7.0 | 7.0 | | | | 7.0 |
| Flash Dont Walk (s) | | 11.0 | 11.0 | | | | 11.0 |
| Pedestrian Calls (#/hr) | | 0 | 0 | | | | 122 |
| Act Effct Green (s) | | 32.6 | 32.6 | | | | |
| Actuated g/C Ratio | | 0.59 | 0.59 | | | | |
| v/c Ratio | | 0.59 | 0.33 | | | | |
| Control Delay | | 13.3 | 9.3 | | | | |
| Queue Delay | | 0.0 | 0.0 | | | | |
| Total Delay | | 13.3 | 9.3 | | | | |
| LOS | | B | A | | | | |
| Approach Delay | | 13.3 | 9.3 | | | | |
| Approach LOS | | B | A | | | | |
| Queue Length 50th (m) | | 43.9 | 19.3 | | | | |
| Queue Length 95th (m) | | 76.9 | 34.6 | | | | |
| Internal Link Dist (m) | | 0.1 | 33.4 | | 0.1 | | |
| Turn Bay Length (m) | | | | | | | |
| Base Capacity (vph) | | 1036 | 1036 | | | | |
| Starvation Cap Reductn | | 0 | 0 | | | | |
| Spillback Cap Reductn | | 0 | 0 | | | | |
| Storage Cap Reductn | | 0 | 0 | | | | |
| Reduced v/c Ratio | | 0.59 | 0.33 | | | | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Cycle Length: 54.8 | | | |
| Actuated Cycle Length: 54.8 | | | |
| Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green | | | |
| Natural Cycle: 60 | | | |
| Control Type: Actuated-Coordinated | | | |
| Maximum v/c Ratio: 0.59 | | | |
| Intersection Signal Delay: 11.9 | | Intersection LOS: B | |
| Intersection Capacity Utilization 35.6% | | ICU Level of Service A | |
| Analysis Period (min) 15 | | | |

Splits and Phases: 6: Scott St & Pedestrian Crossing





| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 0 | 434 | 7 | 15 | 478 | 5 | 11 | 0 | 32 | 5 | 0 | 1 |
| Future Volume (vph) | 0 | 434 | 7 | 15 | 478 | 5 | 11 | 0 | 32 | 5 | 0 | 1 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| 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 |
| Frt | | 0.998 | | | 0.999 | | | 0.900 | | | 0.977 | |
| Flt Protected | | | | | 0.998 | | | 0.987 | | | 0.960 | |
| Satd. Flow (prot) | 0 | 1567 | 0 | 0 | 1551 | 0 | 0 | 1395 | 0 | 0 | 751 | 0 |
| Flt Permitted | | | | | 0.998 | | | 0.987 | | | 0.960 | |
| Satd. Flow (perm) | 0 | 1567 | 0 | 0 | 1551 | 0 | 0 | 1395 | 0 | 0 | 751 | 0 |
| Link Speed (k/h) | | 50 | | | 50 | | | 50 | | | 50 | |
| Link Distance (m) | | 78.0 | | | 22.1 | | | 319.9 | | | 53.1 | |
| Travel Time (s) | | 5.6 | | | 1.6 | | | 23.0 | | | 3.8 | |
| Peak Hour Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Heavy Vehicles (%) | 100% | 2% | 2% | 2% | 2% | 100% | 2% | 100% | 2% | 100% | 100% | 100% |
| Parking (#/hr) | | | 0 | | | 0 | | | 0 | | | 0 |
| Adj. Flow (vph) | 0 | 434 | 7 | 15 | 478 | 5 | 11 | 0 | 32 | 5 | 0 | 1 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 441 | 0 | 0 | 498 | 0 | 0 | 43 | 0 | 0 | 6 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 3.0 | | | 3.0 | | | 3.0 | | | 3.0 | |
| Two way Left Turn Lane | | | | | | | | | | | | |
| Headway Factor | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 |
| Turning Speed (k/h) | 25 | | 15 | 25 | | 15 | 25 | | 15 | 25 | | 15 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | CBD | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization 54.1% | | ICU Level of Service A | |
| Analysis Period (min) 15 | | | |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.9 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ⇕ | | | ⇕ | | | ⇕ | | | ⇕ | |
| Traffic Vol, veh/h | 0 | 434 | 7 | 15 | 478 | 5 | 11 | 0 | 32 | 5 | 0 | 1 |
| Future Vol, veh/h | 0 | 434 | 7 | 15 | 478 | 5 | 11 | 0 | 32 | 5 | 0 | 1 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Heavy Vehicles, % | 100 | 2 | 2 | 2 | 2 | 100 | 2 | 100 | 2 | 100 | 100 | 100 |
| Mvmt Flow | 0 | 434 | 7 | 15 | 478 | 5 | 11 | 0 | 32 | 5 | 0 | 1 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 483 | 0 | 0 | 441 | 0 | 0 | 949 | 951 | 438 | 965 | 952 | 481 |
| Stage 1 | - | - | - | - | - | - | 438 | 438 | - | 511 | 511 | - |
| Stage 2 | - | - | - | - | - | - | 511 | 513 | - | 454 | 441 | - |
| Critical Hdwy | 5.1 | - | - | 4.12 | - | - | 7.12 | 7.5 | 6.22 | 8.1 | 7.5 | 7.2 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.12 | 6.5 | - | 7.1 | 6.5 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.12 | 6.5 | - | 7.1 | 6.5 | - |
| Follow-up Hdwy | 3.1 | - | - | 2.218 | - | - | 3.518 | 4.9 | 3.318 | 4.4 | 4.9 | 4.2 |
| Pot Cap-1 Maneuver | 716 | - | - | 1119 | - | - | 240 | 181 | 619 | 159 | 180 | 428 |
| Stage 1 | - | - | - | - | - | - | 597 | 442 | - | 402 | 405 | - |
| Stage 2 | - | - | - | - | - | - | 545 | 404 | - | 435 | 441 | - |
| Platoon blocked, % | | - | - | | - | - | | | | | | |
| Mov Cap-1 Maneuver | 716 | - | - | 1119 | - | - | 236 | 178 | 619 | 149 | 177 | 428 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 236 | 178 | - | 149 | 177 | - |
| Stage 1 | - | - | - | - | - | - | 597 | 442 | - | 402 | 398 | - |
| Stage 2 | - | - | - | - | - | - | 534 | 397 | - | 413 | 441 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0 | 0.2 | 14.1 | 27.4 |
| HCM LOS | | | B | D |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 437 | 716 | - | - | 1119 | - | - | 167 |
| HCM Lane V/C Ratio | 0.098 | - | - | - | 0.013 | - | - | 0.036 |
| HCM Control Delay (s) | 14.1 | 0 | - | - | 8.3 | 0 | - | 27.4 |
| HCM Lane LOS | B | A | - | - | A | A | - | D |
| HCM 95th %tile Q(veh) | 0.3 | 0 | - | - | 0 | - | - | 0.1 |

| Lane Group | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (vph) | 428 | 43 | 120 | 463 | 35 | 195 |
| Future Volume (vph) | 428 | 43 | 120 | 463 | 35 | 195 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 0.988 | | | | 0.886 | |
| Flt Protected | | | | 0.990 | 0.992 | |
| Satd. Flow (prot) | 1552 | 0 | 0 | 1399 | 1380 | 0 |
| Flt Permitted | | | | 0.990 | 0.992 | |
| Satd. Flow (perm) | 1552 | 0 | 0 | 1399 | 1380 | 0 |
| Link Speed (k/h) | 50 | | | 50 | 50 | |
| Link Distance (m) | 57.4 | | | 138.5 | 320.9 | |
| Travel Time (s) | 4.1 | | | 10.0 | 23.1 | |
| Peak Hour Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Parking (#/hr) | | 0 | | 0 | | |
| Adj. Flow (vph) | 428 | 43 | 120 | 463 | 35 | 195 |
| Shared Lane Traffic (%) | | | | | | |
| Lane Group Flow (vph) | 471 | 0 | 0 | 583 | 230 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No |
| Lane Alignment | Left | Right | Left | Left | Left | Right |
| Median Width(m) | 0.0 | | | 0.0 | 3.5 | |
| Link Offset(m) | 0.0 | | | 0.0 | 0.0 | |
| Crosswalk Width(m) | 3.0 | | | 3.0 | 3.0 | |
| Two way Left Turn Lane | | | | | | |
| Headway Factor | 1.24 | 1.24 | 1.24 | 1.41 | 1.24 | 1.24 |
| Turning Speed (k/h) | | 15 | 25 | | 25 | 15 |
| Sign Control | Free | | | Free | Stop | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | CBD | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization 92.2% | | ICU Level of Service F | |
| Analysis Period (min) 15 | | | |

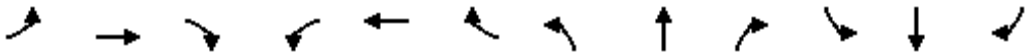
| Intersection | |
|---|---|
| Int Delay, s/veh | 4.6 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 428 | 43 | 120 | 463 | 35 | 195 |
| Future Vol, veh/h | 428 | 43 | 120 | 463 | 35 | 195 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 100 | 100 | 100 | 100 | 100 | 100 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 428 | 43 | 120 | 463 | 35 | 195 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 471 | 0 | 1153 | 450 |
| Stage 1 | - | - | - | - | 450 | - |
| Stage 2 | - | - | - | - | 703 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 1091 | - | 218 | 609 |
| Stage 1 | - | - | - | - | 642 | - |
| Stage 2 | - | - | - | - | 491 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1091 | - | 186 | 609 |
| Mov Cap-2 Maneuver | - | - | - | - | 186 | - |
| Stage 1 | - | - | - | - | 642 | - |
| Stage 2 | - | - | - | - | 418 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 1.8 | 20.9 |
| HCM LOS | | | C |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | 452 | - | - | 1091 | - |
| HCM Lane V/C Ratio | 0.509 | - | - | 0.11 | - |
| HCM Control Delay (s) | 20.9 | - | - | 8.7 | 0 |
| HCM Lane LOS | C | - | - | A | A |
| HCM 95th %tile Q(veh) | 2.8 | - | - | 0.4 | - |



| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 28 | 409 | 18 | 74 | 641 | 11 | 3 | 6 | 34 | 8 | 10 | 16 |
| Future Volume (vph) | 28 | 409 | 18 | 74 | 641 | 11 | 3 | 6 | 34 | 8 | 10 | 16 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Storage Length (m) | 0.0 | | 0.0 | 0.0 | | 10.0 | 0.0 | | 0.0 | 0.0 | | 0.0 |
| Storage Lanes | 0 | | 0 | 0 | | 1 | 0 | | 0 | 0 | | 0 |
| Taper Length (m) | 15.0 | | | 15.0 | | | 15.0 | | | 15.0 | | |
| 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 |
| Frt | | 0.995 | | | | 0.850 | | 0.893 | | | 0.936 | |
| Flt Protected | | 0.997 | | | 0.995 | | | 0.997 | | | 0.988 | |
| Satd. Flow (prot) | 0 | 1558 | 0 | 0 | 1563 | 1201 | 0 | 1398 | 0 | 0 | 1452 | 0 |
| Flt Permitted | | 0.997 | | | 0.995 | | | 0.997 | | | 0.988 | |
| Satd. Flow (perm) | 0 | 1558 | 0 | 0 | 1563 | 1201 | 0 | 1398 | 0 | 0 | 1452 | 0 |
| Link Speed (k/h) | | 50 | | | 50 | | | 50 | | | 50 | |
| Link Distance (m) | | 72.3 | | | 104.2 | | | 72.7 | | | 319.9 | |
| Travel Time (s) | | 5.2 | | | 7.5 | | | 5.2 | | | 23.0 | |
| Peak Hour Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Parking (#/hr) | | | 0 | | | 0 | | | 0 | | | 0 |
| Adj. Flow (vph) | 28 | 409 | 18 | 74 | 641 | 11 | 3 | 6 | 34 | 8 | 10 | 16 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 455 | 0 | 0 | 715 | 11 | 0 | 43 | 0 | 0 | 34 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(m) | | 3.5 | | | 3.5 | | | 0.0 | | | 0.0 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 3.0 | | | 3.0 | | | 3.0 | | | 3.0 | |
| Two way Left Turn Lane | | | | | | | | | | | | |
| Headway Factor | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.41 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 |
| Turning Speed (k/h) | 25 | | 15 | 25 | | 15 | 25 | | 15 | 25 | | 15 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | CBD | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization 78.5% | | ICU Level of Service D | |
| Analysis Period (min) 15 | | | |

| Intersection | |
|---|---|
| Int Delay, s/veh | 2 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 28 | 409 | 18 | 74 | 641 | 11 | 3 | 6 | 34 | 8 | 10 | 16 |
| Future Vol, veh/h | 28 | 409 | 18 | 74 | 641 | 11 | 3 | 6 | 34 | 8 | 10 | 16 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | 100 | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 28 | 409 | 18 | 74 | 641 | 11 | 3 | 6 | 34 | 8 | 10 | 16 |

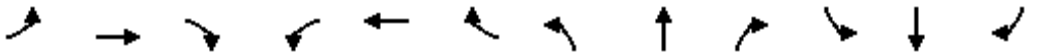
| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 652 | 0 | 0 | 427 | 0 | 0 | 1282 | 1274 | 418 | 1283 | 1272 | 641 |
| Stage 1 | - | - | - | - | - | - | 474 | 474 | - | 789 | 789 | - |
| Stage 2 | - | - | - | - | - | - | 808 | 800 | - | 494 | 483 | - |
| Critical Hdwy | 4.12 | - | - | 4.12 | - | - | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Follow-up Hdwy | 2.218 | - | - | 2.218 | - | - | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 |
| Pot Cap-1 Maneuver | 935 | - | - | 1132 | - | - | 142 | 167 | 635 | 142 | 168 | 475 |
| Stage 1 | - | - | - | - | - | - | 571 | 558 | - | 384 | 402 | - |
| Stage 2 | - | - | - | - | - | - | 375 | 397 | - | 557 | 553 | - |
| Platoon blocked, % | | - | - | | - | - | | | | | | |
| Mov Cap-1 Maneuver | 935 | - | - | 1132 | - | - | 116 | 144 | 635 | 116 | 145 | 475 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 116 | 144 | - | 116 | 145 | - |
| Stage 1 | - | - | - | - | - | - | 549 | 536 | - | 369 | 361 | - |
| Stage 2 | - | - | - | - | - | - | 316 | 356 | - | 501 | 531 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0.6 | 0.9 | 16.5 | 26.9 |
| HCM LOS | | | C | D |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 355 | 935 | - | - | 1132 | - | - | 198 |
| HCM Lane V/C Ratio | 0.121 | 0.03 | - | - | 0.065 | - | - | 0.172 |
| HCM Control Delay (s) | 16.5 | 9 | 0 | - | 8.4 | 0 | - | 26.9 |
| HCM Lane LOS | C | A | A | - | A | A | - | D |
| HCM 95th %tile Q(veh) | 0.4 | 0.1 | - | - | 0.2 | - | - | 0.6 |

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 82 | 301 | 78 | 47 | 636 | 160 | 73 | 60 | 50 | 101 | 39 | 136 |
| Future Volume (vph) | 82 | 301 | 78 | 47 | 636 | 160 | 73 | 60 | 50 | 101 | 39 | 136 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Storage Length (m) | 45.0 | | 0.0 | 60.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 |
| Storage Lanes | 1 | | 0 | 1 | | 0 | 1 | | 0 | 0 | | 0 |
| Taper Length (m) | 30.0 | | | 55.0 | | | 15.0 | | | 15.0 | | |
| 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 |
| Frt | | 0.969 | | | 0.970 | | | 0.932 | | | 0.933 | |
| Flt Protected | 0.950 | | | 0.950 | | | 0.950 | | | | 0.982 | |
| Satd. Flow (prot) | 1492 | 1522 | 0 | 1492 | 1523 | 0 | 1492 | 1464 | 0 | 0 | 1439 | 0 |
| Flt Permitted | 0.281 | | | 0.429 | | | 0.492 | | | | 0.835 | |
| Satd. Flow (perm) | 441 | 1522 | 0 | 674 | 1523 | 0 | 773 | 1464 | 0 | 0 | 1224 | 0 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | 19 | | | 24 | | | 50 | | | 58 | |
| Link Speed (k/h) | | 50 | | | 50 | | | 50 | | | 50 | |
| Link Distance (m) | | 104.2 | | | 101.3 | | | 60.6 | | | 320.9 | |
| Travel Time (s) | | 7.5 | | | 7.3 | | | 4.4 | | | 23.1 | |
| Peak Hour Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Parking (#/hr) | | | 0 | | | 0 | | | | | | |
| Adj. Flow (vph) | 82 | 301 | 78 | 47 | 636 | 160 | 73 | 60 | 50 | 101 | 39 | 136 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 82 | 379 | 0 | 47 | 796 | 0 | 73 | 110 | 0 | 0 | 276 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(m) | | 3.5 | | | 3.5 | | | 3.5 | | | 3.5 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 3.0 | | | 3.0 | | | 3.0 | | | 3.0 | |
| Two way Left Turn Lane | | | | | | | | | | | | |
| Headway Factor | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 |
| Turning Speed (k/h) | 25 | | 15 | 25 | | 15 | 25 | | 15 | 25 | | 15 |
| Number of Detectors | 1 | 2 | | 1 | 2 | | 1 | 2 | | 1 | 2 | |
| Detector Template | Left | Thru | | Left | Thru | | Left | Thru | | Left | Thru | |
| Leading Detector (m) | 2.0 | 10.0 | | 2.0 | 10.0 | | 2.0 | 10.0 | | 2.0 | 10.0 | |
| Trailing Detector (m) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Position(m) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Size(m) | 2.0 | 0.6 | | 2.0 | 0.6 | | 2.0 | 0.6 | | 2.0 | 0.6 | |
| Detector 1 Type | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Queue (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Delay (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 2 Position(m) | | 9.4 | | | 9.4 | | | 9.4 | | | 9.4 | |
| Detector 2 Size(m) | | 0.6 | | | 0.6 | | | 0.6 | | | 0.6 | |
| Detector 2 Type | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Turn Type | Perm | NA | | pm+pt | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | 1 | 6 | | | 8 | | | 4 | |

| Lane Group | Ø3 | Ø7 |
|---|---|---|
| Lane Configurations | | |
| Traffic Volume (vph) | | |
| Future Volume (vph) | | |
| Ideal Flow (vphpl) | | |
| Storage Length (m) | | |
| Storage Lanes | | |
| Taper Length (m) | | |
| Lane Util. Factor | | |
| Frt | | |
| Flt Protected | | |
| Satd. Flow (prot) | | |
| Flt Permitted | | |
| Satd. Flow (perm) | | |
| Right Turn on Red | | |
| Satd. Flow (RTOR) | | |
| Link Speed (k/h) | | |
| Link Distance (m) | | |
| Travel Time (s) | | |
| Peak Hour Factor | | |
| Parking (#/hr) | | |
| Adj. Flow (vph) | | |
| Shared Lane Traffic (%) | | |
| Lane Group Flow (vph) | | |
| Enter Blocked Intersection | | |
| Lane Alignment | | |
| Median Width(m) | | |
| Link Offset(m) | | |
| Crosswalk Width(m) | | |
| Two way Left Turn Lane | | |
| Headway Factor | | |
| Turning Speed (k/h) | | |
| Number of Detectors | | |
| Detector Template | | |
| Leading Detector (m) | | |
| Trailing Detector (m) | | |
| Detector 1 Position(m) | | |
| Detector 1 Size(m) | | |
| Detector 1 Type | | |
| Detector 1 Channel | | |
| Detector 1 Extend (s) | | |
| Detector 1 Queue (s) | | |
| Detector 1 Delay (s) | | |
| Detector 2 Position(m) | | |
| Detector 2 Size(m) | | |
| Detector 2 Type | | |
| Detector 2 Channel | | |
| Detector 2 Extend (s) | | |
| Turn Type | | |
| Protected Phases | 3 | 7 |



| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Permitted Phases | 2 | | | 6 | | | 8 | | | 4 | | |
| Detector Phase | 2 | 2 | | 1 | 6 | | 8 | 8 | | 4 | 4 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 10.0 | 10.0 | | 10.0 | 10.0 | |
| Minimum Split (s) | 22.5 | 22.5 | | 9.5 | 22.5 | | 22.5 | 22.5 | | 22.5 | 22.5 | |
| Total Split (s) | 40.0 | 40.0 | | 11.0 | 51.0 | | 29.0 | 29.0 | | 29.0 | 29.0 | |
| Total Split (%) | 47.1% | 47.1% | | 12.9% | 60.0% | | 34.1% | 34.1% | | 34.1% | 34.1% | |
| Maximum Green (s) | 35.5 | 35.5 | | 6.5 | 46.5 | | 24.5 | 24.5 | | 24.5 | 24.5 | |
| Yellow Time (s) | 3.5 | 3.5 | | 3.5 | 3.5 | | 3.5 | 3.5 | | 3.5 | 3.5 | |
| All-Red Time (s) | 1.0 | 1.0 | | 1.0 | 1.0 | | 1.0 | 1.0 | | 1.0 | 1.0 | |
| Lost Time Adjust (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | | 0.0 | |
| Total Lost Time (s) | 4.5 | 4.5 | | 4.5 | 4.5 | | 4.5 | 4.5 | | | 4.5 | |
| Lead/Lag | Lag | Lag | | Lead | | | Lag | Lag | | Lag | Lag | |
| Lead-Lag Optimize? | Yes | Yes | | Yes | | | Yes | Yes | | Yes | Yes | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Recall Mode | C-Max | C-Max | | None | C-Max | | None | None | | None | None | |
| Walk Time (s) | 7.0 | 7.0 | | | 7.0 | | 7.0 | 7.0 | | 7.0 | 7.0 | |
| Flash Dont Walk (s) | 11.0 | 11.0 | | | 11.0 | | 11.0 | 11.0 | | 11.0 | 11.0 | |
| Pedestrian Calls (#/hr) | 0 | 0 | | | 0 | | 0 | 0 | | 0 | 0 | |
| Act Effct Green (s) | 48.4 | 48.4 | | 55.1 | 55.1 | | 20.9 | 20.9 | | | 20.9 | |
| Actuated g/C Ratio | 0.57 | 0.57 | | 0.65 | 0.65 | | 0.25 | 0.25 | | | 0.25 | |
| v/c Ratio | 0.33 | 0.43 | | 0.09 | 0.80 | | 0.39 | 0.28 | | | 0.80 | |
| Control Delay | 19.7 | 15.0 | | 7.9 | 20.9 | | 30.4 | 15.1 | | | 40.4 | |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | | 0.0 | |
| Total Delay | 19.7 | 15.0 | | 7.9 | 20.9 | | 30.4 | 15.1 | | | 40.4 | |
| LOS | B | B | | A | C | | C | B | | | D | |
| Approach Delay | | 15.9 | | | 20.2 | | | 21.2 | | | 40.4 | |
| Approach LOS | | B | | | C | | | C | | | D | |
| Queue Length 50th (m) | 7.5 | 35.2 | | 2.5 | 82.1 | | 9.9 | 7.6 | | | 33.4 | |
| Queue Length 95th (m) | 23.3 | 71.3 | | 8.0 | #192.9 | | 19.2 | 17.5 | | | 54.0 | |
| Internal Link Dist (m) | | 80.2 | | | 77.3 | | | 36.6 | | | 296.9 | |
| Turn Bay Length (m) | 45.0 | | | 60.0 | | | | | | | | |
| Base Capacity (vph) | 251 | 875 | | 500 | 996 | | 232 | 475 | | | 409 | |
| 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 | 0.33 | 0.43 | | 0.09 | 0.80 | | 0.31 | 0.23 | | | 0.67 | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | CBD | | |
| Cycle Length: 85 | | | |
| Actuated Cycle Length: 85 | | | |
| Offset: 1 (1%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green | | | |
| Natural Cycle: 80 | | | |
| Control Type: Actuated-Coordinated | | | |
| Maximum v/c Ratio: 0.80 | | | |
| Intersection Signal Delay: 22.3 | | Intersection LOS: C | |
| Intersection Capacity Utilization 92.6% | | ICU Level of Service F | |
| Analysis Period (min) 15 | | | |

| Lane Group | Ø3 | Ø7 |
|---|---|---|
| Permitted Phases | | |
| Detector Phase | | |
| Switch Phase | | |
| Minimum Initial (s) | 3.0 | 3.0 |
| Minimum Split (s) | 5.0 | 5.0 |
| Total Split (s) | 5.0 | 5.0 |
| Total Split (%) | 6% | 6% |
| Maximum Green (s) | 3.0 | 3.0 |
| Yellow Time (s) | 2.0 | 2.0 |
| All-Red Time (s) | 0.0 | 0.0 |
| Lost Time Adjust (s) | | |
| Total Lost Time (s) | | |
| Lead/Lag | Lead | Lead |
| Lead-Lag Optimize? | Yes | Yes |
| Vehicle Extension (s) | 3.0 | 3.0 |
| Recall Mode | None | None |
| Walk Time (s) | | |
| Flash Dont Walk (s) | | |
| Pedestrian Calls (#/hr) | | |
| Act Effct Green (s) | | |
| Actuated g/C Ratio | | |
| v/c Ratio | | |
| Control Delay | | |
| Queue Delay | | |
| Total Delay | | |
| LOS | | |
| Approach Delay | | |
| Approach LOS | | |
| Queue Length 50th (m) | | |
| Queue Length 95th (m) | | |
| Internal Link Dist (m) | | |
| Turn Bay Length (m) | | |
| Base Capacity (vph) | | |
| Starvation Cap Reductn | | |
| Spillback Cap Reductn | | |
| Storage Cap Reductn | | |
| Reduced v/c Ratio | | |

| Intersection Summary |
|---|

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

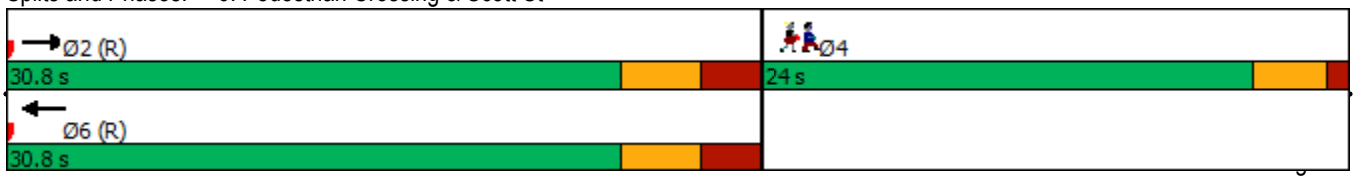
Splits and Phases: 4: McRae Ave & Richmond Rd

| Lane Group | EBT | EBR | WBL | WBT | NBL | NBR | Ø4 |
|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | |
| Traffic Volume (vph) | 471 | 0 | 0 | 498 | 0 | 0 | |
| Future Volume (vph) | 471 | 0 | 0 | 498 | 0 | 0 | |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| Frt | | | | | | | |
| Flt Protected | | | | | | | |
| Satd. Flow (prot) | 1745 | 0 | 0 | 1745 | 0 | 0 | |
| Flt Permitted | | | | | | | |
| Satd. Flow (perm) | 1745 | 0 | 0 | 1745 | 0 | 0 | |
| Right Turn on Red | | Yes | | | | Yes | |
| Satd. Flow (RTOR) | | | | | | | |
| Link Speed (k/h) | 50 | | | 50 | 50 | | |
| Link Distance (m) | 22.1 | | | 57.4 | 22.8 | | |
| Travel Time (s) | 1.6 | | | 4.1 | 1.6 | | |
| Peak Hour Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| Adj. Flow (vph) | 471 | 0 | 0 | 498 | 0 | 0 | |
| Shared Lane Traffic (%) | | | | | | | |
| Lane Group Flow (vph) | 471 | 0 | 0 | 498 | 0 | 0 | |
| Enter Blocked Intersection | No | No | No | No | No | No | |
| Lane Alignment | Left | Right | Left | Left | Left | Right | |
| Median Width(m) | 0.0 | | | 0.0 | 0.0 | | |
| Link Offset(m) | 0.0 | | | 0.0 | 0.0 | | |
| Crosswalk Width(m) | 3.0 | | | 3.0 | 3.0 | | |
| Two way Left Turn Lane | | | | | | | |
| Headway Factor | 1.09 | 1.09 | 1.09 | 1.09 | 1.09 | 1.09 | |
| Turning Speed (k/h) | | 15 | 25 | | 25 | 15 | |
| Number of Detectors | 2 | | | 2 | | | |
| Detector Template | Thru | | | Thru | | | |
| Leading Detector (m) | 10.0 | | | 10.0 | | | |
| Trailing Detector (m) | 0.0 | | | 0.0 | | | |
| Detector 1 Position(m) | 0.0 | | | 0.0 | | | |
| Detector 1 Size(m) | 0.6 | | | 0.6 | | | |
| Detector 1 Type | Cl+Ex | | | Cl+Ex | | | |
| Detector 1 Channel | | | | | | | |
| Detector 1 Extend (s) | 0.0 | | | 0.0 | | | |
| Detector 1 Queue (s) | 0.0 | | | 0.0 | | | |
| Detector 1 Delay (s) | 0.0 | | | 0.0 | | | |
| Detector 2 Position(m) | 9.4 | | | 9.4 | | | |
| Detector 2 Size(m) | 0.6 | | | 0.6 | | | |
| Detector 2 Type | Cl+Ex | | | Cl+Ex | | | |
| Detector 2 Channel | | | | | | | |
| Detector 2 Extend (s) | 0.0 | | | 0.0 | | | |
| Turn Type | NA | | | NA | | | |
| Protected Phases | 2 | | | 6 | | | 4 |
| Permitted Phases | | | | | | | |
| Detector Phase | 2 | | | 6 | | | |
| Switch Phase | | | | | | | |
| Minimum Initial (s) | 5.0 | | | 5.0 | | | 10.0 |

| Lane Group | EBT | EBR | WBL | WBT | NBL | NBR | Ø4 |
|---|---|---|---|---|---|---|---|
| Minimum Split (s) | 23.8 | | | 23.8 | | | 22.0 |
| Total Split (s) | 30.8 | | | 30.8 | | | 24.0 |
| Total Split (%) | 56.2% | | | 56.2% | | | 44% |
| Maximum Green (s) | 25.0 | | | 25.0 | | | 20.0 |
| Yellow Time (s) | 3.3 | | | 3.3 | | | 3.0 |
| All-Red Time (s) | 2.5 | | | 2.5 | | | 1.0 |
| Lost Time Adjust (s) | 0.0 | | | 0.0 | | | |
| Total Lost Time (s) | 5.8 | | | 5.8 | | | |
| Lead/Lag | | | | | | | |
| Lead-Lag Optimize? | | | | | | | |
| Vehicle Extension (s) | 3.0 | | | 3.0 | | | 3.0 |
| Recall Mode | C-Max | | | C-Max | | | None |
| Walk Time (s) | 7.0 | | | 7.0 | | | 7.0 |
| Flash Dont Walk (s) | 11.0 | | | 11.0 | | | 11.0 |
| Pedestrian Calls (#/hr) | 0 | | | 0 | | | 187 |
| Act Effct Green (s) | 32.6 | | | 32.6 | | | |
| Actuated g/C Ratio | 0.59 | | | 0.59 | | | |
| v/c Ratio | 0.45 | | | 0.48 | | | |
| Control Delay | 10.8 | | | 11.1 | | | |
| Queue Delay | 0.0 | | | 0.0 | | | |
| Total Delay | 10.8 | | | 11.1 | | | |
| LOS | B | | | B | | | |
| Approach Delay | 10.8 | | | 11.1 | | | |
| Approach LOS | B | | | B | | | |
| Queue Length 50th (m) | 29.7 | | | 32.1 | | | |
| Queue Length 95th (m) | 51.9 | | | 56.0 | | | |
| Internal Link Dist (m) | 0.1 | | | 33.4 | 0.1 | | |
| Turn Bay Length (m) | | | | | | | |
| Base Capacity (vph) | 1036 | | | 1036 | | | |
| Starvation Cap Reductn | 0 | | | 0 | | | |
| Spillback Cap Reductn | 0 | | | 0 | | | |
| Storage Cap Reductn | 0 | | | 0 | | | |
| Reduced v/c Ratio | 0.45 | | | 0.48 | | | |

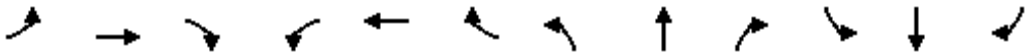
| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Cycle Length: 54.8 | | | |
| Actuated Cycle Length: 54.8 | | | |
| Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green | | | |
| Natural Cycle: 50 | | | |
| Control Type: Actuated-Coordinated | | | |
| Maximum v/c Ratio: 0.48 | | | |
| Intersection Signal Delay: 11.0 | | Intersection LOS: B | |
| Intersection Capacity Utilization 32.5% | | ICU Level of Service A | |
| Analysis Period (min) 15 | | | |

Splits and Phases: 6: Pedestrian Crossing & Scott St



# Appendix K

2027 Future Background Synchro Worksheets



| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 0 | 565 | 4 | 12 | 316 | 6 | 4 | 0 | 40 | 7 | 0 | 0 |
| Future Volume (vph) | 0 | 565 | 4 | 12 | 316 | 6 | 4 | 0 | 40 | 7 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| 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 |
| Frt | | 0.999 | | | 0.997 | | | 0.876 | | | | |
| Flt Protected | | | | | 0.998 | | | 0.996 | | | 0.950 | |
| Satd. Flow (prot) | 0 | 1569 | 0 | 0 | 1535 | 0 | 0 | 1370 | 0 | 0 | 761 | 0 |
| Flt Permitted | | | | | 0.998 | | | 0.996 | | | 0.950 | |
| Satd. Flow (perm) | 0 | 1569 | 0 | 0 | 1535 | 0 | 0 | 1370 | 0 | 0 | 761 | 0 |
| Link Speed (k/h) | | 50 | | | 50 | | | 50 | | | 50 | |
| Link Distance (m) | | 78.0 | | | 22.1 | | | 319.9 | | | 53.1 | |
| Travel Time (s) | | 5.6 | | | 1.6 | | | 23.0 | | | 3.8 | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Heavy Vehicles (%) | 100% | 2% | 2% | 2% | 2% | 100% | 2% | 100% | 2% | 100% | 100% | 100% |
| Parking (#/hr) | | | 0 | | | 0 | | | 0 | | | 0 |
| Adj. Flow (vph) | 0 | 628 | 4 | 13 | 351 | 7 | 4 | 0 | 44 | 8 | 0 | 0 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 632 | 0 | 0 | 371 | 0 | 0 | 48 | 0 | 0 | 8 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 3.0 | | | 3.0 | | | 3.0 | | | 3.0 | |
| Two way Left Turn Lane | | | | | | | | | | | | |
| Headway Factor | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 |
| Turning Speed (k/h) | 25 | | 15 | 25 | | 15 | 25 | | 15 | 25 | | 15 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | CBD | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization | 45.2% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ⇕ | | | ⇕ | | | ⇕ | | | ⇕ | |
| Traffic Vol, veh/h | 0 | 565 | 4 | 12 | 316 | 6 | 4 | 0 | 40 | 7 | 0 | 0 |
| Future Vol, veh/h | 0 | 565 | 4 | 12 | 316 | 6 | 4 | 0 | 40 | 7 | 0 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 100 | 2 | 2 | 2 | 2 | 100 | 2 | 100 | 2 | 100 | 100 | 100 |
| Mvmt Flow | 0 | 628 | 4 | 13 | 351 | 7 | 4 | 0 | 44 | 8 | 0 | 0 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 358 | 0 | 0 | 632 | 0 | 0 | 1011 | 1014 | 630 | 1033 | 1013 | 355 |
| Stage 1 | - | - | - | - | - | - | 630 | 630 | - | 381 | 381 | - |
| Stage 2 | - | - | - | - | - | - | 381 | 384 | - | 652 | 632 | - |
| Critical Hdwy | 5.1 | - | - | 4.12 | - | - | 7.12 | 7.5 | 6.22 | 8.1 | 7.5 | 7.2 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.12 | 6.5 | - | 7.1 | 6.5 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.12 | 6.5 | - | 7.1 | 6.5 | - |
| Follow-up Hdwy | 3.1 | - | - | 2.218 | - | - | 3.518 | 4.9 | 3.318 | 4.4 | 4.9 | 4.2 |
| Pot Cap-1 Maneuver | 813 | - | - | 951 | - | - | 218 | 164 | 482 | 141 | 164 | 515 |
| Stage 1 | - | - | - | - | - | - | 470 | 351 | - | 483 | 473 | - |
| Stage 2 | - | - | - | - | - | - | 641 | 472 | - | 328 | 350 | - |
| Platoon blocked, % | | - | - | | - | - | | | | | | |
| Mov Cap-1 Maneuver | 813 | - | - | 951 | - | - | 215 | 161 | 482 | 126 | 161 | 515 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 215 | 161 | - | 126 | 161 | - |
| Stage 1 | - | - | - | - | - | - | 470 | 351 | - | 483 | 465 | - |
| Stage 2 | - | - | - | - | - | - | 630 | 464 | - | 298 | 350 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0 | 0.3 | 14.4 | 35.4 |
| HCM LOS | | | B | E |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 433 | 813 | - | - | 951 | - | - | 126 |
| HCM Lane V/C Ratio | 0.113 | - | - | - | 0.014 | - | - | 0.062 |
| HCM Control Delay (s) | 14.4 | 0 | - | - | 8.8 | 0 | - | 35.4 |
| HCM Lane LOS | B | A | - | - | A | A | - | E |
| HCM 95th %tile Q(veh) | 0.4 | 0 | - | - | 0 | - | - | 0.2 |

| Lane Group | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (vph) | 581 | 30 | 126 | 318 | 17 | 118 |
| Future Volume (vph) | 581 | 30 | 126 | 318 | 17 | 118 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 0.993 | | | | 0.882 | |
| Flt Protected | | | | 0.986 | 0.994 | |
| Satd. Flow (prot) | 1560 | 0 | 0 | 1394 | 1377 | 0 |
| Flt Permitted | | | | 0.986 | 0.994 | |
| Satd. Flow (perm) | 1560 | 0 | 0 | 1394 | 1377 | 0 |
| Link Speed (k/h) | 50 | | | 50 | 50 | |
| Link Distance (m) | 57.4 | | | 138.5 | 320.9 | |
| Travel Time (s) | 4.1 | | | 10.0 | 23.1 | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Parking (#/hr) | | 0 | | 0 | | |
| Adj. Flow (vph) | 646 | 33 | 140 | 353 | 19 | 131 |
| Shared Lane Traffic (%) | | | | | | |
| Lane Group Flow (vph) | 679 | 0 | 0 | 493 | 150 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No |
| Lane Alignment | Left | Right | Left | Left | Left | Right |
| Median Width(m) | 0.0 | | | 0.0 | 3.5 | |
| Link Offset(m) | 0.0 | | | 0.0 | 0.0 | |
| Crosswalk Width(m) | 3.0 | | | 3.0 | 3.0 | |
| Two way Left Turn Lane | | | | | | |
| Headway Factor | 1.24 | 1.24 | 1.24 | 1.41 | 1.24 | 1.24 |
| Turning Speed (k/h) | | 15 | 25 | | 25 | 15 |
| Sign Control | Free | | | Free | Stop | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | CBD | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization 85.4% | | ICU Level of Service E | |
| Analysis Period (min) 15 | | | |

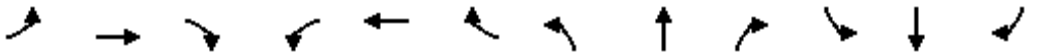
| Intersection | |
|---|---|
| Int Delay, s/veh | 3.5 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 581 | 30 | 126 | 318 | 17 | 118 |
| Future Vol, veh/h | 581 | 30 | 126 | 318 | 17 | 118 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 646 | 33 | 140 | 353 | 19 | 131 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 679 | 0 | 1296 | 663 |
| Stage 1 | - | - | - | - | 663 | - |
| Stage 2 | - | - | - | - | 633 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 913 | - | 179 | 461 |
| Stage 1 | - | - | - | - | 512 | - |
| Stage 2 | - | - | - | - | 529 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 913 | - | 145 | 461 |
| Mov Cap-2 Maneuver | - | - | - | - | 145 | - |
| Stage 1 | - | - | - | - | 512 | - |
| Stage 2 | - | - | - | - | 428 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 2.7 | 21.8 |
| HCM LOS | | | C |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | 362 | - | - | 913 | - |
| HCM Lane V/C Ratio | 0.414 | - | - | 0.153 | - |
| HCM Control Delay (s) | 21.8 | - | - | 9.7 | 0 |
| HCM Lane LOS | C | - | - | A | A |
| HCM 95th %tile Q(veh) | 2 | - | - | 0.5 | - |



| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 23 | 491 | 9 | 15 | 324 | 7 | 8 | 9 | 30 | 2 | 5 | 15 |
| Future Volume (vph) | 23 | 491 | 9 | 15 | 324 | 7 | 8 | 9 | 30 | 2 | 5 | 15 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Storage Length (m) | 0.0 | | 0.0 | 0.0 | | 10.0 | 0.0 | | 0.0 | 0.0 | | 0.0 |
| Storage Lanes | 0 | | 0 | 0 | | 1 | 0 | | 0 | 0 | | 0 |
| Taper Length (m) | 15.0 | | | 15.0 | | | 15.0 | | | 15.0 | | |
| 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 |
| Frt | | 0.998 | | | | 0.850 | | 0.914 | | | 0.908 | |
| Flt Protected | | 0.998 | | | 0.998 | | | 0.991 | | | 0.996 | |
| Satd. Flow (prot) | 0 | 1564 | 0 | 0 | 1567 | 1201 | 0 | 1423 | 0 | 0 | 1420 | 0 |
| Flt Permitted | | 0.998 | | | 0.998 | | | 0.991 | | | 0.996 | |
| Satd. Flow (perm) | 0 | 1564 | 0 | 0 | 1567 | 1201 | 0 | 1423 | 0 | 0 | 1420 | 0 |
| Link Speed (k/h) | | 50 | | | 50 | | | 50 | | | 50 | |
| Link Distance (m) | | 72.3 | | | 104.2 | | | 72.7 | | | 319.9 | |
| Travel Time (s) | | 5.2 | | | 7.5 | | | 5.2 | | | 23.0 | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Parking (#/hr) | | | 0 | | | 0 | | | 0 | | | 0 |
| Adj. Flow (vph) | 26 | 546 | 10 | 17 | 360 | 8 | 9 | 10 | 33 | 2 | 6 | 17 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 582 | 0 | 0 | 377 | 8 | 0 | 52 | 0 | 0 | 25 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(m) | | 3.5 | | | 3.5 | | | 0.0 | | | 0.0 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 3.0 | | | 3.0 | | | 3.0 | | | 3.0 | |
| Two way Left Turn Lane | | | | | | | | | | | | |
| Headway Factor | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.41 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 |
| Turning Speed (k/h) | 25 | | 15 | 25 | | 15 | 25 | | 15 | 25 | | 15 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | CBD | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization 64.9% | | ICU Level of Service C | |
| Analysis Period (min) 15 | | | |

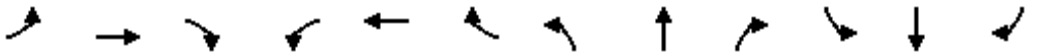
| Intersection | |
|---|---|
| Int Delay, s/veh | 1.6 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ↕ | | | ↰ | ↗ | | ↕ | | | ↕ | |
| Traffic Vol, veh/h | 23 | 491 | 9 | 15 | 324 | 7 | 8 | 9 | 30 | 2 | 5 | 15 |
| Future Vol, veh/h | 23 | 491 | 9 | 15 | 324 | 7 | 8 | 9 | 30 | 2 | 5 | 15 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | 100 | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 26 | 546 | 10 | 17 | 360 | 8 | 9 | 10 | 33 | 2 | 6 | 17 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 368 | 0 | 0 | 556 | 0 | 0 | 1013 | 1005 | 551 | 1019 | 1002 | 360 |
| Stage 1 | - | - | - | - | - | - | 603 | 603 | - | 394 | 394 | - |
| Stage 2 | - | - | - | - | - | - | 410 | 402 | - | 625 | 608 | - |
| Critical Hdwy | 4.12 | - | - | 4.12 | - | - | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Follow-up Hdwy | 2.218 | - | - | 2.218 | - | - | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 |
| Pot Cap-1 Maneuver | 1191 | - | - | 1015 | - | - | 217 | 241 | 534 | 215 | 242 | 684 |
| Stage 1 | - | - | - | - | - | - | 486 | 488 | - | 631 | 605 | - |
| Stage 2 | - | - | - | - | - | - | 619 | 600 | - | 473 | 486 | - |
| Platoon blocked, % | | - | - | | - | - | | | | | | |
| Mov Cap-1 Maneuver | 1191 | - | - | 1015 | - | - | 199 | 228 | 534 | 187 | 229 | 684 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 199 | 228 | - | 187 | 229 | - |
| Stage 1 | - | - | - | - | - | - | 470 | 472 | - | 611 | 592 | - |
| Stage 2 | - | - | - | - | - | - | 586 | 587 | - | 420 | 470 | - |

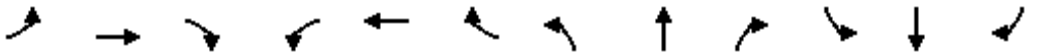
| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0.4 | 0.4 | 17.2 | 14.5 |
| HCM LOS | | | C | B |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 346 | 1191 | - | - | 1015 | - | - | 404 |
| HCM Lane V/C Ratio | 0.151 | 0.021 | - | - | 0.016 | - | - | 0.061 |
| HCM Control Delay (s) | 17.2 | 8.1 | 0 | - | 8.6 | 0 | - | 14.5 |
| HCM Lane LOS | C | A | A | - | A | A | - | B |
| HCM 95th %tile Q(veh) | 0.5 | 0.1 | - | - | 0.1 | - | - | 0.2 |



| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 116 | 418 | 48 | 9 | 331 | 136 | 27 | 11 | 18 | 106 | 24 | 46 |
| Future Volume (vph) | 116 | 418 | 48 | 9 | 331 | 136 | 27 | 11 | 18 | 106 | 24 | 46 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Storage Length (m) | 45.0 | | 0.0 | 60.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 |
| Storage Lanes | 1 | | 0 | 1 | | 0 | 1 | | 0 | 0 | | 0 |
| Taper Length (m) | 30.0 | | | 55.0 | | | 15.0 | | | 15.0 | | |
| 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 |
| Frt | | 0.985 | | | 0.956 | | | 0.906 | | | 0.965 | |
| Flt Protected | 0.950 | | | 0.950 | | | 0.950 | | | | 0.971 | |
| Satd. Flow (prot) | 1492 | 1547 | 0 | 1492 | 1501 | 0 | 1492 | 1423 | 0 | 0 | 1472 | 0 |
| Flt Permitted | 0.421 | | | 0.422 | | | 0.640 | | | | 0.797 | |
| Satd. Flow (perm) | 661 | 1547 | 0 | 663 | 1501 | 0 | 1005 | 1423 | 0 | 0 | 1208 | 0 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | 12 | | | 44 | | | 20 | | | 22 | |
| Link Speed (k/h) | | 50 | | | 50 | | | 50 | | | 50 | |
| Link Distance (m) | | 104.2 | | | 101.3 | | | 60.6 | | | 320.9 | |
| Travel Time (s) | | 7.5 | | | 7.3 | | | 4.4 | | | 23.1 | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Parking (#/hr) | | | 0 | | | 0 | | | | | | |
| Adj. Flow (vph) | 129 | 464 | 53 | 10 | 368 | 151 | 30 | 12 | 20 | 118 | 27 | 51 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 129 | 517 | 0 | 10 | 519 | 0 | 30 | 32 | 0 | 0 | 196 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(m) | | 3.5 | | | 3.5 | | | 3.5 | | | 3.5 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 3.0 | | | 3.0 | | | 3.0 | | | 3.0 | |
| Two way Left Turn Lane | | | | | | | | | | | | |
| Headway Factor | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 |
| Turning Speed (k/h) | 25 | | 15 | 25 | | 15 | 25 | | 15 | 25 | | 15 |
| Number of Detectors | 1 | 2 | | 1 | 2 | | 1 | 2 | | 1 | 2 | |
| Detector Template | Left | Thru | | Left | Thru | | Left | Thru | | Left | Thru | |
| Leading Detector (m) | 2.0 | 10.0 | | 2.0 | 10.0 | | 2.0 | 10.0 | | 2.0 | 10.0 | |
| Trailing Detector (m) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Position(m) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Size(m) | 2.0 | 0.6 | | 2.0 | 0.6 | | 2.0 | 0.6 | | 2.0 | 0.6 | |
| Detector 1 Type | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Queue (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Delay (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 2 Position(m) | | 9.4 | | | 9.4 | | | 9.4 | | | 9.4 | |
| Detector 2 Size(m) | | 0.6 | | | 0.6 | | | 0.6 | | | 0.6 | |
| Detector 2 Type | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 8 | | | 4 | |

| Lane Group | Ø3 | Ø7 |
|---|---|---|
| Lane Configurations | | |
| Traffic Volume (vph) | | |
| Future Volume (vph) | | |
| Ideal Flow (vphpl) | | |
| Storage Length (m) | | |
| Storage Lanes | | |
| Taper Length (m) | | |
| Lane Util. Factor | | |
| Frt | | |
| Flt Protected | | |
| Satd. Flow (prot) | | |
| Flt Permitted | | |
| Satd. Flow (perm) | | |
| Right Turn on Red | | |
| Satd. Flow (RTOR) | | |
| Link Speed (k/h) | | |
| Link Distance (m) | | |
| Travel Time (s) | | |
| Peak Hour Factor | | |
| Parking (#/hr) | | |
| Adj. Flow (vph) | | |
| Shared Lane Traffic (%) | | |
| Lane Group Flow (vph) | | |
| Enter Blocked Intersection | | |
| Lane Alignment | | |
| Median Width(m) | | |
| Link Offset(m) | | |
| Crosswalk Width(m) | | |
| Two way Left Turn Lane | | |
| Headway Factor | | |
| Turning Speed (k/h) | | |
| Number of Detectors | | |
| Detector Template | | |
| Leading Detector (m) | | |
| Trailing Detector (m) | | |
| Detector 1 Position(m) | | |
| Detector 1 Size(m) | | |
| Detector 1 Type | | |
| Detector 1 Channel | | |
| Detector 1 Extend (s) | | |
| Detector 1 Queue (s) | | |
| Detector 1 Delay (s) | | |
| Detector 2 Position(m) | | |
| Detector 2 Size(m) | | |
| Detector 2 Type | | |
| Detector 2 Channel | | |
| Detector 2 Extend (s) | | |
| Turn Type | | |
| Protected Phases | 3 | 7 |



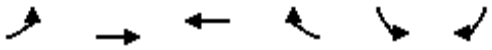
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Permitted Phases | 2 | | | 6 | | | 8 | | | 4 | | |
| Detector Phase | 2 | 2 | | 6 | 6 | | 8 | 8 | | 4 | 4 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 10.0 | 10.0 | | 10.0 | 10.0 | |
| Minimum Split (s) | 24.2 | 24.2 | | 24.2 | 24.2 | | 22.0 | 22.0 | | 22.0 | 22.0 | |
| Total Split (s) | 48.0 | 48.0 | | 48.0 | 48.0 | | 22.0 | 22.0 | | 22.0 | 22.0 | |
| Total Split (%) | 64.0% | 64.0% | | 64.0% | 64.0% | | 29.3% | 29.3% | | 29.3% | 29.3% | |
| Maximum Green (s) | 41.8 | 41.8 | | 41.8 | 41.8 | | 16.5 | 16.5 | | 16.5 | 16.5 | |
| Yellow Time (s) | 3.3 | 3.3 | | 3.3 | 3.3 | | 3.3 | 3.3 | | 3.3 | 3.3 | |
| All-Red Time (s) | 2.9 | 2.9 | | 2.9 | 2.9 | | 2.2 | 2.2 | | 2.2 | 2.2 | |
| Lost Time Adjust (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | | 0.0 | |
| Total Lost Time (s) | 6.2 | 6.2 | | 6.2 | 6.2 | | 5.5 | 5.5 | | | 5.5 | |
| Lead/Lag | | | | | | | Lag | Lag | | Lag | Lag | |
| Lead-Lag Optimize? | | | | | | | Yes | Yes | | Yes | Yes | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Recall Mode | C-Max | C-Max | | C-Max | C-Max | | None | None | | None | None | |
| Walk Time (s) | 7.0 | 7.0 | | 7.0 | 7.0 | | 5.5 | 5.5 | | 5.5 | 5.5 | |
| Flash Dont Walk (s) | 11.0 | 11.0 | | 11.0 | 11.0 | | 11.0 | 11.0 | | 11.0 | 11.0 | |
| Pedestrian Calls (#/hr) | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Act Effct Green (s) | 47.1 | 47.1 | | 47.1 | 47.1 | | 16.2 | 16.2 | | | 16.2 | |
| Actuated g/C Ratio | 0.63 | 0.63 | | 0.63 | 0.63 | | 0.22 | 0.22 | | | 0.22 | |
| v/c Ratio | 0.31 | 0.53 | | 0.02 | 0.54 | | 0.14 | 0.10 | | | 0.71 | |
| Control Delay | 10.4 | 11.1 | | 7.2 | 10.8 | | 23.0 | 13.0 | | | 37.2 | |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | | 0.0 | |
| Total Delay | 10.4 | 11.1 | | 7.2 | 10.8 | | 23.0 | 13.0 | | | 37.2 | |
| LOS | B | B | | A | B | | C | B | | | D | |
| Approach Delay | | 11.0 | | | 10.7 | | | 17.9 | | | 37.2 | |
| Approach LOS | | B | | | B | | | B | | | D | |
| Queue Length 50th (m) | 7.6 | 35.5 | | 0.5 | 33.4 | | 3.4 | 1.3 | | | 22.6 | |
| Queue Length 95th (m) | 20.5 | 71.6 | | 2.5 | 69.8 | | 9.1 | 7.0 | | | 40.3 | |
| Internal Link Dist (m) | | 80.2 | | | 77.3 | | | 36.6 | | | 296.9 | |
| Turn Bay Length (m) | 45.0 | | | 60.0 | | | | | | | | |
| Base Capacity (vph) | 414 | 975 | | 416 | 958 | | 243 | 358 | | | 308 | |
| 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 | 0.31 | 0.53 | | 0.02 | 0.54 | | 0.12 | 0.09 | | | 0.64 | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | CBD | | |
| Cycle Length: 75 | | | |
| Actuated Cycle Length: 75 | | | |
| Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green | | | |
| Natural Cycle: 60 | | | |
| Control Type: Actuated-Coordinated | | | |
| Maximum v/c Ratio: 0.71 | | | |
| Intersection Signal Delay: 14.8 | | Intersection LOS: B | |
| Intersection Capacity Utilization 70.9% | | ICU Level of Service C | |
| Analysis Period (min) 15 | | | |

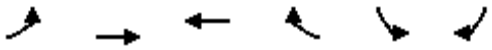
Splits and Phases: 4: McRae Ave & Richmond Rd

| Lane Group | Ø3 | Ø7 |
|---|---|---|
| Permitted Phases | | |
| Detector Phase | | |
| Switch Phase | | |
| Minimum Initial (s) | 3.0 | 3.0 |
| Minimum Split (s) | 5.0 | 5.0 |
| Total Split (s) | 5.0 | 5.0 |
| Total Split (%) | 7% | 7% |
| Maximum Green (s) | 3.0 | 3.0 |
| Yellow Time (s) | 2.0 | 2.0 |
| All-Red Time (s) | 0.0 | 0.0 |
| Lost Time Adjust (s) | | |
| Total Lost Time (s) | | |
| Lead/Lag | Lead | Lead |
| Lead-Lag Optimize? | Yes | Yes |
| Vehicle Extension (s) | 3.0 | 3.0 |
| Recall Mode | None | None |
| Walk Time (s) | | |
| Flash Dont Walk (s) | | |
| Pedestrian Calls (#/hr) | | |
| Act Effct Green (s) | | |
| Actuated g/C Ratio | | |
| v/c Ratio | | |
| Control Delay | | |
| Queue Delay | | |
| Total Delay | | |
| LOS | | |
| Approach Delay | | |
| Approach LOS | | |
| Queue Length 50th (m) | | |
| Queue Length 95th (m) | | |
| Internal Link Dist (m) | | |
| Turn Bay Length (m) | | |
| Base Capacity (vph) | | |
| Starvation Cap Reductn | | |
| Spillback Cap Reductn | | |
| Storage Cap Reductn | | |
| Reduced v/c Ratio | | |

| Intersection Summary |
|---|



| Lane Group | EBL | EBT | WBT | WBR | SBL | SBR | Ø4 |
|---|---|---|---|---|---|---|---|
| Lane Configurations | | ↑ | ↑ | | | | |
| Traffic Volume (vph) | 0 | 612 | 334 | 0 | 0 | 0 | |
| Future Volume (vph) | 0 | 612 | 334 | 0 | 0 | 0 | |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| Frt | | | | | | | |
| Flt Protected | | | | | | | |
| Satd. Flow (prot) | 0 | 1745 | 1745 | 0 | 0 | 0 | |
| Flt Permitted | | | | | | | |
| Satd. Flow (perm) | 0 | 1745 | 1745 | 0 | 0 | 0 | |
| Right Turn on Red | | | | No | | Yes | |
| Satd. Flow (RTOR) | | | | | | | |
| Link Speed (k/h) | | 50 | 50 | | 50 | | |
| Link Distance (m) | | 22.1 | 57.4 | | 18.9 | | |
| Travel Time (s) | | 1.6 | 4.1 | | 1.4 | | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | |
| Adj. Flow (vph) | 0 | 680 | 371 | 0 | 0 | 0 | |
| Shared Lane Traffic (%) | | | | | | | |
| Lane Group Flow (vph) | 0 | 680 | 371 | 0 | 0 | 0 | |
| Enter Blocked Intersection | No | No | No | No | No | No | |
| Lane Alignment | Left | Left | Left | Right | Left | Right | |
| Median Width(m) | | 0.0 | 0.0 | | 0.0 | | |
| Link Offset(m) | | 0.0 | 0.0 | | 0.0 | | |
| Crosswalk Width(m) | | 3.0 | 3.0 | | 3.0 | | |
| Two way Left Turn Lane | | | | | | | |
| Headway Factor | 1.09 | 1.09 | 1.09 | 1.09 | 1.09 | 1.09 | |
| Turning Speed (k/h) | 25 | | | 15 | 25 | 15 | |
| Number of Detectors | | 2 | 2 | | | | |
| Detector Template | | Thru | Thru | | | | |
| Leading Detector (m) | | 10.0 | 10.0 | | | | |
| Trailing Detector (m) | | 0.0 | 0.0 | | | | |
| Detector 1 Position(m) | | 0.0 | 0.0 | | | | |
| Detector 1 Size(m) | | 0.6 | 0.6 | | | | |
| Detector 1 Type | | Cl+Ex | Cl+Ex | | | | |
| Detector 1 Channel | | | | | | | |
| Detector 1 Extend (s) | | 0.0 | 0.0 | | | | |
| Detector 1 Queue (s) | | 0.0 | 0.0 | | | | |
| Detector 1 Delay (s) | | 0.0 | 0.0 | | | | |
| Detector 2 Position(m) | | 9.4 | 9.4 | | | | |
| Detector 2 Size(m) | | 0.6 | 0.6 | | | | |
| Detector 2 Type | | Cl+Ex | Cl+Ex | | | | |
| Detector 2 Channel | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | 0.0 | | | | |
| Turn Type | | NA | NA | | | | |
| Protected Phases | | 2 | 6 | | | | 4 |
| Permitted Phases | | | | | | | |
| Detector Phase | | 2 | 6 | | | | |
| Switch Phase | | | | | | | |
| Minimum Initial (s) | | 5.0 | 5.0 | | | | 10.0 |

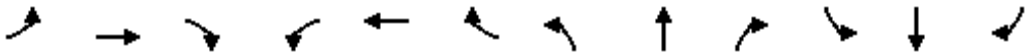


| Lane Group | EBL | EBT | WBT | WBR | SBL | SBR | Ø4 |
|---|---|---|---|---|---|---|---|
| Minimum Split (s) | | 23.8 | 23.8 | | | | 22.0 |
| Total Split (s) | | 30.8 | 30.8 | | | | 24.0 |
| Total Split (%) | | 56.2% | 56.2% | | | | 44% |
| Maximum Green (s) | | 25.0 | 25.0 | | | | 20.0 |
| Yellow Time (s) | | 3.3 | 3.3 | | | | 3.0 |
| All-Red Time (s) | | 2.5 | 2.5 | | | | 1.0 |
| Lost Time Adjust (s) | | 0.0 | 0.0 | | | | |
| Total Lost Time (s) | | 5.8 | 5.8 | | | | |
| Lead/Lag | | | | | | | |
| Lead-Lag Optimize? | | | | | | | |
| Vehicle Extension (s) | | 3.0 | 3.0 | | | | 3.0 |
| Recall Mode | | C-Max | C-Max | | | | None |
| Walk Time (s) | | 7.0 | 7.0 | | | | 7.0 |
| Flash Dont Walk (s) | | 11.0 | 11.0 | | | | 11.0 |
| Pedestrian Calls (#/hr) | | 0 | 0 | | | | 122 |
| Act Effct Green (s) | | 32.6 | 32.6 | | | | |
| Actuated g/C Ratio | | 0.59 | 0.59 | | | | |
| v/c Ratio | | 0.66 | 0.36 | | | | |
| Control Delay | | 15.4 | 9.6 | | | | |
| Queue Delay | | 0.0 | 0.0 | | | | |
| Total Delay | | 15.4 | 9.6 | | | | |
| LOS | | B | A | | | | |
| Approach Delay | | 15.4 | 9.6 | | | | |
| Approach LOS | | B | A | | | | |
| Queue Length 50th (m) | | 51.3 | 21.7 | | | | |
| Queue Length 95th (m) | | #106.3 | 38.5 | | | | |
| Internal Link Dist (m) | | 0.1 | 33.4 | | 0.1 | | |
| Turn Bay Length (m) | | | | | | | |
| Base Capacity (vph) | | 1036 | 1036 | | | | |
| Starvation Cap Reductn | | 0 | 0 | | | | |
| Spillback Cap Reductn | | 0 | 0 | | | | |
| Storage Cap Reductn | | 0 | 0 | | | | |
| Reduced v/c Ratio | | 0.66 | 0.36 | | | | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Cycle Length: 54.8 | | | |
| Actuated Cycle Length: 54.8 | | | |
| Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green | | | |
| Natural Cycle: 60 | | | |
| Control Type: Actuated-Coordinated | | | |
| Maximum v/c Ratio: 0.66 | | | |
| Intersection Signal Delay: 13.4 | | Intersection LOS: B | |
| Intersection Capacity Utilization 38.8% | | ICU Level of Service A | |
| Analysis Period (min) 15 | | | |

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

Splits and Phases: 6: Scott St & Pedestrian Crossing



| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 0 | 478 | 8 | 16 | 527 | 6 | 12 | 0 | 35 | 6 | 0 | 1 |
| Future Volume (vph) | 0 | 478 | 8 | 16 | 527 | 6 | 12 | 0 | 35 | 6 | 0 | 1 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| 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 |
| Frt | | 0.998 | | | 0.999 | | | 0.899 | | | 0.981 | |
| Flt Protected | | | | | 0.999 | | | 0.987 | | | 0.959 | |
| Satd. Flow (prot) | 0 | 1567 | 0 | 0 | 1551 | 0 | 0 | 1394 | 0 | 0 | 754 | 0 |
| Flt Permitted | | | | | 0.999 | | | 0.987 | | | 0.959 | |
| Satd. Flow (perm) | 0 | 1567 | 0 | 0 | 1551 | 0 | 0 | 1394 | 0 | 0 | 754 | 0 |
| Link Speed (k/h) | | 50 | | | 50 | | | 50 | | | 50 | |
| Link Distance (m) | | 78.0 | | | 22.1 | | | 319.9 | | | 53.1 | |
| Travel Time (s) | | 5.6 | | | 1.6 | | | 23.0 | | | 3.8 | |
| Peak Hour Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Heavy Vehicles (%) | 100% | 2% | 2% | 2% | 2% | 100% | 2% | 100% | 2% | 100% | 100% | 100% |
| Parking (#/hr) | | | 0 | | | 0 | | | 0 | | | 0 |
| Adj. Flow (vph) | 0 | 478 | 8 | 16 | 527 | 6 | 12 | 0 | 35 | 6 | 0 | 1 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 486 | 0 | 0 | 549 | 0 | 0 | 47 | 0 | 0 | 7 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 3.0 | | | 3.0 | | | 3.0 | | | 3.0 | |
| Two way Left Turn Lane | | | | | | | | | | | | |
| Headway Factor | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 |
| Turning Speed (k/h) | 25 | | 15 | 25 | | 15 | 25 | | 15 | 25 | | 15 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | CBD | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization 58.1% | | ICU Level of Service B | |
| Analysis Period (min) 15 | | | |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ⇕ | | | ⇕ | | | ⇕ | | | ⇕ | |
| Traffic Vol, veh/h | 0 | 478 | 8 | 16 | 527 | 6 | 12 | 0 | 35 | 6 | 0 | 1 |
| Future Vol, veh/h | 0 | 478 | 8 | 16 | 527 | 6 | 12 | 0 | 35 | 6 | 0 | 1 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Heavy Vehicles, % | 100 | 2 | 2 | 2 | 2 | 100 | 2 | 100 | 2 | 100 | 100 | 100 |
| Mvmt Flow | 0 | 478 | 8 | 16 | 527 | 6 | 12 | 0 | 35 | 6 | 0 | 1 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 533 | 0 | 0 | 486 | 0 | 0 | 1045 | 1047 | 482 | 1062 | 1048 | 530 |
| Stage 1 | - | - | - | - | - | - | 482 | 482 | - | 562 | 562 | - |
| Stage 2 | - | - | - | - | - | - | 563 | 565 | - | 500 | 486 | - |
| Critical Hdwy | 5.1 | - | - | 4.12 | - | - | 7.12 | 7.5 | 6.22 | 8.1 | 7.5 | 7.2 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.12 | 6.5 | - | 7.1 | 6.5 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.12 | 6.5 | - | 7.1 | 6.5 | - |
| Follow-up Hdwy | 3.1 | - | - | 2.218 | - | - | 3.518 | 4.9 | 3.318 | 4.4 | 4.9 | 4.2 |
| Pot Cap-1 Maneuver | 681 | - | - | 1077 | - | - | 207 | 156 | 584 | 134 | 155 | 398 |
| Stage 1 | - | - | - | - | - | - | 565 | 420 | - | 373 | 381 | - |
| Stage 2 | - | - | - | - | - | - | 511 | 380 | - | 408 | 418 | - |
| Platoon blocked, % | | - | - | | - | - | | | | | | |
| Mov Cap-1 Maneuver | 681 | - | - | 1077 | - | - | 203 | 153 | 584 | 124 | 152 | 398 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 203 | 153 | - | 124 | 152 | - |
| Stage 1 | - | - | - | - | - | - | 565 | 420 | - | 373 | 373 | - |
| Stage 2 | - | - | - | - | - | - | 499 | 372 | - | 384 | 418 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0 | 0.2 | 15.3 | 32.5 |
| HCM LOS | | | C | D |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 395 | 681 | - | - | 1077 | - | - | 138 |
| HCM Lane V/C Ratio | 0.119 | - | - | - | 0.015 | - | - | 0.051 |
| HCM Control Delay (s) | 15.3 | 0 | - | - | 8.4 | 0 | - | 32.5 |
| HCM Lane LOS | C | A | - | - | A | A | - | D |
| HCM 95th %tile Q(veh) | 0.4 | 0 | - | - | 0 | - | - | 0.2 |

| Lane Group | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (vph) | 472 | 48 | 130 | 511 | 38 | 214 |
| Future Volume (vph) | 472 | 48 | 130 | 511 | 38 | 214 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 0.988 | | | | 0.885 | |
| Flt Protected | | | | 0.990 | 0.993 | |
| Satd. Flow (prot) | 1552 | 0 | 0 | 1399 | 1380 | 0 |
| Flt Permitted | | | | 0.990 | 0.993 | |
| Satd. Flow (perm) | 1552 | 0 | 0 | 1399 | 1380 | 0 |
| Link Speed (k/h) | 50 | | | 50 | 50 | |
| Link Distance (m) | 57.4 | | | 138.5 | 320.9 | |
| Travel Time (s) | 4.1 | | | 10.0 | 23.1 | |
| Peak Hour Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Parking (#/hr) | | 0 | | 0 | | |
| Adj. Flow (vph) | 472 | 48 | 130 | 511 | 38 | 214 |
| Shared Lane Traffic (%) | | | | | | |
| Lane Group Flow (vph) | 520 | 0 | 0 | 641 | 252 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No |
| Lane Alignment | Left | Right | Left | Left | Left | Right |
| Median Width(m) | 0.0 | | | 0.0 | 3.5 | |
| Link Offset(m) | 0.0 | | | 0.0 | 0.0 | |
| Crosswalk Width(m) | 3.0 | | | 3.0 | 3.0 | |
| Two way Left Turn Lane | | | | | | |
| Headway Factor | 1.24 | 1.24 | 1.24 | 1.41 | 1.24 | 1.24 |
| Turning Speed (k/h) | | 15 | 25 | | 25 | 15 |
| Sign Control | Free | | | Free | Stop | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | CBD | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization 100.5% | | ICU Level of Service G | |
| Analysis Period (min) 15 | | | |

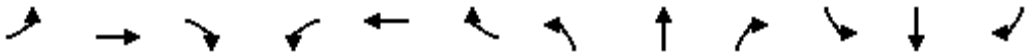
| Intersection | |
|---|---|
| Int Delay, s/veh | 5.7 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 472 | 48 | 130 | 511 | 38 | 214 |
| Future Vol, veh/h | 472 | 48 | 130 | 511 | 38 | 214 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 100 | 100 | 100 | 100 | 100 | 100 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 472 | 48 | 130 | 511 | 38 | 214 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 520 | 0 | 1267 | 496 |
| Stage 1 | - | - | - | - | 496 | - |
| Stage 2 | - | - | - | - | 771 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 1046 | - | 186 | 574 |
| Stage 1 | - | - | - | - | 612 | - |
| Stage 2 | - | - | - | - | 456 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1046 | - | 154 | 574 |
| Mov Cap-2 Maneuver | - | - | - | - | 154 | - |
| Stage 1 | - | - | - | - | 612 | - |
| Stage 2 | - | - | - | - | 377 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 1.8 | 27.2 |
| HCM LOS | | | D |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | 407 | - | - | 1046 | - |
| HCM Lane V/C Ratio | 0.619 | - | - | 0.124 | - |
| HCM Control Delay (s) | 27.2 | - | - | 8.9 | 0 |
| HCM Lane LOS | D | - | - | A | A |
| HCM 95th %tile Q(veh) | 4 | - | - | 0.4 | - |



| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 30 | 451 | 20 | 82 | 707 | 12 | 4 | 7 | 37 | 9 | 11 | 18 |
| Future Volume (vph) | 30 | 451 | 20 | 82 | 707 | 12 | 4 | 7 | 37 | 9 | 11 | 18 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Storage Length (m) | 0.0 | | 0.0 | 0.0 | | 10.0 | 0.0 | | 0.0 | 0.0 | | 0.0 |
| Storage Lanes | 0 | | 0 | 0 | | 1 | 0 | | 0 | 0 | | 0 |
| Taper Length (m) | 15.0 | | | 15.0 | | | 15.0 | | | 15.0 | | |
| 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 |
| Frt | | 0.995 | | | | 0.850 | | 0.896 | | | 0.936 | |
| Flt Protected | | 0.997 | | | 0.995 | | | 0.996 | | | 0.988 | |
| Satd. Flow (prot) | 0 | 1558 | 0 | 0 | 1563 | 1201 | 0 | 1402 | 0 | 0 | 1452 | 0 |
| Flt Permitted | | 0.997 | | | 0.995 | | | 0.996 | | | 0.988 | |
| Satd. Flow (perm) | 0 | 1558 | 0 | 0 | 1563 | 1201 | 0 | 1402 | 0 | 0 | 1452 | 0 |
| Link Speed (k/h) | | 50 | | | 50 | | | 50 | | | 50 | |
| Link Distance (m) | | 72.3 | | | 104.2 | | | 72.7 | | | 319.9 | |
| Travel Time (s) | | 5.2 | | | 7.5 | | | 5.2 | | | 23.0 | |
| Peak Hour Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Parking (#/hr) | | | 0 | | | 0 | | | 0 | | | 0 |
| Adj. Flow (vph) | 30 | 451 | 20 | 82 | 707 | 12 | 4 | 7 | 37 | 9 | 11 | 18 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 501 | 0 | 0 | 789 | 12 | 0 | 48 | 0 | 0 | 38 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(m) | | 3.5 | | | 3.5 | | | 0.0 | | | 0.0 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 3.0 | | | 3.0 | | | 3.0 | | | 3.0 | |
| Two way Left Turn Lane | | | | | | | | | | | | |
| Headway Factor | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.41 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 |
| Turning Speed (k/h) | 25 | | 15 | 25 | | 15 | 25 | | 15 | 25 | | 15 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | CBD | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization 86.3% | | ICU Level of Service E | |
| Analysis Period (min) 15 | | | |

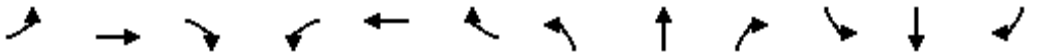
| Intersection | |
|---|---|
| Int Delay, s/veh | 2.4 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ↕ | | | ↰ | ↱ | | ↕ | | | ↕ | |
| Traffic Vol, veh/h | 30 | 451 | 20 | 82 | 707 | 12 | 4 | 7 | 37 | 9 | 11 | 18 |
| Future Vol, veh/h | 30 | 451 | 20 | 82 | 707 | 12 | 4 | 7 | 37 | 9 | 11 | 18 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | 100 | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 30 | 451 | 20 | 82 | 707 | 12 | 4 | 7 | 37 | 9 | 11 | 18 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 719 | 0 | 0 | 471 | 0 | 0 | 1413 | 1404 | 461 | 1414 | 1402 | 707 |
| Stage 1 | - | - | - | - | - | - | 521 | 521 | - | 871 | 871 | - |
| Stage 2 | - | - | - | - | - | - | 892 | 883 | - | 543 | 531 | - |
| Critical Hdwy | 4.12 | - | - | 4.12 | - | - | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Follow-up Hdwy | 2.218 | - | - | 2.218 | - | - | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 |
| Pot Cap-1 Maneuver | 882 | - | - | 1091 | - | - | 115 | 140 | 600 | 115 | 140 | 435 |
| Stage 1 | - | - | - | - | - | - | 539 | 532 | - | 346 | 368 | - |
| Stage 2 | - | - | - | - | - | - | 337 | 364 | - | 524 | 526 | - |
| Platoon blocked, % | | - | - | | - | - | | | | | | |
| Mov Cap-1 Maneuver | 882 | - | - | 1091 | - | - | 89 | 117 | 600 | 90 | 117 | 435 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 89 | 117 | - | 90 | 117 | - |
| Stage 1 | - | - | - | - | - | - | 514 | 508 | - | 330 | 322 | - |
| Stage 2 | - | - | - | - | - | - | 273 | 319 | - | 463 | 502 | - |

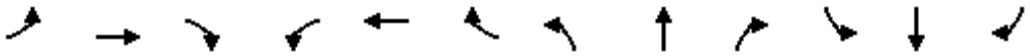
| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0.6 | 0.9 | 20 | 34.1 |
| HCM LOS | | | C | D |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 288 | 882 | - | - | 1091 | - | - | 161 |
| HCM Lane V/C Ratio | 0.167 | 0.034 | - | - | 0.075 | - | - | 0.236 |
| HCM Control Delay (s) | 20 | 9.2 | 0 | - | 8.6 | 0 | - | 34.1 |
| HCM Lane LOS | C | A | A | - | A | A | - | D |
| HCM 95th %tile Q(veh) | 0.6 | 0.1 | - | - | 0.2 | - | - | 0.9 |



| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 90 | 331 | 87 | 52 | 701 | 175 | 80 | 66 | 55 | 111 | 43 | 149 |
| Future Volume (vph) | 90 | 331 | 87 | 52 | 701 | 175 | 80 | 66 | 55 | 111 | 43 | 149 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Storage Length (m) | 45.0 | | 0.0 | 60.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 |
| Storage Lanes | 1 | | 0 | 1 | | 0 | 1 | | 0 | 0 | | 0 |
| Taper Length (m) | 30.0 | | | 55.0 | | | 15.0 | | | 15.0 | | |
| 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 |
| Frt | | 0.969 | | | 0.970 | | | 0.932 | | | 0.934 | |
| Flt Protected | 0.950 | | | 0.950 | | | 0.950 | | | | 0.982 | |
| Satd. Flow (prot) | 1492 | 1522 | 0 | 1492 | 1523 | 0 | 1492 | 1464 | 0 | 0 | 1441 | 0 |
| Flt Permitted | 0.209 | | | 0.389 | | | 0.486 | | | | 0.830 | |
| Satd. Flow (perm) | 328 | 1522 | 0 | 611 | 1523 | 0 | 763 | 1464 | 0 | 0 | 1218 | 0 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | 19 | | | 23 | | | 50 | | | 58 | |
| Link Speed (k/h) | | 50 | | | 50 | | | 50 | | | 50 | |
| Link Distance (m) | | 104.2 | | | 101.3 | | | 60.6 | | | 320.9 | |
| Travel Time (s) | | 7.5 | | | 7.3 | | | 4.4 | | | 23.1 | |
| Peak Hour Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Parking (#/hr) | | | 0 | | | 0 | | | | | | |
| Adj. Flow (vph) | 90 | 331 | 87 | 52 | 701 | 175 | 80 | 66 | 55 | 111 | 43 | 149 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 90 | 418 | 0 | 52 | 876 | 0 | 80 | 121 | 0 | 0 | 303 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(m) | | 3.5 | | | 3.5 | | | 3.5 | | | 3.5 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 3.0 | | | 3.0 | | | 3.0 | | | 3.0 | |
| Two way Left Turn Lane | | | | | | | | | | | | |
| Headway Factor | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 |
| Turning Speed (k/h) | 25 | | 15 | 25 | | 15 | 25 | | 15 | 25 | | 15 |
| Number of Detectors | 1 | 2 | | 1 | 2 | | 1 | 2 | | 1 | 2 | |
| Detector Template | Left | Thru | | Left | Thru | | Left | Thru | | Left | Thru | |
| Leading Detector (m) | 2.0 | 10.0 | | 2.0 | 10.0 | | 2.0 | 10.0 | | 2.0 | 10.0 | |
| Trailing Detector (m) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Position(m) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Size(m) | 2.0 | 0.6 | | 2.0 | 0.6 | | 2.0 | 0.6 | | 2.0 | 0.6 | |
| Detector 1 Type | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Queue (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Delay (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 2 Position(m) | | 9.4 | | | 9.4 | | | 9.4 | | | 9.4 | |
| Detector 2 Size(m) | | 0.6 | | | 0.6 | | | 0.6 | | | 0.6 | |
| Detector 2 Type | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Turn Type | Perm | NA | | pm+pt | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | 1 | 6 | | | 8 | | | 4 | |

| Lane Group | Ø3 | Ø7 |
|---|---|---|
| Lane Configurations | | |
| Traffic Volume (vph) | | |
| Future Volume (vph) | | |
| Ideal Flow (vphpl) | | |
| Storage Length (m) | | |
| Storage Lanes | | |
| Taper Length (m) | | |
| Lane Util. Factor | | |
| Frt | | |
| Flt Protected | | |
| Satd. Flow (prot) | | |
| Flt Permitted | | |
| Satd. Flow (perm) | | |
| Right Turn on Red | | |
| Satd. Flow (RTOR) | | |
| Link Speed (k/h) | | |
| Link Distance (m) | | |
| Travel Time (s) | | |
| Peak Hour Factor | | |
| Parking (#/hr) | | |
| Adj. Flow (vph) | | |
| Shared Lane Traffic (%) | | |
| Lane Group Flow (vph) | | |
| Enter Blocked Intersection | | |
| Lane Alignment | | |
| Median Width(m) | | |
| Link Offset(m) | | |
| Crosswalk Width(m) | | |
| Two way Left Turn Lane | | |
| Headway Factor | | |
| Turning Speed (k/h) | | |
| Number of Detectors | | |
| Detector Template | | |
| Leading Detector (m) | | |
| Trailing Detector (m) | | |
| Detector 1 Position(m) | | |
| Detector 1 Size(m) | | |
| Detector 1 Type | | |
| Detector 1 Channel | | |
| Detector 1 Extend (s) | | |
| Detector 1 Queue (s) | | |
| Detector 1 Delay (s) | | |
| Detector 2 Position(m) | | |
| Detector 2 Size(m) | | |
| Detector 2 Type | | |
| Detector 2 Channel | | |
| Detector 2 Extend (s) | | |
| Turn Type | | |
| Protected Phases | 3 | 7 |



| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Permitted Phases | 2 | | | 6 | | | 8 | | | 4 | | |
| Detector Phase | 2 | 2 | | 1 | 6 | | 8 | 8 | | 4 | 4 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 10.0 | 10.0 | | 10.0 | 10.0 | |
| Minimum Split (s) | 22.5 | 22.5 | | 9.5 | 22.5 | | 22.5 | 22.5 | | 22.5 | 22.5 | |
| Total Split (s) | 40.0 | 40.0 | | 11.0 | 51.0 | | 29.0 | 29.0 | | 29.0 | 29.0 | |
| Total Split (%) | 47.1% | 47.1% | | 12.9% | 60.0% | | 34.1% | 34.1% | | 34.1% | 34.1% | |
| Maximum Green (s) | 35.5 | 35.5 | | 6.5 | 46.5 | | 24.5 | 24.5 | | 24.5 | 24.5 | |
| Yellow Time (s) | 3.5 | 3.5 | | 3.5 | 3.5 | | 3.5 | 3.5 | | 3.5 | 3.5 | |
| All-Red Time (s) | 1.0 | 1.0 | | 1.0 | 1.0 | | 1.0 | 1.0 | | 1.0 | 1.0 | |
| Lost Time Adjust (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | | 0.0 | |
| Total Lost Time (s) | 4.5 | 4.5 | | 4.5 | 4.5 | | 4.5 | 4.5 | | | 4.5 | |
| Lead/Lag | Lag | Lag | | Lead | | | Lag | Lag | | Lag | Lag | |
| Lead-Lag Optimize? | Yes | Yes | | Yes | | | Yes | Yes | | Yes | Yes | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Recall Mode | C-Max | C-Max | | None | C-Max | | None | None | | None | None | |
| Walk Time (s) | 7.0 | 7.0 | | | 7.0 | | 7.0 | 7.0 | | 7.0 | 7.0 | |
| Flash Dont Walk (s) | 11.0 | 11.0 | | | 11.0 | | 11.0 | 11.0 | | 11.0 | 11.0 | |
| Pedestrian Calls (#/hr) | 0 | 0 | | | 0 | | 0 | 0 | | 0 | 0 | |
| Act Effct Green (s) | 46.4 | 46.4 | | 53.2 | 53.2 | | 22.8 | 22.8 | | | 22.8 | |
| Actuated g/C Ratio | 0.55 | 0.55 | | 0.63 | 0.63 | | 0.27 | 0.27 | | | 0.27 | |
| v/c Ratio | 0.51 | 0.50 | | 0.12 | 0.91 | | 0.39 | 0.28 | | | 0.82 | |
| Control Delay | 31.6 | 17.2 | | 8.6 | 31.8 | | 29.2 | 15.1 | | | 41.0 | |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | | 0.0 | |
| Total Delay | 31.6 | 17.2 | | 8.6 | 31.8 | | 29.2 | 15.1 | | | 41.0 | |
| LOS | C | B | | A | C | | C | B | | | D | |
| Approach Delay | | 19.8 | | | 30.5 | | | 20.7 | | | 41.0 | |
| Approach LOS | | B | | | C | | | C | | | D | |
| Queue Length 50th (m) | 9.9 | 43.7 | | 3.1 | 113.2 | | 10.4 | 8.7 | | | 37.0 | |
| Queue Length 95th (m) | #35.8 | 81.2 | | 8.6 | #223.2 | | 20.8 | 19.5 | | | 61.3 | |
| Internal Link Dist (m) | | 80.2 | | | 77.3 | | | 36.6 | | | 296.9 | |
| Turn Bay Length (m) | 45.0 | | | 60.0 | | | | | | | | |
| Base Capacity (vph) | 178 | 839 | | 451 | 961 | | 233 | 484 | | | 414 | |
| 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 | 0.50 | | 0.12 | 0.91 | | 0.34 | 0.25 | | | 0.73 | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | CBD | | |
| Cycle Length: 85 | | | |
| Actuated Cycle Length: 85 | | | |
| Offset: 1 (1%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green | | | |
| Natural Cycle: 90 | | | |
| Control Type: Actuated-Coordinated | | | |
| Maximum v/c Ratio: 0.91 | | | |
| Intersection Signal Delay: 28.3 | | Intersection LOS: C | |
| Intersection Capacity Utilization 105.5% | | ICU Level of Service G | |
| Analysis Period (min) 15 | | | |

| Lane Group | Ø3 | Ø7 |
|---|---|---|
| Permitted Phases | | |
| Detector Phase | | |
| Switch Phase | | |
| Minimum Initial (s) | 3.0 | 3.0 |
| Minimum Split (s) | 5.0 | 5.0 |
| Total Split (s) | 5.0 | 5.0 |
| Total Split (%) | 6% | 6% |
| Maximum Green (s) | 3.0 | 3.0 |
| Yellow Time (s) | 2.0 | 2.0 |
| All-Red Time (s) | 0.0 | 0.0 |
| Lost Time Adjust (s) | | |
| Total Lost Time (s) | | |
| Lead/Lag | Lead | Lead |
| Lead-Lag Optimize? | Yes | Yes |
| Vehicle Extension (s) | 3.0 | 3.0 |
| Recall Mode | None | None |
| Walk Time (s) | | |
| Flash Dont Walk (s) | | |
| Pedestrian Calls (#/hr) | | |
| Act Effct Green (s) | | |
| Actuated g/C Ratio | | |
| v/c Ratio | | |
| Control Delay | | |
| Queue Delay | | |
| Total Delay | | |
| LOS | | |
| Approach Delay | | |
| Approach LOS | | |
| Queue Length 50th (m) | | |
| Queue Length 95th (m) | | |
| Internal Link Dist (m) | | |
| Turn Bay Length (m) | | |
| Base Capacity (vph) | | |
| Starvation Cap Reductn | | |
| Spillback Cap Reductn | | |
| Storage Cap Reductn | | |
| Reduced v/c Ratio | | |

| Intersection Summary |
|---|

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

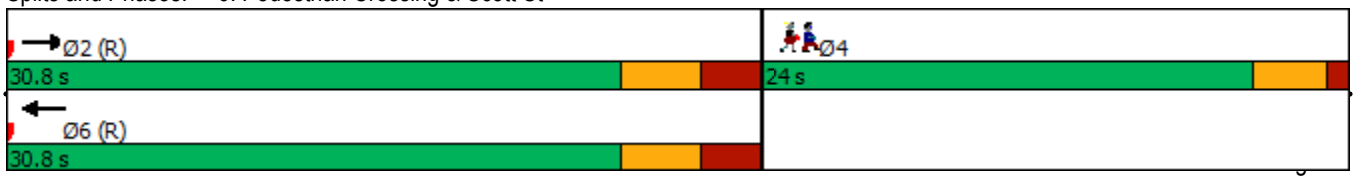
Splits and Phases: 4: McRae Ave & Richmond Rd

| Lane Group | EBT | EBR | WBL | WBT | NBL | NBR | Ø4 |
|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | |
| Traffic Volume (vph) | 519 | 0 | 0 | 549 | 0 | 0 | |
| Future Volume (vph) | 519 | 0 | 0 | 549 | 0 | 0 | |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| Frt | | | | | | | |
| Flt Protected | | | | | | | |
| Satd. Flow (prot) | 1745 | 0 | 0 | 1745 | 0 | 0 | |
| Flt Permitted | | | | | | | |
| Satd. Flow (perm) | 1745 | 0 | 0 | 1745 | 0 | 0 | |
| Right Turn on Red | | Yes | | | | Yes | |
| Satd. Flow (RTOR) | | | | | | | |
| Link Speed (k/h) | 50 | | | 50 | 50 | | |
| Link Distance (m) | 22.1 | | | 57.4 | 22.8 | | |
| Travel Time (s) | 1.6 | | | 4.1 | 1.6 | | |
| Peak Hour Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| Adj. Flow (vph) | 519 | 0 | 0 | 549 | 0 | 0 | |
| Shared Lane Traffic (%) | | | | | | | |
| Lane Group Flow (vph) | 519 | 0 | 0 | 549 | 0 | 0 | |
| Enter Blocked Intersection | No | No | No | No | No | No | |
| Lane Alignment | Left | Right | Left | Left | Left | Right | |
| Median Width(m) | 0.0 | | | 0.0 | 0.0 | | |
| Link Offset(m) | 0.0 | | | 0.0 | 0.0 | | |
| Crosswalk Width(m) | 3.0 | | | 3.0 | 3.0 | | |
| Two way Left Turn Lane | | | | | | | |
| Headway Factor | 1.09 | 1.09 | 1.09 | 1.09 | 1.09 | 1.09 | |
| Turning Speed (k/h) | | 15 | 25 | | 25 | 15 | |
| Number of Detectors | 2 | | | 2 | | | |
| Detector Template | Thru | | | Thru | | | |
| Leading Detector (m) | 10.0 | | | 10.0 | | | |
| Trailing Detector (m) | 0.0 | | | 0.0 | | | |
| Detector 1 Position(m) | 0.0 | | | 0.0 | | | |
| Detector 1 Size(m) | 0.6 | | | 0.6 | | | |
| Detector 1 Type | Cl+Ex | | | Cl+Ex | | | |
| Detector 1 Channel | | | | | | | |
| Detector 1 Extend (s) | 0.0 | | | 0.0 | | | |
| Detector 1 Queue (s) | 0.0 | | | 0.0 | | | |
| Detector 1 Delay (s) | 0.0 | | | 0.0 | | | |
| Detector 2 Position(m) | 9.4 | | | 9.4 | | | |
| Detector 2 Size(m) | 0.6 | | | 0.6 | | | |
| Detector 2 Type | Cl+Ex | | | Cl+Ex | | | |
| Detector 2 Channel | | | | | | | |
| Detector 2 Extend (s) | 0.0 | | | 0.0 | | | |
| Turn Type | NA | | | NA | | | |
| Protected Phases | 2 | | | 6 | | | 4 |
| Permitted Phases | | | | | | | |
| Detector Phase | 2 | | | 6 | | | |
| Switch Phase | | | | | | | |
| Minimum Initial (s) | 5.0 | | | 5.0 | | | 10.0 |

| Lane Group | EBT | EBR | WBL | WBT | NBL | NBR | Ø4 |
|---|---|---|---|---|---|---|---|
| Minimum Split (s) | 23.8 | | | 23.8 | | | 22.0 |
| Total Split (s) | 30.8 | | | 30.8 | | | 24.0 |
| Total Split (%) | 56.2% | | | 56.2% | | | 44% |
| Maximum Green (s) | 25.0 | | | 25.0 | | | 20.0 |
| Yellow Time (s) | 3.3 | | | 3.3 | | | 3.0 |
| All-Red Time (s) | 2.5 | | | 2.5 | | | 1.0 |
| Lost Time Adjust (s) | 0.0 | | | 0.0 | | | |
| Total Lost Time (s) | 5.8 | | | 5.8 | | | |
| Lead/Lag | | | | | | | |
| Lead-Lag Optimize? | | | | | | | |
| Vehicle Extension (s) | 3.0 | | | 3.0 | | | 3.0 |
| Recall Mode | C-Max | | | C-Max | | | None |
| Walk Time (s) | 7.0 | | | 7.0 | | | 7.0 |
| Flash Dont Walk (s) | 11.0 | | | 11.0 | | | 11.0 |
| Pedestrian Calls (#/hr) | 0 | | | 0 | | | 187 |
| Act Effct Green (s) | 32.6 | | | 32.6 | | | |
| Actuated g/C Ratio | 0.59 | | | 0.59 | | | |
| v/c Ratio | 0.50 | | | 0.53 | | | |
| Control Delay | 11.4 | | | 11.9 | | | |
| Queue Delay | 0.0 | | | 0.0 | | | |
| Total Delay | 11.4 | | | 11.9 | | | |
| LOS | B | | | B | | | |
| Approach Delay | 11.4 | | | 11.9 | | | |
| Approach LOS | B | | | B | | | |
| Queue Length 50th (m) | 34.0 | | | 36.9 | | | |
| Queue Length 95th (m) | 59.4 | | | 64.2 | | | |
| Internal Link Dist (m) | 0.1 | | | 33.4 | 0.1 | | |
| Turn Bay Length (m) | | | | | | | |
| Base Capacity (vph) | 1036 | | | 1036 | | | |
| Starvation Cap Reductn | 0 | | | 0 | | | |
| Spillback Cap Reductn | 0 | | | 0 | | | |
| Storage Cap Reductn | 0 | | | 0 | | | |
| Reduced v/c Ratio | 0.50 | | | 0.53 | | | |

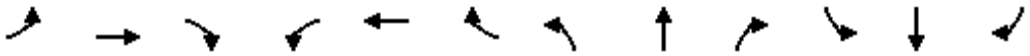
| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Cycle Length: 54.8 | | | |
| Actuated Cycle Length: 54.8 | | | |
| Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green | | | |
| Natural Cycle: 55 | | | |
| Control Type: Actuated-Coordinated | | | |
| Maximum v/c Ratio: 0.53 | | | |
| Intersection Signal Delay: 11.7 | | Intersection LOS: B | |
| Intersection Capacity Utilization 35.3% | | ICU Level of Service A | |
| Analysis Period (min) 15 | | | |

Splits and Phases: 6: Pedestrian Crossing & Scott St



# Appendix L

2022 Future Total Synchro Worksheets



| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 0 | 512 | 3 | 11 | 287 | 5 | 3 | 0 | 36 | 6 | 0 | 0 |
| Future Volume (vph) | 0 | 512 | 3 | 11 | 287 | 5 | 3 | 0 | 36 | 6 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| 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 |
| Frt | | 0.999 | | | 0.998 | | | 0.874 | | | | |
| Flt Protected | | | | | 0.998 | | | 0.997 | | | 0.950 | |
| Satd. Flow (prot) | 0 | 1569 | 0 | 0 | 1538 | 0 | 0 | 1369 | 0 | 0 | 761 | 0 |
| Flt Permitted | | | | | 0.998 | | | 0.997 | | | 0.950 | |
| Satd. Flow (perm) | 0 | 1569 | 0 | 0 | 1538 | 0 | 0 | 1369 | 0 | 0 | 761 | 0 |
| Link Speed (k/h) | | 50 | | | 50 | | | 50 | | | 50 | |
| Link Distance (m) | | 78.0 | | | 22.1 | | | 319.9 | | | 53.1 | |
| Travel Time (s) | | 5.6 | | | 1.6 | | | 23.0 | | | 3.8 | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Heavy Vehicles (%) | 100% | 2% | 2% | 2% | 2% | 100% | 2% | 100% | 2% | 100% | 100% | 100% |
| Parking (#/hr) | | | 0 | | | 0 | | | 0 | | | 0 |
| Adj. Flow (vph) | 0 | 569 | 3 | 12 | 319 | 6 | 3 | 0 | 40 | 7 | 0 | 0 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 572 | 0 | 0 | 337 | 0 | 0 | 43 | 0 | 0 | 7 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 3.0 | | | 3.0 | | | 3.0 | | | 3.0 | |
| Two way Left Turn Lane | | | | | | | | | | | | |
| Headway Factor | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 |
| Turning Speed (k/h) | 25 | | 15 | 25 | | 15 | 25 | | 15 | 25 | | 15 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | CBD | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization | 41.8% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.9 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ⇕ | | | ⇕ | | | ⇕ | | | ⇕ | |
| Traffic Vol, veh/h | 0 | 512 | 3 | 11 | 287 | 5 | 3 | 0 | 36 | 6 | 0 | 0 |
| Future Vol, veh/h | 0 | 512 | 3 | 11 | 287 | 5 | 3 | 0 | 36 | 6 | 0 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 100 | 2 | 2 | 2 | 2 | 100 | 2 | 100 | 2 | 100 | 100 | 100 |
| Mvmt Flow | 0 | 569 | 3 | 12 | 319 | 6 | 3 | 0 | 40 | 7 | 0 | 0 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 325 | 0 | 0 | 572 | 0 | 0 | 917 | 920 | 571 | 937 | 918 | 322 |
| Stage 1 | - | - | - | - | - | - | 571 | 571 | - | 346 | 346 | - |
| Stage 2 | - | - | - | - | - | - | 346 | 349 | - | 591 | 572 | - |
| Critical Hdwy | 5.1 | - | - | 4.12 | - | - | 7.12 | 7.5 | 6.22 | 8.1 | 7.5 | 7.2 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.12 | 6.5 | - | 7.1 | 6.5 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.12 | 6.5 | - | 7.1 | 6.5 | - |
| Follow-up Hdwy | 3.1 | - | - | 2.218 | - | - | 3.518 | 4.9 | 3.318 | 4.4 | 4.9 | 4.2 |
| Pot Cap-1 Maneuver | 840 | - | - | 1001 | - | - | 253 | 190 | 520 | 167 | 190 | 540 |
| Stage 1 | - | - | - | - | - | - | 506 | 377 | - | 507 | 493 | - |
| Stage 2 | - | - | - | - | - | - | 670 | 491 | - | 358 | 376 | - |
| Platoon blocked, % | | - | - | | - | - | | | | | | |
| Mov Cap-1 Maneuver | 840 | - | - | 1001 | - | - | 250 | 187 | 520 | 152 | 187 | 540 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 250 | 187 | - | 152 | 187 | - |
| Stage 1 | - | - | - | - | - | - | 506 | 377 | - | 507 | 486 | - |
| Stage 2 | - | - | - | - | - | - | 660 | 484 | - | 330 | 376 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0 | 0.3 | 13.2 | 29.8 |
| HCM LOS | | | B | D |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 480 | 840 | - | - | 1001 | - | - | 152 |
| HCM Lane V/C Ratio | 0.09 | - | - | - | 0.012 | - | - | 0.044 |
| HCM Control Delay (s) | 13.2 | 0 | - | - | 8.6 | 0 | - | 29.8 |
| HCM Lane LOS | B | A | - | - | A | A | - | D |
| HCM 95th %tile Q(veh) | 0.3 | 0 | - | - | 0 | - | - | 0.1 |

| Lane Group | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (vph) | 527 | 28 | 125 | 289 | 16 | 138 |
| Future Volume (vph) | 527 | 28 | 125 | 289 | 16 | 138 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 0.993 | | | | 0.879 | |
| Flt Protected | | | | 0.985 | 0.995 | |
| Satd. Flow (prot) | 1560 | 0 | 0 | 1392 | 1374 | 0 |
| Flt Permitted | | | | 0.985 | 0.995 | |
| Satd. Flow (perm) | 1560 | 0 | 0 | 1392 | 1374 | 0 |
| Link Speed (k/h) | 50 | | | 50 | 50 | |
| Link Distance (m) | 57.4 | | | 138.5 | 125.8 | |
| Travel Time (s) | 4.1 | | | 10.0 | 9.1 | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Parking (#/hr) | | 0 | | 0 | | |
| Adj. Flow (vph) | 586 | 31 | 139 | 321 | 18 | 153 |
| Shared Lane Traffic (%) | | | | | | |
| Lane Group Flow (vph) | 617 | 0 | 0 | 460 | 171 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No |
| Lane Alignment | Left | Right | Left | Left | Left | Right |
| Median Width(m) | 0.0 | | | 0.0 | 3.5 | |
| Link Offset(m) | 0.0 | | | 0.0 | 0.0 | |
| Crosswalk Width(m) | 3.0 | | | 3.0 | 3.0 | |
| Two way Left Turn Lane | | | | | | |
| Headway Factor | 1.24 | 1.24 | 1.24 | 1.41 | 1.24 | 1.24 |
| Turning Speed (k/h) | | 15 | 25 | | 25 | 15 |
| Sign Control | Free | | | Free | Stop | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | CBD | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization 81.5% | | ICU Level of Service D | |
| Analysis Period (min) 15 | | | |

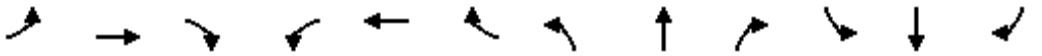
| Intersection | |
|---|---|
| Int Delay, s/veh | 3.7 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 527 | 28 | 125 | 289 | 16 | 138 |
| Future Vol, veh/h | 527 | 28 | 125 | 289 | 16 | 138 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 586 | 31 | 139 | 321 | 18 | 153 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 617 | 0 | 1201 | 602 |
| Stage 1 | - | - | - | - | 602 | - |
| Stage 2 | - | - | - | - | 599 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 963 | - | 204 | 500 |
| Stage 1 | - | - | - | - | 547 | - |
| Stage 2 | - | - | - | - | 549 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 963 | - | 168 | 500 |
| Mov Cap-2 Maneuver | - | - | - | - | 168 | - |
| Stage 1 | - | - | - | - | 547 | - |
| Stage 2 | - | - | - | - | 452 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 2.8 | 19.6 |
| HCM LOS | | | C |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | 415 | - | - | 963 | - |
| HCM Lane V/C Ratio | 0.412 | - | - | 0.144 | - |
| HCM Control Delay (s) | 19.6 | - | - | 9.4 | 0 |
| HCM Lane LOS | C | - | - | A | A |
| HCM 95th %tile Q(veh) | 2 | - | - | 0.5 | - |



| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 21 | 449 | 8 | 26 | 306 | 6 | 7 | 8 | 32 | 2 | 4 | 14 |
| Future Volume (vph) | 21 | 449 | 8 | 26 | 306 | 6 | 7 | 8 | 32 | 2 | 4 | 14 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Storage Length (m) | 0.0 | | 0.0 | 0.0 | | 10.0 | 0.0 | | 0.0 | 0.0 | | 0.0 |
| Storage Lanes | 0 | | 0 | 0 | | 1 | 0 | | 0 | 0 | | 0 |
| Taper Length (m) | 15.0 | | | 15.0 | | | 15.0 | | | 15.0 | | |
| 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 |
| Frt | | 0.998 | | | | 0.850 | | 0.908 | | | 0.902 | |
| Flt Protected | | 0.998 | | | 0.996 | | | 0.993 | | | 0.995 | |
| Satd. Flow (prot) | 0 | 1564 | 0 | 0 | 1564 | 1201 | 0 | 1416 | 0 | 0 | 1410 | 0 |
| Flt Permitted | | 0.998 | | | 0.996 | | | 0.993 | | | 0.995 | |
| Satd. Flow (perm) | 0 | 1564 | 0 | 0 | 1564 | 1201 | 0 | 1416 | 0 | 0 | 1410 | 0 |
| Link Speed (k/h) | | 50 | | | 50 | | | 50 | | | 50 | |
| Link Distance (m) | | 72.3 | | | 104.2 | | | 72.7 | | | 319.9 | |
| Travel Time (s) | | 5.2 | | | 7.5 | | | 5.2 | | | 23.0 | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Parking (#/hr) | | | 0 | | | 0 | | | 0 | | | 0 |
| Adj. Flow (vph) | 23 | 499 | 9 | 29 | 340 | 7 | 8 | 9 | 36 | 2 | 4 | 16 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 531 | 0 | 0 | 369 | 7 | 0 | 53 | 0 | 0 | 22 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(m) | | 3.5 | | | 3.5 | | | 0.0 | | | 0.0 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 3.0 | | | 3.0 | | | 3.0 | | | 3.0 | |
| Two way Left Turn Lane | | | | | | | | | | | | |
| Headway Factor | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.41 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 |
| Turning Speed (k/h) | 25 | | 15 | 25 | | 15 | 25 | | 15 | 25 | | 15 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | CBD | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization 59.9% | | ICU Level of Service B | |
| Analysis Period (min) 15 | | | |

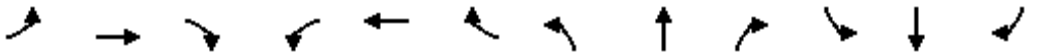
| Intersection | |
|---|---|
| Int Delay, s/veh | 1.6 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ⇕ | | | ⇂ | ↱ | | ⇕ | | | ⇕ | |
| Traffic Vol, veh/h | 21 | 449 | 8 | 26 | 306 | 6 | 7 | 8 | 32 | 2 | 4 | 14 |
| Future Vol, veh/h | 21 | 449 | 8 | 26 | 306 | 6 | 7 | 8 | 32 | 2 | 4 | 14 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | 100 | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 23 | 499 | 9 | 29 | 340 | 7 | 8 | 9 | 36 | 2 | 4 | 16 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 347 | 0 | 0 | 508 | 0 | 0 | 962 | 955 | 504 | 970 | 952 | 340 |
| Stage 1 | - | - | - | - | - | - | 550 | 550 | - | 398 | 398 | - |
| Stage 2 | - | - | - | - | - | - | 412 | 405 | - | 572 | 554 | - |
| Critical Hdwy | 4.12 | - | - | 4.12 | - | - | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Follow-up Hdwy | 2.218 | - | - | 2.218 | - | - | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 |
| Pot Cap-1 Maneuver | 1212 | - | - | 1057 | - | - | 235 | 258 | 568 | 233 | 259 | 702 |
| Stage 1 | - | - | - | - | - | - | 519 | 516 | - | 628 | 603 | - |
| Stage 2 | - | - | - | - | - | - | 617 | 598 | - | 505 | 514 | - |
| Platoon blocked, % | | - | - | | - | - | | | | | | |
| Mov Cap-1 Maneuver | 1212 | - | - | 1057 | - | - | 216 | 243 | 568 | 203 | 244 | 702 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 216 | 243 | - | 203 | 244 | - |
| Stage 1 | - | - | - | - | - | - | 506 | 503 | - | 612 | 582 | - |
| Stage 2 | - | - | - | - | - | - | 578 | 578 | - | 453 | 501 | - |

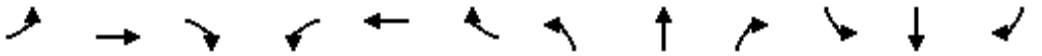
| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0.4 | 0.7 | 15.8 | 13.8 |
| HCM LOS | | | C | B |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 386 | 1212 | - | - | 1057 | - | - | 433 |
| HCM Lane V/C Ratio | 0.135 | 0.019 | - | - | 0.027 | - | - | 0.051 |
| HCM Control Delay (s) | 15.8 | 8 | 0 | - | 8.5 | 0 | - | 13.8 |
| HCM Lane LOS | C | A | A | - | A | A | - | B |
| HCM 95th %tile Q(veh) | 0.5 | 0.1 | - | - | 0.1 | - | - | 0.2 |



| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 115 | 379 | 43 | 8 | 301 | 130 | 24 | 16 | 17 | 109 | 39 | 68 |
| Future Volume (vph) | 115 | 379 | 43 | 8 | 301 | 130 | 24 | 16 | 17 | 109 | 39 | 68 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Storage Length (m) | 45.0 | | 0.0 | 60.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 |
| Storage Lanes | 1 | | 0 | 1 | | 0 | 1 | | 0 | 0 | | 0 |
| Taper Length (m) | 30.0 | | | 55.0 | | | 15.0 | | | 15.0 | | |
| 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 |
| Frt | | 0.985 | | | 0.955 | | | 0.923 | | | 0.957 | |
| Flt Protected | 0.950 | | | 0.950 | | | 0.950 | | | | 0.975 | |
| Satd. Flow (prot) | 1492 | 1547 | 0 | 1492 | 1500 | 0 | 1492 | 1450 | 0 | 0 | 1465 | 0 |
| Flt Permitted | 0.440 | | | 0.447 | | | 0.587 | | | | 0.822 | |
| Satd. Flow (perm) | 691 | 1547 | 0 | 702 | 1500 | 0 | 922 | 1450 | 0 | 0 | 1236 | 0 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | 12 | | | 47 | | | 19 | | | 29 | |
| Link Speed (k/h) | | 50 | | | 50 | | | 50 | | | 50 | |
| Link Distance (m) | | 104.2 | | | 101.3 | | | 60.6 | | | 195.0 | |
| Travel Time (s) | | 7.5 | | | 7.3 | | | 4.4 | | | 14.0 | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Parking (#/hr) | | | 0 | | | 0 | | | | | | |
| Adj. Flow (vph) | 128 | 421 | 48 | 9 | 334 | 144 | 27 | 18 | 19 | 121 | 43 | 76 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 128 | 469 | 0 | 9 | 478 | 0 | 27 | 37 | 0 | 0 | 240 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(m) | | 3.5 | | | 3.5 | | | 3.5 | | | 3.5 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 3.0 | | | 3.0 | | | 3.0 | | | 3.0 | |
| Two way Left Turn Lane | | | | | | | | | | | | |
| Headway Factor | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 |
| Turning Speed (k/h) | 25 | | 15 | 25 | | 15 | 25 | | 15 | 25 | | 15 |
| Number of Detectors | 1 | 2 | | 1 | 2 | | 1 | 2 | | 1 | 2 | |
| Detector Template | Left | Thru | | Left | Thru | | Left | Thru | | Left | Thru | |
| Leading Detector (m) | 2.0 | 10.0 | | 2.0 | 10.0 | | 2.0 | 10.0 | | 2.0 | 10.0 | |
| Trailing Detector (m) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Position(m) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Size(m) | 2.0 | 0.6 | | 2.0 | 0.6 | | 2.0 | 0.6 | | 2.0 | 0.6 | |
| Detector 1 Type | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Queue (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Delay (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 2 Position(m) | | 9.4 | | | 9.4 | | | 9.4 | | | 9.4 | |
| Detector 2 Size(m) | | 0.6 | | | 0.6 | | | 0.6 | | | 0.6 | |
| Detector 2 Type | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 8 | | | 4 | |

| Lane Group | Ø3 | Ø7 |
|---|---|---|
| Lane Configurations | | |
| Traffic Volume (vph) | | |
| Future Volume (vph) | | |
| Ideal Flow (vphpl) | | |
| Storage Length (m) | | |
| Storage Lanes | | |
| Taper Length (m) | | |
| Lane Util. Factor | | |
| Frt | | |
| Flt Protected | | |
| Satd. Flow (prot) | | |
| Flt Permitted | | |
| Satd. Flow (perm) | | |
| Right Turn on Red | | |
| Satd. Flow (RTOR) | | |
| Link Speed (k/h) | | |
| Link Distance (m) | | |
| Travel Time (s) | | |
| Peak Hour Factor | | |
| Parking (#/hr) | | |
| Adj. Flow (vph) | | |
| Shared Lane Traffic (%) | | |
| Lane Group Flow (vph) | | |
| Enter Blocked Intersection | | |
| Lane Alignment | | |
| Median Width(m) | | |
| Link Offset(m) | | |
| Crosswalk Width(m) | | |
| Two way Left Turn Lane | | |
| Headway Factor | | |
| Turning Speed (k/h) | | |
| Number of Detectors | | |
| Detector Template | | |
| Leading Detector (m) | | |
| Trailing Detector (m) | | |
| Detector 1 Position(m) | | |
| Detector 1 Size(m) | | |
| Detector 1 Type | | |
| Detector 1 Channel | | |
| Detector 1 Extend (s) | | |
| Detector 1 Queue (s) | | |
| Detector 1 Delay (s) | | |
| Detector 2 Position(m) | | |
| Detector 2 Size(m) | | |
| Detector 2 Type | | |
| Detector 2 Channel | | |
| Detector 2 Extend (s) | | |
| Turn Type | | |
| Protected Phases | 3 | 7 |



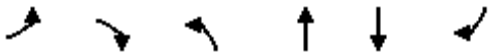
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Permitted Phases | 2 | | | 6 | | | 8 | | | 4 | | |
| Detector Phase | 2 | 2 | | 6 | 6 | | 8 | 8 | | 4 | 4 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 10.0 | 10.0 | | 10.0 | 10.0 | |
| Minimum Split (s) | 24.2 | 24.2 | | 24.2 | 24.2 | | 22.0 | 22.0 | | 22.0 | 22.0 | |
| Total Split (s) | 48.0 | 48.0 | | 48.0 | 48.0 | | 22.0 | 22.0 | | 22.0 | 22.0 | |
| Total Split (%) | 64.0% | 64.0% | | 64.0% | 64.0% | | 29.3% | 29.3% | | 29.3% | 29.3% | |
| Maximum Green (s) | 41.8 | 41.8 | | 41.8 | 41.8 | | 16.5 | 16.5 | | 16.5 | 16.5 | |
| Yellow Time (s) | 3.3 | 3.3 | | 3.3 | 3.3 | | 3.3 | 3.3 | | 3.3 | 3.3 | |
| All-Red Time (s) | 2.9 | 2.9 | | 2.9 | 2.9 | | 2.2 | 2.2 | | 2.2 | 2.2 | |
| Lost Time Adjust (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | | 0.0 | |
| Total Lost Time (s) | 6.2 | 6.2 | | 6.2 | 6.2 | | 5.5 | 5.5 | | | 5.5 | |
| Lead/Lag | | | | | | | Lag | Lag | | Lag | Lag | |
| Lead-Lag Optimize? | | | | | | | Yes | Yes | | Yes | Yes | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Recall Mode | C-Max | C-Max | | C-Max | C-Max | | None | None | | None | None | |
| Walk Time (s) | 7.0 | 7.0 | | 7.0 | 7.0 | | 5.5 | 5.5 | | 5.5 | 5.5 | |
| Flash Dont Walk (s) | 11.0 | 11.0 | | 11.0 | 11.0 | | 11.0 | 11.0 | | 11.0 | 11.0 | |
| Pedestrian Calls (#/hr) | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Act Effct Green (s) | 45.1 | 45.1 | | 45.1 | 45.1 | | 18.2 | 18.2 | | | 18.2 | |
| Actuated g/C Ratio | 0.60 | 0.60 | | 0.60 | 0.60 | | 0.24 | 0.24 | | | 0.24 | |
| v/c Ratio | 0.31 | 0.50 | | 0.02 | 0.52 | | 0.12 | 0.10 | | | 0.75 | |
| Control Delay | 11.0 | 11.5 | | 7.6 | 11.0 | | 21.8 | 13.5 | | | 37.5 | |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | | 0.0 | |
| Total Delay | 11.0 | 11.5 | | 7.6 | 11.0 | | 21.8 | 13.5 | | | 37.5 | |
| LOS | B | B | | A | B | | C | B | | | D | |
| Approach Delay | | 11.4 | | | 11.0 | | | 17.0 | | | 37.5 | |
| Approach LOS | | B | | | B | | | B | | | D | |
| Queue Length 50th (m) | 8.5 | 35.0 | | 0.5 | 33.1 | | 2.9 | 1.9 | | | 26.8 | |
| Queue Length 95th (m) | 19.9 | 61.9 | | 2.4 | 60.9 | | 8.4 | 8.1 | | | 49.3 | |
| Internal Link Dist (m) | | 80.2 | | | 77.3 | | | 36.6 | | | 171.0 | |
| Turn Bay Length (m) | 45.0 | | | 60.0 | | | | | | | | |
| Base Capacity (vph) | 416 | 935 | | 422 | 921 | | 235 | 384 | | | 337 | |
| 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 | 0.31 | 0.50 | | 0.02 | 0.52 | | 0.11 | 0.10 | | | 0.71 | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | CBD | | |
| Cycle Length: 75 | | | |
| Actuated Cycle Length: 75 | | | |
| Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green | | | |
| Natural Cycle: 60 | | | |
| Control Type: Actuated-Coordinated | | | |
| Maximum v/c Ratio: 0.75 | | | |
| Intersection Signal Delay: 16.0 | | Intersection LOS: B | |
| Intersection Capacity Utilization 71.3% | | ICU Level of Service C | |
| Analysis Period (min) 15 | | | |

Splits and Phases: 4: McRae Ave & Richmond Rd

| Lane Group | Ø3 | Ø7 |
|---|---|---|
| Permitted Phases | | |
| Detector Phase | | |
| Switch Phase | | |
| Minimum Initial (s) | 3.0 | 3.0 |
| Minimum Split (s) | 5.0 | 5.0 |
| Total Split (s) | 5.0 | 5.0 |
| Total Split (%) | 7% | 7% |
| Maximum Green (s) | 3.0 | 3.0 |
| Yellow Time (s) | 2.0 | 2.0 |
| All-Red Time (s) | 0.0 | 0.0 |
| Lost Time Adjust (s) | | |
| Total Lost Time (s) | | |
| Lead/Lag | Lead | Lead |
| Lead-Lag Optimize? | Yes | Yes |
| Vehicle Extension (s) | 3.0 | 3.0 |
| Recall Mode | None | None |
| Walk Time (s) | | |
| Flash Dont Walk (s) | | |
| Pedestrian Calls (#/hr) | | |
| Act Effct Green (s) | | |
| Actuated g/C Ratio | | |
| v/c Ratio | | |
| Control Delay | | |
| Queue Delay | | |
| Total Delay | | |
| LOS | | |
| Approach Delay | | |
| Approach LOS | | |
| Queue Length 50th (m) | | |
| Queue Length 95th (m) | | |
| Internal Link Dist (m) | | |
| Turn Bay Length (m) | | |
| Base Capacity (vph) | | |
| Starvation Cap Reductn | | |
| Spillback Cap Reductn | | |
| Storage Cap Reductn | | |
| Reduced v/c Ratio | | |

| Intersection Summary |
|---|



| Lane Group | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (vph) | 29 | 54 | 19 | 114 | 142 | 10 |
| Future Volume (vph) | 29 | 54 | 19 | 114 | 142 | 10 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 0.912 | | | | 0.991 | |
| Flt Protected | 0.983 | | | 0.993 | | |
| Satd. Flow (prot) | 1564 | 0 | 0 | 1733 | 1729 | 0 |
| Flt Permitted | 0.983 | | | 0.993 | | |
| Satd. Flow (perm) | 1564 | 0 | 0 | 1733 | 1729 | 0 |
| Link Speed (k/h) | 30 | | | 50 | 50 | |
| Link Distance (m) | 54.2 | | | 195.0 | 125.8 | |
| Travel Time (s) | 6.5 | | | 14.0 | 9.1 | |
| Peak Hour Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj. Flow (vph) | 29 | 54 | 19 | 114 | 142 | 10 |
| Shared Lane Traffic (%) | | | | | | |
| Lane Group Flow (vph) | 83 | 0 | 0 | 133 | 152 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No |
| Lane Alignment | Left | Right | Left | Left | Left | Right |
| Median Width(m) | 3.5 | | | 0.0 | 0.0 | |
| Link Offset(m) | 0.0 | | | 0.0 | 0.0 | |
| Crosswalk Width(m) | 3.0 | | | 3.0 | 3.0 | |
| Two way Left Turn Lane | | | | | | |
| Headway Factor | 1.09 | 1.09 | 1.09 | 1.09 | 1.09 | 1.09 |
| Turning Speed (k/h) | 25 | 15 | 25 | | | 15 |
| Sign Control | Stop | | | Free | Free | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization 31.2% | | ICU Level of Service A | |
| Analysis Period (min) 15 | | | |

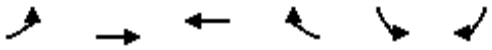
| Intersection | |
|---|---|
| Int Delay, s/veh | 2.7 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 29 | 54 | 19 | 114 | 142 | 10 |
| Future Vol, veh/h | 29 | 54 | 19 | 114 | 142 | 10 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 100 | 100 | 100 | 100 | 100 | 100 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 29 | 54 | 19 | 114 | 142 | 10 |

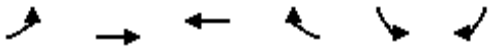
| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 299 | 147 | 152 | 0 | - | 0 |
| Stage 1 | 147 | - | - | - | - | - |
| Stage 2 | 152 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | 4.12 | - | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | 2.218 | - | - | - |
| Pot Cap-1 Maneuver | 692 | 900 | 1429 | - | - | - |
| Stage 1 | 880 | - | - | - | - | - |
| Stage 2 | 876 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 682 | 900 | 1429 | - | - | - |
| Mov Cap-2 Maneuver | 682 | - | - | - | - | - |
| Stage 1 | 868 | - | - | - | - | - |
| Stage 2 | 876 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 10 | 1.1 | 0 |
| HCM LOS | B | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1429 | - | 810 | - | - |
| HCM Lane V/C Ratio | 0.013 | - | 0.102 | - | - |
| HCM Control Delay (s) | 7.6 | 0 | 10 | - | - |
| HCM Lane LOS | A | A | B | - | - |
| HCM 95th %tile Q(veh) | 0 | - | 0.3 | - | - |



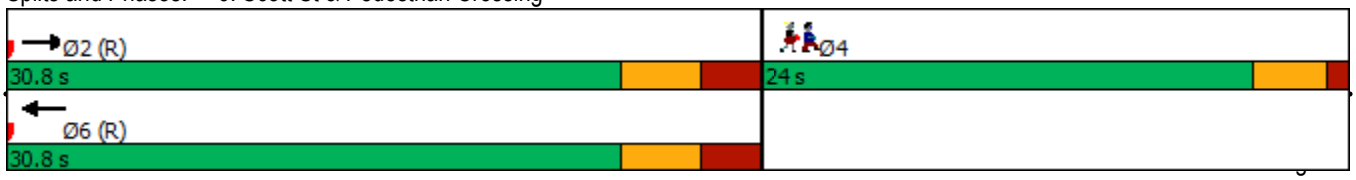
| Lane Group | EBL | EBT | WBT | WBR | SBL | SBR | Ø4 |
|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | |
| Traffic Volume (vph) | 0 | 554 | 303 | 0 | 0 | 0 | |
| Future Volume (vph) | 0 | 554 | 303 | 0 | 0 | 0 | |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| Frt | | | | | | | |
| Flt Protected | | | | | | | |
| Satd. Flow (prot) | 0 | 1745 | 1745 | 0 | 0 | 0 | |
| Flt Permitted | | | | | | | |
| Satd. Flow (perm) | 0 | 1745 | 1745 | 0 | 0 | 0 | |
| Right Turn on Red | | | | No | | Yes | |
| Satd. Flow (RTOR) | | | | | | | |
| Link Speed (k/h) | | 50 | 50 | | 50 | | |
| Link Distance (m) | | 22.1 | 57.4 | | 18.9 | | |
| Travel Time (s) | | 1.6 | 4.1 | | 1.4 | | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | |
| Adj. Flow (vph) | 0 | 616 | 337 | 0 | 0 | 0 | |
| Shared Lane Traffic (%) | | | | | | | |
| Lane Group Flow (vph) | 0 | 616 | 337 | 0 | 0 | 0 | |
| Enter Blocked Intersection | No | No | No | No | No | No | |
| Lane Alignment | Left | Left | Left | Right | Left | Right | |
| Median Width(m) | | 0.0 | 0.0 | | 0.0 | | |
| Link Offset(m) | | 0.0 | 0.0 | | 0.0 | | |
| Crosswalk Width(m) | | 3.0 | 3.0 | | 3.0 | | |
| Two way Left Turn Lane | | | | | | | |
| Headway Factor | 1.09 | 1.09 | 1.09 | 1.09 | 1.09 | 1.09 | |
| Turning Speed (k/h) | 25 | | | 15 | 25 | 15 | |
| Number of Detectors | | 2 | 2 | | | | |
| Detector Template | | Thru | Thru | | | | |
| Leading Detector (m) | | 10.0 | 10.0 | | | | |
| Trailing Detector (m) | | 0.0 | 0.0 | | | | |
| Detector 1 Position(m) | | 0.0 | 0.0 | | | | |
| Detector 1 Size(m) | | 0.6 | 0.6 | | | | |
| Detector 1 Type | | Cl+Ex | Cl+Ex | | | | |
| Detector 1 Channel | | | | | | | |
| Detector 1 Extend (s) | | 0.0 | 0.0 | | | | |
| Detector 1 Queue (s) | | 0.0 | 0.0 | | | | |
| Detector 1 Delay (s) | | 0.0 | 0.0 | | | | |
| Detector 2 Position(m) | | 9.4 | 9.4 | | | | |
| Detector 2 Size(m) | | 0.6 | 0.6 | | | | |
| Detector 2 Type | | Cl+Ex | Cl+Ex | | | | |
| Detector 2 Channel | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | 0.0 | | | | |
| Turn Type | | NA | NA | | | | |
| Protected Phases | | 2 | 6 | | | | 4 |
| Permitted Phases | | | | | | | |
| Detector Phase | | 2 | 6 | | | | |
| Switch Phase | | | | | | | |
| Minimum Initial (s) | | 5.0 | 5.0 | | | | 10.0 |

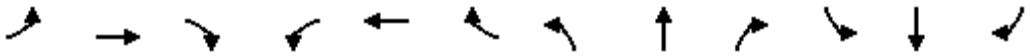


| Lane Group | EBL | EBT | WBT | WBR | SBL | SBR | Ø4 |
|---|---|---|---|---|---|---|---|
| Minimum Split (s) | | 23.8 | 23.8 | | | | 22.0 |
| Total Split (s) | | 30.8 | 30.8 | | | | 24.0 |
| Total Split (%) | | 56.2% | 56.2% | | | | 44% |
| Maximum Green (s) | | 25.0 | 25.0 | | | | 20.0 |
| Yellow Time (s) | | 3.3 | 3.3 | | | | 3.0 |
| All-Red Time (s) | | 2.5 | 2.5 | | | | 1.0 |
| Lost Time Adjust (s) | | 0.0 | 0.0 | | | | |
| Total Lost Time (s) | | 5.8 | 5.8 | | | | |
| Lead/Lag | | | | | | | |
| Lead-Lag Optimize? | | | | | | | |
| Vehicle Extension (s) | | 3.0 | 3.0 | | | | 3.0 |
| Recall Mode | | C-Max | C-Max | | | | None |
| Walk Time (s) | | 7.0 | 7.0 | | | | 7.0 |
| Flash Dont Walk (s) | | 11.0 | 11.0 | | | | 11.0 |
| Pedestrian Calls (#/hr) | | 0 | 0 | | | | 122 |
| Act Effct Green (s) | | 32.6 | 32.6 | | | | |
| Actuated g/C Ratio | | 0.59 | 0.59 | | | | |
| v/c Ratio | | 0.59 | 0.33 | | | | |
| Control Delay | | 13.3 | 9.3 | | | | |
| Queue Delay | | 0.0 | 0.0 | | | | |
| Total Delay | | 13.3 | 9.3 | | | | |
| LOS | | B | A | | | | |
| Approach Delay | | 13.3 | 9.3 | | | | |
| Approach LOS | | B | A | | | | |
| Queue Length 50th (m) | | 43.9 | 19.3 | | | | |
| Queue Length 95th (m) | | 76.9 | 34.6 | | | | |
| Internal Link Dist (m) | | 0.1 | 33.4 | | 0.1 | | |
| Turn Bay Length (m) | | | | | | | |
| Base Capacity (vph) | | 1036 | 1036 | | | | |
| Starvation Cap Reductn | | 0 | 0 | | | | |
| Spillback Cap Reductn | | 0 | 0 | | | | |
| Storage Cap Reductn | | 0 | 0 | | | | |
| Reduced v/c Ratio | | 0.59 | 0.33 | | | | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Cycle Length: 54.8 | | | |
| Actuated Cycle Length: 54.8 | | | |
| Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green | | | |
| Natural Cycle: 60 | | | |
| Control Type: Actuated-Coordinated | | | |
| Maximum v/c Ratio: 0.59 | | | |
| Intersection Signal Delay: 11.9 | | Intersection LOS: B | |
| Intersection Capacity Utilization 35.6% | | ICU Level of Service A | |
| Analysis Period (min) 15 | | | |

Splits and Phases: 6: Scott St & Pedestrian Crossing





| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 0 | 434 | 7 | 15 | 478 | 5 | 11 | 0 | 32 | 5 | 0 | 1 |
| Future Volume (vph) | 0 | 434 | 7 | 15 | 478 | 5 | 11 | 0 | 32 | 5 | 0 | 1 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| 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 |
| Frt | | 0.998 | | | 0.999 | | | 0.900 | | | 0.977 | |
| Flt Protected | | | | | 0.998 | | | 0.987 | | | 0.960 | |
| Satd. Flow (prot) | 0 | 1567 | 0 | 0 | 1551 | 0 | 0 | 1395 | 0 | 0 | 751 | 0 |
| Flt Permitted | | | | | 0.998 | | | 0.987 | | | 0.960 | |
| Satd. Flow (perm) | 0 | 1567 | 0 | 0 | 1551 | 0 | 0 | 1395 | 0 | 0 | 751 | 0 |
| Link Speed (k/h) | | 50 | | | 50 | | | 50 | | | 50 | |
| Link Distance (m) | | 78.0 | | | 22.1 | | | 319.9 | | | 53.1 | |
| Travel Time (s) | | 5.6 | | | 1.6 | | | 23.0 | | | 3.8 | |
| Peak Hour Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Heavy Vehicles (%) | 100% | 2% | 2% | 2% | 2% | 100% | 2% | 100% | 2% | 100% | 100% | 100% |
| Parking (#/hr) | | | 0 | | | 0 | | | 0 | | | 0 |
| Adj. Flow (vph) | 0 | 434 | 7 | 15 | 478 | 5 | 11 | 0 | 32 | 5 | 0 | 1 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 441 | 0 | 0 | 498 | 0 | 0 | 43 | 0 | 0 | 6 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 3.0 | | | 3.0 | | | 3.0 | | | 3.0 | |
| Two way Left Turn Lane | | | | | | | | | | | | |
| Headway Factor | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 |
| Turning Speed (k/h) | 25 | | 15 | 25 | | 15 | 25 | | 15 | 25 | | 15 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | CBD | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization 54.1% | | ICU Level of Service A | |
| Analysis Period (min) 15 | | | |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.9 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ⇕ | | | ⇕ | | | ⇕ | | | ⇕ | |
| Traffic Vol, veh/h | 0 | 434 | 7 | 15 | 478 | 5 | 11 | 0 | 32 | 5 | 0 | 1 |
| Future Vol, veh/h | 0 | 434 | 7 | 15 | 478 | 5 | 11 | 0 | 32 | 5 | 0 | 1 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Heavy Vehicles, % | 100 | 2 | 2 | 2 | 2 | 100 | 2 | 100 | 2 | 100 | 100 | 100 |
| Mvmt Flow | 0 | 434 | 7 | 15 | 478 | 5 | 11 | 0 | 32 | 5 | 0 | 1 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 483 | 0 | 0 | 441 | 0 | 0 | 949 | 951 | 438 | 965 | 952 | 481 |
| Stage 1 | - | - | - | - | - | - | 438 | 438 | - | 511 | 511 | - |
| Stage 2 | - | - | - | - | - | - | 511 | 513 | - | 454 | 441 | - |
| Critical Hdwy | 5.1 | - | - | 4.12 | - | - | 7.12 | 7.5 | 6.22 | 8.1 | 7.5 | 7.2 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.12 | 6.5 | - | 7.1 | 6.5 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.12 | 6.5 | - | 7.1 | 6.5 | - |
| Follow-up Hdwy | 3.1 | - | - | 2.218 | - | - | 3.518 | 4.9 | 3.318 | 4.4 | 4.9 | 4.2 |
| Pot Cap-1 Maneuver | 716 | - | - | 1119 | - | - | 240 | 181 | 619 | 159 | 180 | 428 |
| Stage 1 | - | - | - | - | - | - | 597 | 442 | - | 402 | 405 | - |
| Stage 2 | - | - | - | - | - | - | 545 | 404 | - | 435 | 441 | - |
| Platoon blocked, % | | - | - | | - | - | | | | | | |
| Mov Cap-1 Maneuver | 716 | - | - | 1119 | - | - | 236 | 178 | 619 | 149 | 177 | 428 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 236 | 178 | - | 149 | 177 | - |
| Stage 1 | - | - | - | - | - | - | 597 | 442 | - | 402 | 398 | - |
| Stage 2 | - | - | - | - | - | - | 534 | 397 | - | 413 | 441 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0 | 0.2 | 14.1 | 27.4 |
| HCM LOS | | | B | D |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 437 | 716 | - | - | 1119 | - | - | 167 |
| HCM Lane V/C Ratio | 0.098 | - | - | - | 0.013 | - | - | 0.036 |
| HCM Control Delay (s) | 14.1 | 0 | - | - | 8.3 | 0 | - | 27.4 |
| HCM Lane LOS | B | A | - | - | A | A | - | D |
| HCM 95th %tile Q(veh) | 0.3 | 0 | - | - | 0 | - | - | 0.1 |

| Lane Group | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (vph) | 428 | 43 | 147 | 463 | 35 | 213 |
| Future Volume (vph) | 428 | 43 | 147 | 463 | 35 | 213 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 0.988 | | | | 0.884 | |
| Flt Protected | | | | 0.988 | 0.993 | |
| Satd. Flow (prot) | 1552 | 0 | 0 | 1397 | 1379 | 0 |
| Flt Permitted | | | | 0.988 | 0.993 | |
| Satd. Flow (perm) | 1552 | 0 | 0 | 1397 | 1379 | 0 |
| Link Speed (k/h) | 50 | | | 50 | 50 | |
| Link Distance (m) | 57.4 | | | 138.5 | 126.3 | |
| Travel Time (s) | 4.1 | | | 10.0 | 9.1 | |
| Peak Hour Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Parking (#/hr) | | 0 | | 0 | | |
| Adj. Flow (vph) | 428 | 43 | 147 | 463 | 35 | 213 |
| Shared Lane Traffic (%) | | | | | | |
| Lane Group Flow (vph) | 471 | 0 | 0 | 610 | 248 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No |
| Lane Alignment | Left | Right | Left | Left | Left | Right |
| Median Width(m) | 0.0 | | | 0.0 | 3.5 | |
| Link Offset(m) | 0.0 | | | 0.0 | 0.0 | |
| Crosswalk Width(m) | 3.0 | | | 3.0 | 3.0 | |
| Two way Left Turn Lane | | | | | | |
| Headway Factor | 1.24 | 1.24 | 1.24 | 1.41 | 1.24 | 1.24 |
| Turning Speed (k/h) | | 15 | 25 | | 25 | 15 |
| Sign Control | Free | | | Free | Stop | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | CBD | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization 95.3% | | ICU Level of Service F | |
| Analysis Period (min) 15 | | | |

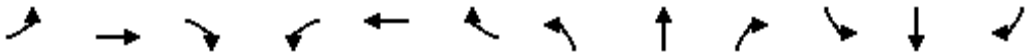
| Intersection | |
|---|---|
| Int Delay, s/veh | 5.3 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 428 | 43 | 147 | 463 | 35 | 213 |
| Future Vol, veh/h | 428 | 43 | 147 | 463 | 35 | 213 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 100 | 100 | 100 | 100 | 100 | 100 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 428 | 43 | 147 | 463 | 35 | 213 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 471 | 0 | 1207 | 450 |
| Stage 1 | - | - | - | - | 450 | - |
| Stage 2 | - | - | - | - | 757 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 1091 | - | 203 | 609 |
| Stage 1 | - | - | - | - | 642 | - |
| Stage 2 | - | - | - | - | 463 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1091 | - | 166 | 609 |
| Mov Cap-2 Maneuver | - | - | - | - | 166 | - |
| Stage 1 | - | - | - | - | 642 | - |
| Stage 2 | - | - | - | - | 379 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 2.1 | 23.1 |
| HCM LOS | | | C |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | 442 | - | - | 1091 | - |
| HCM Lane V/C Ratio | 0.561 | - | - | 0.135 | - |
| HCM Control Delay (s) | 23.1 | - | - | 8.8 | 0 |
| HCM Lane LOS | C | - | - | A | A |
| HCM 95th %tile Q(veh) | 3.4 | - | - | 0.5 | - |



| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 28 | 421 | 18 | 82 | 649 | 11 | 3 | 6 | 46 | 8 | 10 | 16 |
| Future Volume (vph) | 28 | 421 | 18 | 82 | 649 | 11 | 3 | 6 | 46 | 8 | 10 | 16 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Storage Length (m) | 0.0 | | 0.0 | 0.0 | | 10.0 | 0.0 | | 0.0 | 0.0 | | 0.0 |
| Storage Lanes | 0 | | 0 | 0 | | 1 | 0 | | 0 | 0 | | 0 |
| Taper Length (m) | 15.0 | | | 15.0 | | | 15.0 | | | 15.0 | | |
| 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 |
| Frt | | 0.995 | | | | 0.850 | | 0.887 | | | 0.936 | |
| Flt Protected | | 0.997 | | | 0.994 | | | 0.997 | | | 0.988 | |
| Satd. Flow (prot) | 0 | 1558 | 0 | 0 | 1561 | 1201 | 0 | 1389 | 0 | 0 | 1452 | 0 |
| Flt Permitted | | 0.997 | | | 0.994 | | | 0.997 | | | 0.988 | |
| Satd. Flow (perm) | 0 | 1558 | 0 | 0 | 1561 | 1201 | 0 | 1389 | 0 | 0 | 1452 | 0 |
| Link Speed (k/h) | | 50 | | | 50 | | | 50 | | | 50 | |
| Link Distance (m) | | 72.3 | | | 104.2 | | | 72.7 | | | 319.9 | |
| Travel Time (s) | | 5.2 | | | 7.5 | | | 5.2 | | | 23.0 | |
| Peak Hour Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Parking (#/hr) | | | 0 | | | 0 | | | 0 | | | 0 |
| Adj. Flow (vph) | 28 | 421 | 18 | 82 | 649 | 11 | 3 | 6 | 46 | 8 | 10 | 16 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 467 | 0 | 0 | 731 | 11 | 0 | 55 | 0 | 0 | 34 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(m) | | 3.5 | | | 3.5 | | | 0.0 | | | 0.0 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 3.0 | | | 3.0 | | | 3.0 | | | 3.0 | |
| Two way Left Turn Lane | | | | | | | | | | | | |
| Headway Factor | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.41 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 |
| Turning Speed (k/h) | 25 | | 15 | 25 | | 15 | 25 | | 15 | 25 | | 15 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | CBD | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization 83.2% | | ICU Level of Service E | |
| Analysis Period (min) 15 | | | |

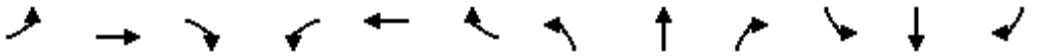
| Intersection | |
|---|---|
| Int Delay, s/veh | 2.1 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ↕ | | | ↰ | ↗ | | ↕ | | | ↕ | |
| Traffic Vol, veh/h | 28 | 421 | 18 | 82 | 649 | 11 | 3 | 6 | 46 | 8 | 10 | 16 |
| Future Vol, veh/h | 28 | 421 | 18 | 82 | 649 | 11 | 3 | 6 | 46 | 8 | 10 | 16 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | 100 | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 28 | 421 | 18 | 82 | 649 | 11 | 3 | 6 | 46 | 8 | 10 | 16 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 660 | 0 | 0 | 439 | 0 | 0 | 1318 | 1310 | 430 | 1325 | 1308 | 649 |
| Stage 1 | - | - | - | - | - | - | 486 | 486 | - | 813 | 813 | - |
| Stage 2 | - | - | - | - | - | - | 832 | 824 | - | 512 | 495 | - |
| Critical Hdwy | 4.12 | - | - | 4.12 | - | - | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Follow-up Hdwy | 2.218 | - | - | 2.218 | - | - | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 |
| Pot Cap-1 Maneuver | 928 | - | - | 1121 | - | - | 134 | 159 | 625 | 133 | 159 | 470 |
| Stage 1 | - | - | - | - | - | - | 563 | 551 | - | 372 | 392 | - |
| Stage 2 | - | - | - | - | - | - | 363 | 387 | - | 545 | 546 | - |
| Platoon blocked, % | | - | - | | - | - | | | | | | |
| Mov Cap-1 Maneuver | 928 | - | - | 1121 | - | - | 108 | 135 | 625 | 105 | 135 | 470 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 108 | 135 | - | 105 | 135 | - |
| Stage 1 | - | - | - | - | - | - | 540 | 529 | - | 357 | 347 | - |
| Stage 2 | - | - | - | - | - | - | 301 | 342 | - | 479 | 524 | - |

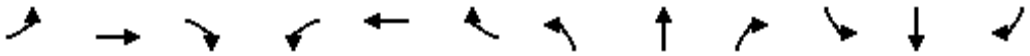
| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0.5 | 0.9 | 16.2 | 28.9 |
| HCM LOS | | | C | D |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 377 | 928 | - | - | 1121 | - | - | 184 |
| HCM Lane V/C Ratio | 0.146 | 0.03 | - | - | 0.073 | - | - | 0.185 |
| HCM Control Delay (s) | 16.2 | 9 | 0 | - | 8.5 | 0 | - | 28.9 |
| HCM Lane LOS | C | A | A | - | A | A | - | D |
| HCM 95th %tile Q(veh) | 0.5 | 0.1 | - | - | 0.2 | - | - | 0.7 |



| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 105 | 301 | 78 | 47 | 636 | 172 | 73 | 75 | 50 | 109 | 49 | 151 |
| Future Volume (vph) | 105 | 301 | 78 | 47 | 636 | 172 | 73 | 75 | 50 | 109 | 49 | 151 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Storage Length (m) | 45.0 | | 0.0 | 60.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 |
| Storage Lanes | 1 | | 0 | 1 | | 0 | 1 | | 0 | 0 | | 0 |
| Taper Length (m) | 30.0 | | | 55.0 | | | 15.0 | | | 15.0 | | |
| 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 |
| Frt | | 0.969 | | | 0.968 | | | 0.940 | | | 0.934 | |
| Flt Protected | 0.950 | | | 0.950 | | | 0.950 | | | | 0.983 | |
| Satd. Flow (prot) | 1492 | 1522 | 0 | 1492 | 1520 | 0 | 1492 | 1476 | 0 | 0 | 1442 | 0 |
| Flt Permitted | 0.254 | | | 0.417 | | | 0.479 | | | | 0.835 | |
| Satd. Flow (perm) | 399 | 1522 | 0 | 655 | 1520 | 0 | 752 | 1476 | 0 | 0 | 1225 | 0 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | 19 | | | 25 | | | 40 | | | 57 | |
| Link Speed (k/h) | | 50 | | | 50 | | | 50 | | | 50 | |
| Link Distance (m) | | 104.2 | | | 101.3 | | | 60.6 | | | 194.6 | |
| Travel Time (s) | | 7.5 | | | 7.3 | | | 4.4 | | | 14.0 | |
| Peak Hour Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Parking (#/hr) | | | 0 | | | 0 | | | | | | |
| Adj. Flow (vph) | 105 | 301 | 78 | 47 | 636 | 172 | 73 | 75 | 50 | 109 | 49 | 151 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 105 | 379 | 0 | 47 | 808 | 0 | 73 | 125 | 0 | 0 | 309 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(m) | | 3.5 | | | 3.5 | | | 3.5 | | | 3.5 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 3.0 | | | 3.0 | | | 3.0 | | | 3.0 | |
| Two way Left Turn Lane | | | | | | | | | | | | |
| Headway Factor | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 |
| Turning Speed (k/h) | 25 | | 15 | 25 | | 15 | 25 | | 15 | 25 | | 15 |
| Number of Detectors | 1 | 2 | | 1 | 2 | | 1 | 2 | | 1 | 2 | |
| Detector Template | Left | Thru | | Left | Thru | | Left | Thru | | Left | Thru | |
| Leading Detector (m) | 2.0 | 10.0 | | 2.0 | 10.0 | | 2.0 | 10.0 | | 2.0 | 10.0 | |
| Trailing Detector (m) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Position(m) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Size(m) | 2.0 | 0.6 | | 2.0 | 0.6 | | 2.0 | 0.6 | | 2.0 | 0.6 | |
| Detector 1 Type | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Queue (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Delay (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 2 Position(m) | | 9.4 | | | 9.4 | | | 9.4 | | | 9.4 | |
| Detector 2 Size(m) | | 0.6 | | | 0.6 | | | 0.6 | | | 0.6 | |
| Detector 2 Type | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Turn Type | Perm | NA | | pm+pt | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | 1 | 6 | | | 8 | | | 4 | |

| Lane Group | Ø3 | Ø7 |
|---|---|---|
| Lane Configurations | | |
| Traffic Volume (vph) | | |
| Future Volume (vph) | | |
| Ideal Flow (vphpl) | | |
| Storage Length (m) | | |
| Storage Lanes | | |
| Taper Length (m) | | |
| Lane Util. Factor | | |
| Frt | | |
| Flt Protected | | |
| Satd. Flow (prot) | | |
| Flt Permitted | | |
| Satd. Flow (perm) | | |
| Right Turn on Red | | |
| Satd. Flow (RTOR) | | |
| Link Speed (k/h) | | |
| Link Distance (m) | | |
| Travel Time (s) | | |
| Peak Hour Factor | | |
| Parking (#/hr) | | |
| Adj. Flow (vph) | | |
| Shared Lane Traffic (%) | | |
| Lane Group Flow (vph) | | |
| Enter Blocked Intersection | | |
| Lane Alignment | | |
| Median Width(m) | | |
| Link Offset(m) | | |
| Crosswalk Width(m) | | |
| Two way Left Turn Lane | | |
| Headway Factor | | |
| Turning Speed (k/h) | | |
| Number of Detectors | | |
| Detector Template | | |
| Leading Detector (m) | | |
| Trailing Detector (m) | | |
| Detector 1 Position(m) | | |
| Detector 1 Size(m) | | |
| Detector 1 Type | | |
| Detector 1 Channel | | |
| Detector 1 Extend (s) | | |
| Detector 1 Queue (s) | | |
| Detector 1 Delay (s) | | |
| Detector 2 Position(m) | | |
| Detector 2 Size(m) | | |
| Detector 2 Type | | |
| Detector 2 Channel | | |
| Detector 2 Extend (s) | | |
| Turn Type | | |
| Protected Phases | 3 | 7 |



| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Permitted Phases | 2 | | | 6 | | | 8 | | | 4 | | |
| Detector Phase | 2 | 2 | | 1 | 6 | | 8 | 8 | | 4 | 4 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 10.0 | 10.0 | | 10.0 | 10.0 | |
| Minimum Split (s) | 22.5 | 22.5 | | 9.5 | 22.5 | | 22.5 | 22.5 | | 22.5 | 22.5 | |
| Total Split (s) | 40.0 | 40.0 | | 11.0 | 51.0 | | 29.0 | 29.0 | | 29.0 | 29.0 | |
| Total Split (%) | 47.1% | 47.1% | | 12.9% | 60.0% | | 34.1% | 34.1% | | 34.1% | 34.1% | |
| Maximum Green (s) | 35.5 | 35.5 | | 6.5 | 46.5 | | 24.5 | 24.5 | | 24.5 | 24.5 | |
| Yellow Time (s) | 3.5 | 3.5 | | 3.5 | 3.5 | | 3.5 | 3.5 | | 3.5 | 3.5 | |
| All-Red Time (s) | 1.0 | 1.0 | | 1.0 | 1.0 | | 1.0 | 1.0 | | 1.0 | 1.0 | |
| Lost Time Adjust (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | | 0.0 | |
| Total Lost Time (s) | 4.5 | 4.5 | | 4.5 | 4.5 | | 4.5 | 4.5 | | | 4.5 | |
| Lead/Lag | Lag | Lag | | Lead | | | Lag | Lag | | Lag | Lag | |
| Lead-Lag Optimize? | Yes | Yes | | Yes | | | Yes | Yes | | Yes | Yes | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Recall Mode | C-Max | C-Max | | None | C-Max | | None | None | | None | None | |
| Walk Time (s) | 7.0 | 7.0 | | | 7.0 | | 7.0 | 7.0 | | 7.0 | 7.0 | |
| Flash Dont Walk (s) | 11.0 | 11.0 | | | 11.0 | | 11.0 | 11.0 | | 11.0 | 11.0 | |
| Pedestrian Calls (#/hr) | 0 | 0 | | | 0 | | 0 | 0 | | 0 | 0 | |
| Act Effct Green (s) | 46.0 | 46.0 | | 52.8 | 52.8 | | 23.2 | 23.2 | | | 23.2 | |
| Actuated g/C Ratio | 0.54 | 0.54 | | 0.62 | 0.62 | | 0.27 | 0.27 | | | 0.27 | |
| v/c Ratio | 0.49 | 0.45 | | 0.10 | 0.85 | | 0.36 | 0.29 | | | 0.82 | |
| Control Delay | 28.0 | 16.5 | | 8.6 | 25.5 | | 27.9 | 16.7 | | | 40.9 | |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | | 0.0 | |
| Total Delay | 28.0 | 16.5 | | 8.6 | 25.5 | | 27.9 | 16.7 | | | 40.9 | |
| LOS | C | B | | A | C | | C | B | | | D | |
| Approach Delay | | 19.0 | | | 24.5 | | | 20.9 | | | 40.9 | |
| Approach LOS | | B | | | C | | | C | | | D | |
| Queue Length 50th (m) | 11.5 | 38.4 | | 2.8 | 95.6 | | 9.4 | 10.4 | | | 38.1 | |
| Queue Length 95th (m) | #37.9 | 71.3 | | 8.0 | #197.6 | | 19.2 | 21.7 | | | 63.1 | |
| Internal Link Dist (m) | | 80.2 | | | 77.3 | | | 36.6 | | | 170.6 | |
| Turn Bay Length (m) | 45.0 | | | 60.0 | | | | | | | | |
| Base Capacity (vph) | 216 | 833 | | 472 | 953 | | 231 | 482 | | | 417 | |
| 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 | 0.49 | 0.45 | | 0.10 | 0.85 | | 0.32 | 0.26 | | | 0.74 | |

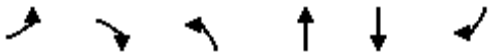
| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | CBD | | |
| Cycle Length: 85 | | | |
| Actuated Cycle Length: 85 | | | |
| Offset: 1 (1%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green | | | |
| Natural Cycle: 90 | | | |
| Control Type: Actuated-Coordinated | | | |
| Maximum v/c Ratio: 0.85 | | | |
| Intersection Signal Delay: 25.4 | | Intersection LOS: C | |
| Intersection Capacity Utilization 102.6% | | ICU Level of Service G | |
| Analysis Period (min) 15 | | | |

| Lane Group | Ø3 | Ø7 |
|---|---|---|
| Permitted Phases | | |
| Detector Phase | | |
| Switch Phase | | |
| Minimum Initial (s) | 3.0 | 3.0 |
| Minimum Split (s) | 5.0 | 5.0 |
| Total Split (s) | 5.0 | 5.0 |
| Total Split (%) | 6% | 6% |
| Maximum Green (s) | 3.0 | 3.0 |
| Yellow Time (s) | 2.0 | 2.0 |
| All-Red Time (s) | 0.0 | 0.0 |
| Lost Time Adjust (s) | | |
| Total Lost Time (s) | | |
| Lead/Lag | Lead | Lead |
| Lead-Lag Optimize? | Yes | Yes |
| Vehicle Extension (s) | 3.0 | 3.0 |
| Recall Mode | None | None |
| Walk Time (s) | | |
| Flash Dont Walk (s) | | |
| Pedestrian Calls (#/hr) | | |
| Act Effct Green (s) | | |
| Actuated g/C Ratio | | |
| v/c Ratio | | |
| Control Delay | | |
| Queue Delay | | |
| Total Delay | | |
| LOS | | |
| Approach Delay | | |
| Approach LOS | | |
| Queue Length 50th (m) | | |
| Queue Length 95th (m) | | |
| Internal Link Dist (m) | | |
| Turn Bay Length (m) | | |
| Base Capacity (vph) | | |
| Starvation Cap Reductn | | |
| Spillback Cap Reductn | | |
| Storage Cap Reductn | | |
| Reduced v/c Ratio | | |

| Intersection Summary |
|---|

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

Splits and Phases: 4: McRae Ave & Richmond Rd



| Lane Group | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (vph) | 18 | 33 | 50 | 223 | 167 | 27 |
| Future Volume (vph) | 18 | 33 | 50 | 223 | 167 | 27 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 0.913 | | | | 0.981 | |
| Flt Protected | 0.983 | | | 0.991 | | |
| Satd. Flow (prot) | 1566 | 0 | 0 | 1729 | 1712 | 0 |
| Flt Permitted | 0.983 | | | 0.991 | | |
| Satd. Flow (perm) | 1566 | 0 | 0 | 1729 | 1712 | 0 |
| Link Speed (k/h) | 30 | | | 50 | 50 | |
| Link Distance (m) | 55.1 | | | 194.6 | 126.3 | |
| Travel Time (s) | 6.6 | | | 14.0 | 9.1 | |
| Peak Hour Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj. Flow (vph) | 18 | 33 | 50 | 223 | 167 | 27 |
| Shared Lane Traffic (%) | | | | | | |
| Lane Group Flow (vph) | 51 | 0 | 0 | 273 | 194 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No |
| Lane Alignment | Left | Right | Left | Left | Left | Right |
| Median Width(m) | 3.5 | | | 0.0 | 0.0 | |
| Link Offset(m) | 0.0 | | | 0.0 | 0.0 | |
| Crosswalk Width(m) | 3.0 | | | 3.0 | 3.0 | |
| Two way Left Turn Lane | | | | | | |
| Headway Factor | 1.09 | 1.09 | 1.09 | 1.09 | 1.09 | 1.09 |
| Turning Speed (k/h) | 25 | 15 | 25 | | | 15 |
| Sign Control | Stop | | | Free | Free | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization 39.6% | | ICU Level of Service A | |
| Analysis Period (min) 15 | | | |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.8 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 18 | 33 | 50 | 223 | 167 | 27 |
| Future Vol, veh/h | 18 | 33 | 50 | 223 | 167 | 27 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 100 | 100 | 100 | 100 | 100 | 100 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 18 | 33 | 50 | 223 | 167 | 27 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 504 | 181 | 194 | 0 | - | 0 |
| Stage 1 | 181 | - | - | - | - | - |
| Stage 2 | 323 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | 4.12 | - | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | 2.218 | - | - | - |
| Pot Cap-1 Maneuver | 528 | 862 | 1379 | - | - | - |
| Stage 1 | 850 | - | - | - | - | - |
| Stage 2 | 734 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 506 | 862 | 1379 | - | - | - |
| Mov Cap-2 Maneuver | 506 | - | - | - | - | - |
| Stage 1 | 815 | - | - | - | - | - |
| Stage 2 | 734 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 10.6 | 1.4 | 0 |
| HCM LOS | B | | |

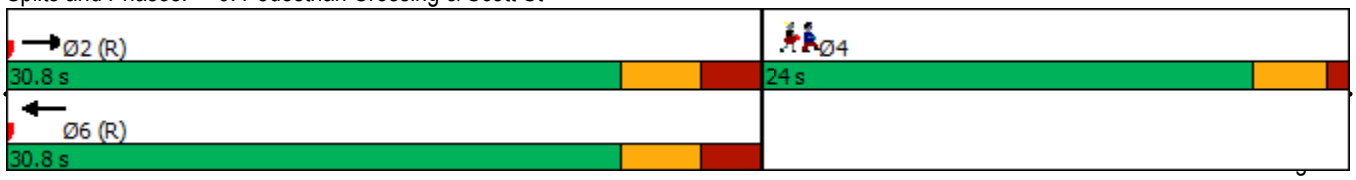
| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1379 | - | 691 | - | - |
| HCM Lane V/C Ratio | 0.036 | - | 0.074 | - | - |
| HCM Control Delay (s) | 7.7 | 0 | 10.6 | - | - |
| HCM Lane LOS | A | A | B | - | - |
| HCM 95th %tile Q(veh) | 0.1 | - | 0.2 | - | - |

| Lane Group | EBT | EBR | WBL | WBT | NBL | NBR | Ø4 |
|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | |
| Traffic Volume (vph) | 471 | 0 | 0 | 498 | 0 | 0 | |
| Future Volume (vph) | 471 | 0 | 0 | 498 | 0 | 0 | |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| Frt | | | | | | | |
| Flt Protected | | | | | | | |
| Satd. Flow (prot) | 1745 | 0 | 0 | 1745 | 0 | 0 | |
| Flt Permitted | | | | | | | |
| Satd. Flow (perm) | 1745 | 0 | 0 | 1745 | 0 | 0 | |
| Right Turn on Red | | Yes | | | | Yes | |
| Satd. Flow (RTOR) | | | | | | | |
| Link Speed (k/h) | 50 | | | 50 | 50 | | |
| Link Distance (m) | 22.1 | | | 57.4 | 22.8 | | |
| Travel Time (s) | 1.6 | | | 4.1 | 1.6 | | |
| Peak Hour Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| Adj. Flow (vph) | 471 | 0 | 0 | 498 | 0 | 0 | |
| Shared Lane Traffic (%) | | | | | | | |
| Lane Group Flow (vph) | 471 | 0 | 0 | 498 | 0 | 0 | |
| Enter Blocked Intersection | No | No | No | No | No | No | |
| Lane Alignment | Left | Right | Left | Left | Left | Right | |
| Median Width(m) | 0.0 | | | 0.0 | 0.0 | | |
| Link Offset(m) | 0.0 | | | 0.0 | 0.0 | | |
| Crosswalk Width(m) | 3.0 | | | 3.0 | 3.0 | | |
| Two way Left Turn Lane | | | | | | | |
| Headway Factor | 1.09 | 1.09 | 1.09 | 1.09 | 1.09 | 1.09 | |
| Turning Speed (k/h) | | 15 | 25 | | 25 | 15 | |
| Number of Detectors | 2 | | | 2 | | | |
| Detector Template | Thru | | | Thru | | | |
| Leading Detector (m) | 10.0 | | | 10.0 | | | |
| Trailing Detector (m) | 0.0 | | | 0.0 | | | |
| Detector 1 Position(m) | 0.0 | | | 0.0 | | | |
| Detector 1 Size(m) | 0.6 | | | 0.6 | | | |
| Detector 1 Type | Cl+Ex | | | Cl+Ex | | | |
| Detector 1 Channel | | | | | | | |
| Detector 1 Extend (s) | 0.0 | | | 0.0 | | | |
| Detector 1 Queue (s) | 0.0 | | | 0.0 | | | |
| Detector 1 Delay (s) | 0.0 | | | 0.0 | | | |
| Detector 2 Position(m) | 9.4 | | | 9.4 | | | |
| Detector 2 Size(m) | 0.6 | | | 0.6 | | | |
| Detector 2 Type | Cl+Ex | | | Cl+Ex | | | |
| Detector 2 Channel | | | | | | | |
| Detector 2 Extend (s) | 0.0 | | | 0.0 | | | |
| Turn Type | NA | | | NA | | | |
| Protected Phases | 2 | | | 6 | | | 4 |
| Permitted Phases | | | | | | | |
| Detector Phase | 2 | | | 6 | | | |
| Switch Phase | | | | | | | |
| Minimum Initial (s) | 5.0 | | | 5.0 | | | 10.0 |

| Lane Group | EBT | EBR | WBL | WBT | NBL | NBR | Ø4 |
|---|---|---|---|---|---|---|---|
| Minimum Split (s) | 23.8 | | | 23.8 | | | 22.0 |
| Total Split (s) | 30.8 | | | 30.8 | | | 24.0 |
| Total Split (%) | 56.2% | | | 56.2% | | | 44% |
| Maximum Green (s) | 25.0 | | | 25.0 | | | 20.0 |
| Yellow Time (s) | 3.3 | | | 3.3 | | | 3.0 |
| All-Red Time (s) | 2.5 | | | 2.5 | | | 1.0 |
| Lost Time Adjust (s) | 0.0 | | | 0.0 | | | |
| Total Lost Time (s) | 5.8 | | | 5.8 | | | |
| Lead/Lag | | | | | | | |
| Lead-Lag Optimize? | | | | | | | |
| Vehicle Extension (s) | 3.0 | | | 3.0 | | | 3.0 |
| Recall Mode | C-Max | | | C-Max | | | None |
| Walk Time (s) | 7.0 | | | 7.0 | | | 7.0 |
| Flash Dont Walk (s) | 11.0 | | | 11.0 | | | 11.0 |
| Pedestrian Calls (#/hr) | 0 | | | 0 | | | 187 |
| Act Effct Green (s) | 32.6 | | | 32.6 | | | |
| Actuated g/C Ratio | 0.59 | | | 0.59 | | | |
| v/c Ratio | 0.45 | | | 0.48 | | | |
| Control Delay | 10.8 | | | 11.1 | | | |
| Queue Delay | 0.0 | | | 0.0 | | | |
| Total Delay | 10.8 | | | 11.1 | | | |
| LOS | B | | | B | | | |
| Approach Delay | 10.8 | | | 11.1 | | | |
| Approach LOS | B | | | B | | | |
| Queue Length 50th (m) | 29.7 | | | 32.1 | | | |
| Queue Length 95th (m) | 51.9 | | | 56.0 | | | |
| Internal Link Dist (m) | 0.1 | | | 33.4 | 0.1 | | |
| Turn Bay Length (m) | | | | | | | |
| Base Capacity (vph) | 1036 | | | 1036 | | | |
| Starvation Cap Reductn | 0 | | | 0 | | | |
| Spillback Cap Reductn | 0 | | | 0 | | | |
| Storage Cap Reductn | 0 | | | 0 | | | |
| Reduced v/c Ratio | 0.45 | | | 0.48 | | | |

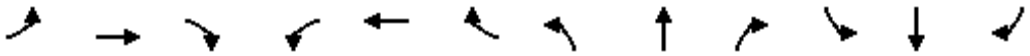
| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Cycle Length: 54.8 | | | |
| Actuated Cycle Length: 54.8 | | | |
| Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green | | | |
| Natural Cycle: 50 | | | |
| Control Type: Actuated-Coordinated | | | |
| Maximum v/c Ratio: 0.48 | | | |
| Intersection Signal Delay: 11.0 | | Intersection LOS: B | |
| Intersection Capacity Utilization 32.5% | | ICU Level of Service A | |
| Analysis Period (min) 15 | | | |

Splits and Phases: 6: Pedestrian Crossing & Scott St



# Appendix M

2027 Future Total Synchro Worksheets



| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 0 | 565 | 4 | 12 | 316 | 6 | 4 | 0 | 40 | 7 | 0 | 0 |
| Future Volume (vph) | 0 | 565 | 4 | 12 | 316 | 6 | 4 | 0 | 40 | 7 | 0 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| 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 |
| Frt | | 0.999 | | | 0.997 | | | 0.876 | | | | |
| Flt Protected | | | | | 0.998 | | | 0.996 | | | 0.950 | |
| Satd. Flow (prot) | 0 | 1569 | 0 | 0 | 1535 | 0 | 0 | 1370 | 0 | 0 | 761 | 0 |
| Flt Permitted | | | | | 0.998 | | | 0.996 | | | 0.950 | |
| Satd. Flow (perm) | 0 | 1569 | 0 | 0 | 1535 | 0 | 0 | 1370 | 0 | 0 | 761 | 0 |
| Link Speed (k/h) | | 50 | | | 50 | | | 50 | | | 50 | |
| Link Distance (m) | | 78.0 | | | 22.1 | | | 319.9 | | | 53.1 | |
| Travel Time (s) | | 5.6 | | | 1.6 | | | 23.0 | | | 3.8 | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Heavy Vehicles (%) | 100% | 2% | 2% | 2% | 2% | 100% | 2% | 100% | 2% | 100% | 100% | 100% |
| Parking (#/hr) | | | 0 | | | 0 | | | 0 | | | 0 |
| Adj. Flow (vph) | 0 | 628 | 4 | 13 | 351 | 7 | 4 | 0 | 44 | 8 | 0 | 0 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 632 | 0 | 0 | 371 | 0 | 0 | 48 | 0 | 0 | 8 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 3.0 | | | 3.0 | | | 3.0 | | | 3.0 | |
| Two way Left Turn Lane | | | | | | | | | | | | |
| Headway Factor | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 |
| Turning Speed (k/h) | 25 | | 15 | 25 | | 15 | 25 | | 15 | 25 | | 15 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | CBD | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization | 45.2% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ⇕ | | | ⇕ | | | ⇕ | | | ⇕ | |
| Traffic Vol, veh/h | 0 | 565 | 4 | 12 | 316 | 6 | 4 | 0 | 40 | 7 | 0 | 0 |
| Future Vol, veh/h | 0 | 565 | 4 | 12 | 316 | 6 | 4 | 0 | 40 | 7 | 0 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 100 | 2 | 2 | 2 | 2 | 100 | 2 | 100 | 2 | 100 | 100 | 100 |
| Mvmt Flow | 0 | 628 | 4 | 13 | 351 | 7 | 4 | 0 | 44 | 8 | 0 | 0 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 358 | 0 | 0 | 632 | 0 | 0 | 1011 | 1014 | 630 | 1033 | 1013 | 355 |
| Stage 1 | - | - | - | - | - | - | 630 | 630 | - | 381 | 381 | - |
| Stage 2 | - | - | - | - | - | - | 381 | 384 | - | 652 | 632 | - |
| Critical Hdwy | 5.1 | - | - | 4.12 | - | - | 7.12 | 7.5 | 6.22 | 8.1 | 7.5 | 7.2 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.12 | 6.5 | - | 7.1 | 6.5 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.12 | 6.5 | - | 7.1 | 6.5 | - |
| Follow-up Hdwy | 3.1 | - | - | 2.218 | - | - | 3.518 | 4.9 | 3.318 | 4.4 | 4.9 | 4.2 |
| Pot Cap-1 Maneuver | 813 | - | - | 951 | - | - | 218 | 164 | 482 | 141 | 164 | 515 |
| Stage 1 | - | - | - | - | - | - | 470 | 351 | - | 483 | 473 | - |
| Stage 2 | - | - | - | - | - | - | 641 | 472 | - | 328 | 350 | - |
| Platoon blocked, % | | - | - | | - | - | | | | | | |
| Mov Cap-1 Maneuver | 813 | - | - | 951 | - | - | 215 | 161 | 482 | 126 | 161 | 515 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 215 | 161 | - | 126 | 161 | - |
| Stage 1 | - | - | - | - | - | - | 470 | 351 | - | 483 | 465 | - |
| Stage 2 | - | - | - | - | - | - | 630 | 464 | - | 298 | 350 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0 | 0.3 | 14.4 | 35.4 |
| HCM LOS | | | B | E |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 433 | 813 | - | - | 951 | - | - | 126 |
| HCM Lane V/C Ratio | 0.113 | - | - | - | 0.014 | - | - | 0.062 |
| HCM Control Delay (s) | 14.4 | 0 | - | - | 8.8 | 0 | - | 35.4 |
| HCM Lane LOS | B | A | - | - | A | A | - | E |
| HCM 95th %tile Q(veh) | 0.4 | 0 | - | - | 0 | - | - | 0.2 |

| Lane Group | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (vph) | 581 | 30 | 129 | 318 | 17 | 126 |
| Future Volume (vph) | 581 | 30 | 129 | 318 | 17 | 126 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 0.993 | | | | 0.881 | |
| Flt Protected | | | | 0.986 | 0.994 | |
| Satd. Flow (prot) | 1560 | 0 | 0 | 1394 | 1375 | 0 |
| Flt Permitted | | | | 0.986 | 0.994 | |
| Satd. Flow (perm) | 1560 | 0 | 0 | 1394 | 1375 | 0 |
| Link Speed (k/h) | 50 | | | 50 | 50 | |
| Link Distance (m) | 57.4 | | | 138.5 | 125.8 | |
| Travel Time (s) | 4.1 | | | 10.0 | 9.1 | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Parking (#/hr) | | 0 | | 0 | | |
| Adj. Flow (vph) | 646 | 33 | 143 | 353 | 19 | 140 |
| Shared Lane Traffic (%) | | | | | | |
| Lane Group Flow (vph) | 679 | 0 | 0 | 496 | 159 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No |
| Lane Alignment | Left | Right | Left | Left | Left | Right |
| Median Width(m) | 0.0 | | | 0.0 | 3.5 | |
| Link Offset(m) | 0.0 | | | 0.0 | 0.0 | |
| Crosswalk Width(m) | 3.0 | | | 3.0 | 3.0 | |
| Two way Left Turn Lane | | | | | | |
| Headway Factor | 1.24 | 1.24 | 1.24 | 1.41 | 1.24 | 1.24 |
| Turning Speed (k/h) | | 15 | 25 | | 25 | 15 |
| Sign Control | Free | | | Free | Stop | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | CBD | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization 86.2% | | ICU Level of Service E | |
| Analysis Period (min) 15 | | | |

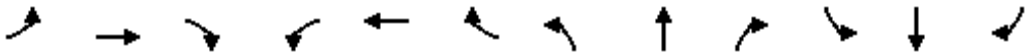
| Intersection | |
|---|---|
| Int Delay, s/veh | 3.7 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 581 | 30 | 129 | 318 | 17 | 126 |
| Future Vol, veh/h | 581 | 30 | 129 | 318 | 17 | 126 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 646 | 33 | 143 | 353 | 19 | 140 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 679 | 0 | 1302 | 663 |
| Stage 1 | - | - | - | - | 663 | - |
| Stage 2 | - | - | - | - | 639 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 913 | - | 177 | 461 |
| Stage 1 | - | - | - | - | 512 | - |
| Stage 2 | - | - | - | - | 526 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 913 | - | 142 | 461 |
| Mov Cap-2 Maneuver | - | - | - | - | 142 | - |
| Stage 1 | - | - | - | - | 512 | - |
| Stage 2 | - | - | - | - | 423 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 2.8 | 22.3 |
| HCM LOS | | | C |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | 364 | - | - | 913 | - |
| HCM Lane V/C Ratio | 0.437 | - | - | 0.157 | - |
| HCM Control Delay (s) | 22.3 | - | - | 9.7 | 0 |
| HCM Lane LOS | C | - | - | A | A |
| HCM 95th %tile Q(veh) | 2.1 | - | - | 0.6 | - |



| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 23 | 492 | 9 | 19 | 328 | 7 | 8 | 9 | 31 | 2 | 5 | 15 |
| Future Volume (vph) | 23 | 492 | 9 | 19 | 328 | 7 | 8 | 9 | 31 | 2 | 5 | 15 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Storage Length (m) | 0.0 | | 0.0 | 0.0 | | 10.0 | 0.0 | | 0.0 | 0.0 | | 0.0 |
| Storage Lanes | 0 | | 0 | 0 | | 1 | 0 | | 0 | 0 | | 0 |
| Taper Length (m) | 15.0 | | | 15.0 | | | 15.0 | | | 15.0 | | |
| 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 |
| Frt | | 0.998 | | | | 0.850 | | 0.913 | | | 0.908 | |
| Flt Protected | | 0.998 | | | 0.997 | | | 0.992 | | | 0.996 | |
| Satd. Flow (prot) | 0 | 1564 | 0 | 0 | 1566 | 1201 | 0 | 1422 | 0 | 0 | 1420 | 0 |
| Flt Permitted | | 0.998 | | | 0.997 | | | 0.992 | | | 0.996 | |
| Satd. Flow (perm) | 0 | 1564 | 0 | 0 | 1566 | 1201 | 0 | 1422 | 0 | 0 | 1420 | 0 |
| Link Speed (k/h) | | 50 | | | 50 | | | 50 | | | 50 | |
| Link Distance (m) | | 72.3 | | | 104.2 | | | 72.7 | | | 319.9 | |
| Travel Time (s) | | 5.2 | | | 7.5 | | | 5.2 | | | 23.0 | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Parking (#/hr) | | | 0 | | | 0 | | | 0 | | | 0 |
| Adj. Flow (vph) | 26 | 547 | 10 | 21 | 364 | 8 | 9 | 10 | 34 | 2 | 6 | 17 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 583 | 0 | 0 | 385 | 8 | 0 | 53 | 0 | 0 | 25 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(m) | | 3.5 | | | 3.5 | | | 0.0 | | | 0.0 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 3.0 | | | 3.0 | | | 3.0 | | | 3.0 | |
| Two way Left Turn Lane | | | | | | | | | | | | |
| Headway Factor | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.41 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 |
| Turning Speed (k/h) | 25 | | 15 | 25 | | 15 | 25 | | 15 | 25 | | 15 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | CBD | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization 65.1% | | ICU Level of Service C | |
| Analysis Period (min) 15 | | | |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.6 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ↕ | | | ↰ | ↱ | | ↕ | | | ↕ | |
| Traffic Vol, veh/h | 23 | 492 | 9 | 19 | 328 | 7 | 8 | 9 | 31 | 2 | 5 | 15 |
| Future Vol, veh/h | 23 | 492 | 9 | 19 | 328 | 7 | 8 | 9 | 31 | 2 | 5 | 15 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | 100 | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 26 | 547 | 10 | 21 | 364 | 8 | 9 | 10 | 34 | 2 | 6 | 17 |

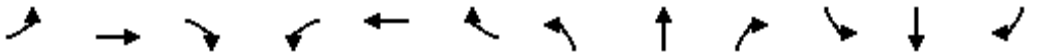
| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 372 | 0 | 0 | 557 | 0 | 0 | 1026 | 1018 | 552 | 1032 | 1015 | 364 |
| Stage 1 | - | - | - | - | - | - | 604 | 604 | - | 406 | 406 | - |
| Stage 2 | - | - | - | - | - | - | 422 | 414 | - | 626 | 609 | - |
| Critical Hdwy | 4.12 | - | - | 4.12 | - | - | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Follow-up Hdwy | 2.218 | - | - | 2.218 | - | - | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 |
| Pot Cap-1 Maneuver | 1186 | - | - | 1014 | - | - | 213 | 237 | 533 | 211 | 238 | 681 |
| Stage 1 | - | - | - | - | - | - | 485 | 488 | - | 622 | 598 | - |
| Stage 2 | - | - | - | - | - | - | 609 | 593 | - | 472 | 485 | - |
| Platoon blocked, % | | - | - | | - | - | | | | | | |
| Mov Cap-1 Maneuver | 1186 | - | - | 1014 | - | - | 195 | 223 | 533 | 182 | 224 | 681 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 195 | 223 | - | 182 | 224 | - |
| Stage 1 | - | - | - | - | - | - | 469 | 472 | - | 602 | 582 | - |
| Stage 2 | - | - | - | - | - | - | 573 | 578 | - | 418 | 469 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0.4 | 0.5 | 17.4 | 14.6 |
| HCM LOS | | | C | B |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 344 | 1186 | - | - | 1014 | - | - | 398 |
| HCM Lane V/C Ratio | 0.155 | 0.022 | - | - | 0.021 | - | - | 0.061 |
| HCM Control Delay (s) | 17.4 | 8.1 | 0 | - | 8.6 | 0 | - | 14.6 |
| HCM Lane LOS | C | A | A | - | A | A | - | B |
| HCM 95th %tile Q(veh) | 0.5 | 0.1 | - | - | 0.1 | - | - | 0.2 |

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 119 | 418 | 48 | 9 | 331 | 137 | 27 | 13 | 18 | 110 | 29 | 53 |
| Future Volume (vph) | 119 | 418 | 48 | 9 | 331 | 137 | 27 | 13 | 18 | 110 | 29 | 53 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Storage Length (m) | 45.0 | | 0.0 | 60.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 |
| Storage Lanes | 1 | | 0 | 1 | | 0 | 1 | | 0 | 0 | | 0 |
| Taper Length (m) | 30.0 | | | 55.0 | | | 15.0 | | | 15.0 | | |
| 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 |
| Frt | | 0.985 | | | 0.956 | | | 0.912 | | | 0.963 | |
| Flt Protected | 0.950 | | | 0.950 | | | 0.950 | | | | 0.972 | |
| Satd. Flow (prot) | 1492 | 1547 | 0 | 1492 | 1501 | 0 | 1492 | 1432 | 0 | 0 | 1470 | 0 |
| Flt Permitted | 0.416 | | | 0.418 | | | 0.622 | | | | 0.804 | |
| Satd. Flow (perm) | 653 | 1547 | 0 | 657 | 1501 | 0 | 977 | 1432 | 0 | 0 | 1216 | 0 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | 12 | | | 45 | | | 20 | | | 24 | |
| Link Speed (k/h) | | 50 | | | 50 | | | 50 | | | 50 | |
| Link Distance (m) | | 104.2 | | | 101.3 | | | 60.6 | | | 195.0 | |
| Travel Time (s) | | 7.5 | | | 7.3 | | | 4.4 | | | 14.0 | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Parking (#/hr) | | | 0 | | | 0 | | | | | | |
| Adj. Flow (vph) | 132 | 464 | 53 | 10 | 368 | 152 | 30 | 14 | 20 | 122 | 32 | 59 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 132 | 517 | 0 | 10 | 520 | 0 | 30 | 34 | 0 | 0 | 213 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(m) | | 3.5 | | | 3.5 | | | 3.5 | | | 3.5 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 3.0 | | | 3.0 | | | 3.0 | | | 3.0 | |
| Two way Left Turn Lane | | | | | | | | | | | | |
| Headway Factor | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 |
| Turning Speed (k/h) | 25 | | 15 | 25 | | 15 | 25 | | 15 | 25 | | 15 |
| Number of Detectors | 1 | 2 | | 1 | 2 | | 1 | 2 | | 1 | 2 | |
| Detector Template | Left | Thru | | Left | Thru | | Left | Thru | | Left | Thru | |
| Leading Detector (m) | 2.0 | 10.0 | | 2.0 | 10.0 | | 2.0 | 10.0 | | 2.0 | 10.0 | |
| Trailing Detector (m) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Position(m) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Size(m) | 2.0 | 0.6 | | 2.0 | 0.6 | | 2.0 | 0.6 | | 2.0 | 0.6 | |
| Detector 1 Type | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Queue (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Delay (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 2 Position(m) | | 9.4 | | | 9.4 | | | 9.4 | | | 9.4 | |
| Detector 2 Size(m) | | 0.6 | | | 0.6 | | | 0.6 | | | 0.6 | |
| Detector 2 Type | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 8 | | | 4 | |

| Lane Group | Ø3 | Ø7 |
|---|---|---|
| Lane Configurations | | |
| Traffic Volume (vph) | | |
| Future Volume (vph) | | |
| Ideal Flow (vphpl) | | |
| Storage Length (m) | | |
| Storage Lanes | | |
| Taper Length (m) | | |
| Lane Util. Factor | | |
| Frt | | |
| Flt Protected | | |
| Satd. Flow (prot) | | |
| Flt Permitted | | |
| Satd. Flow (perm) | | |
| Right Turn on Red | | |
| Satd. Flow (RTOR) | | |
| Link Speed (k/h) | | |
| Link Distance (m) | | |
| Travel Time (s) | | |
| Peak Hour Factor | | |
| Parking (#/hr) | | |
| Adj. Flow (vph) | | |
| Shared Lane Traffic (%) | | |
| Lane Group Flow (vph) | | |
| Enter Blocked Intersection | | |
| Lane Alignment | | |
| Median Width(m) | | |
| Link Offset(m) | | |
| Crosswalk Width(m) | | |
| Two way Left Turn Lane | | |
| Headway Factor | | |
| Turning Speed (k/h) | | |
| Number of Detectors | | |
| Detector Template | | |
| Leading Detector (m) | | |
| Trailing Detector (m) | | |
| Detector 1 Position(m) | | |
| Detector 1 Size(m) | | |
| Detector 1 Type | | |
| Detector 1 Channel | | |
| Detector 1 Extend (s) | | |
| Detector 1 Queue (s) | | |
| Detector 1 Delay (s) | | |
| Detector 2 Position(m) | | |
| Detector 2 Size(m) | | |
| Detector 2 Type | | |
| Detector 2 Channel | | |
| Detector 2 Extend (s) | | |
| Turn Type | | |
| Protected Phases | 3 | 7 |



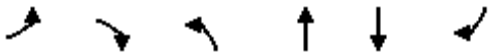
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Permitted Phases | 2 | | | 6 | | | 8 | | | 4 | | |
| Detector Phase | 2 | 2 | | 6 | 6 | | 8 | 8 | | 4 | 4 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 10.0 | 10.0 | | 10.0 | 10.0 | |
| Minimum Split (s) | 24.2 | 24.2 | | 24.2 | 24.2 | | 22.0 | 22.0 | | 22.0 | 22.0 | |
| Total Split (s) | 48.0 | 48.0 | | 48.0 | 48.0 | | 22.0 | 22.0 | | 22.0 | 22.0 | |
| Total Split (%) | 64.0% | 64.0% | | 64.0% | 64.0% | | 29.3% | 29.3% | | 29.3% | 29.3% | |
| Maximum Green (s) | 41.8 | 41.8 | | 41.8 | 41.8 | | 16.5 | 16.5 | | 16.5 | 16.5 | |
| Yellow Time (s) | 3.3 | 3.3 | | 3.3 | 3.3 | | 3.3 | 3.3 | | 3.3 | 3.3 | |
| All-Red Time (s) | 2.9 | 2.9 | | 2.9 | 2.9 | | 2.2 | 2.2 | | 2.2 | 2.2 | |
| Lost Time Adjust (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | | 0.0 | |
| Total Lost Time (s) | 6.2 | 6.2 | | 6.2 | 6.2 | | 5.5 | 5.5 | | | 5.5 | |
| Lead/Lag | | | | | | | Lag | Lag | | Lag | Lag | |
| Lead-Lag Optimize? | | | | | | | Yes | Yes | | Yes | Yes | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Recall Mode | C-Max | C-Max | | C-Max | C-Max | | None | None | | None | None | |
| Walk Time (s) | 7.0 | 7.0 | | 7.0 | 7.0 | | 5.5 | 5.5 | | 5.5 | 5.5 | |
| Flash Dont Walk (s) | 11.0 | 11.0 | | 11.0 | 11.0 | | 11.0 | 11.0 | | 11.0 | 11.0 | |
| Pedestrian Calls (#/hr) | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Act Effct Green (s) | 46.4 | 46.4 | | 46.4 | 46.4 | | 16.9 | 16.9 | | | 16.9 | |
| Actuated g/C Ratio | 0.62 | 0.62 | | 0.62 | 0.62 | | 0.23 | 0.23 | | | 0.23 | |
| v/c Ratio | 0.33 | 0.54 | | 0.02 | 0.55 | | 0.14 | 0.10 | | | 0.73 | |
| Control Delay | 11.1 | 11.6 | | 7.4 | 11.2 | | 22.6 | 13.0 | | | 37.9 | |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | | 0.0 | |
| Total Delay | 11.1 | 11.6 | | 7.4 | 11.2 | | 22.6 | 13.0 | | | 37.9 | |
| LOS | B | B | | A | B | | C | B | | | D | |
| Approach Delay | | 11.5 | | | 11.2 | | | 17.5 | | | 37.9 | |
| Approach LOS | | B | | | B | | | B | | | D | |
| Queue Length 50th (m) | 8.2 | 37.3 | | 0.5 | 35.0 | | 3.4 | 1.5 | | | 24.5 | |
| Queue Length 95th (m) | 21.4 | 71.6 | | 2.5 | 69.8 | | 9.1 | 7.4 | | | 43.8 | |
| Internal Link Dist (m) | | 80.2 | | | 77.3 | | | 36.6 | | | 171.0 | |
| Turn Bay Length (m) | 45.0 | | | 60.0 | | | | | | | | |
| Base Capacity (vph) | 404 | 961 | | 406 | 945 | | 242 | 370 | | | 319 | |
| 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 | 0.33 | 0.54 | | 0.02 | 0.55 | | 0.12 | 0.09 | | | 0.67 | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | CBD | | |
| Cycle Length: 75 | | | |
| Actuated Cycle Length: 75 | | | |
| Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green | | | |
| Natural Cycle: 60 | | | |
| Control Type: Actuated-Coordinated | | | |
| Maximum v/c Ratio: 0.73 | | | |
| Intersection Signal Delay: 15.5 | | Intersection LOS: B | |
| Intersection Capacity Utilization 72.3% | | ICU Level of Service C | |
| Analysis Period (min) 15 | | | |

Splits and Phases: 4: McRae Ave & Richmond Rd

| Lane Group | Ø3 | Ø7 |
|---|---|---|
| Permitted Phases | | |
| Detector Phase | | |
| Switch Phase | | |
| Minimum Initial (s) | 3.0 | 3.0 |
| Minimum Split (s) | 5.0 | 5.0 |
| Total Split (s) | 5.0 | 5.0 |
| Total Split (%) | 7% | 7% |
| Maximum Green (s) | 3.0 | 3.0 |
| Yellow Time (s) | 2.0 | 2.0 |
| All-Red Time (s) | 0.0 | 0.0 |
| Lost Time Adjust (s) | | |
| Total Lost Time (s) | | |
| Lead/Lag | Lead | Lead |
| Lead-Lag Optimize? | Yes | Yes |
| Vehicle Extension (s) | 3.0 | 3.0 |
| Recall Mode | None | None |
| Walk Time (s) | | |
| Flash Dont Walk (s) | | |
| Pedestrian Calls (#/hr) | | |
| Act Effct Green (s) | | |
| Actuated g/C Ratio | | |
| v/c Ratio | | |
| Control Delay | | |
| Queue Delay | | |
| Total Delay | | |
| LOS | | |
| Approach Delay | | |
| Approach LOS | | |
| Queue Length 50th (m) | | |
| Queue Length 95th (m) | | |
| Internal Link Dist (m) | | |
| Turn Bay Length (m) | | |
| Base Capacity (vph) | | |
| Starvation Cap Reductn | | |
| Spillback Cap Reductn | | |
| Storage Cap Reductn | | |
| Reduced v/c Ratio | | |

| Intersection Summary |
|---|



| Lane Group | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (vph) | 8 | 16 | 6 | 124 | 155 | 3 |
| Future Volume (vph) | 8 | 16 | 6 | 124 | 155 | 3 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 0.910 | | | | 0.997 | |
| Flt Protected | 0.984 | | | 0.998 | | |
| Satd. Flow (prot) | 1563 | 0 | 0 | 1742 | 1740 | 0 |
| Flt Permitted | 0.984 | | | 0.998 | | |
| Satd. Flow (perm) | 1563 | 0 | 0 | 1742 | 1740 | 0 |
| Link Speed (k/h) | 30 | | | 50 | 50 | |
| Link Distance (m) | 54.2 | | | 195.0 | 125.8 | |
| Travel Time (s) | 6.5 | | | 14.0 | 9.1 | |
| Peak Hour Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj. Flow (vph) | 8 | 16 | 6 | 124 | 155 | 3 |
| Shared Lane Traffic (%) | | | | | | |
| Lane Group Flow (vph) | 24 | 0 | 0 | 130 | 158 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No |
| Lane Alignment | Left | Right | Left | Left | Left | Right |
| Median Width(m) | 3.5 | | | 0.0 | 0.0 | |
| Link Offset(m) | 0.0 | | | 0.0 | 0.0 | |
| Crosswalk Width(m) | 3.0 | | | 3.0 | 3.0 | |
| Two way Left Turn Lane | | | | | | |
| Headway Factor | 1.09 | 1.09 | 1.09 | 1.09 | 1.09 | 1.09 |
| Turning Speed (k/h) | 25 | 15 | 25 | | | 15 |
| Sign Control | Stop | | | Free | Free | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization 22.0% | | ICU Level of Service A | |
| Analysis Period (min) 15 | | | |

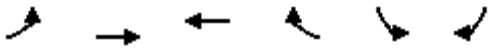
| Intersection | |
|---|---|
| Int Delay, s/veh | 0.9 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 8 | 16 | 6 | 124 | 155 | 3 |
| Future Vol, veh/h | 8 | 16 | 6 | 124 | 155 | 3 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 100 | 100 | 100 | 100 | 100 | 100 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 8 | 16 | 6 | 124 | 155 | 3 |

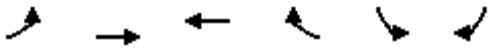
| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 293 | 157 | 158 | 0 | - | 0 |
| Stage 1 | 157 | - | - | - | - | - |
| Stage 2 | 136 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | 4.12 | - | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | 2.218 | - | - | - |
| Pot Cap-1 Maneuver | 698 | 889 | 1422 | - | - | - |
| Stage 1 | 871 | - | - | - | - | - |
| Stage 2 | 890 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 695 | 889 | 1422 | - | - | - |
| Mov Cap-2 Maneuver | 695 | - | - | - | - | - |
| Stage 1 | 867 | - | - | - | - | - |
| Stage 2 | 890 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 9.6 | 0.3 | 0 |
| HCM LOS | A | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1422 | - | 813 | - | - |
| HCM Lane V/C Ratio | 0.004 | - | 0.03 | - | - |
| HCM Control Delay (s) | 7.5 | 0 | 9.6 | - | - |
| HCM Lane LOS | A | A | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | 0.1 | - | - |



| Lane Group | EBL | EBT | WBT | WBR | SBL | SBR | Ø4 |
|---|---|---|---|---|---|---|---|
| Lane Configurations | | ↑ | ↑ | | | | |
| Traffic Volume (vph) | 0 | 612 | 334 | 0 | 0 | 0 | |
| Future Volume (vph) | 0 | 612 | 334 | 0 | 0 | 0 | |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| Frt | | | | | | | |
| Flt Protected | | | | | | | |
| Satd. Flow (prot) | 0 | 1745 | 1745 | 0 | 0 | 0 | |
| Flt Permitted | | | | | | | |
| Satd. Flow (perm) | 0 | 1745 | 1745 | 0 | 0 | 0 | |
| Right Turn on Red | | | | No | | Yes | |
| Satd. Flow (RTOR) | | | | | | | |
| Link Speed (k/h) | | 50 | 50 | | 50 | | |
| Link Distance (m) | | 22.1 | 57.4 | | 18.9 | | |
| Travel Time (s) | | 1.6 | 4.1 | | 1.4 | | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | |
| Adj. Flow (vph) | 0 | 680 | 371 | 0 | 0 | 0 | |
| Shared Lane Traffic (%) | | | | | | | |
| Lane Group Flow (vph) | 0 | 680 | 371 | 0 | 0 | 0 | |
| Enter Blocked Intersection | No | No | No | No | No | No | |
| Lane Alignment | Left | Left | Left | Right | Left | Right | |
| Median Width(m) | | 0.0 | 0.0 | | 0.0 | | |
| Link Offset(m) | | 0.0 | 0.0 | | 0.0 | | |
| Crosswalk Width(m) | | 3.0 | 3.0 | | 3.0 | | |
| Two way Left Turn Lane | | | | | | | |
| Headway Factor | 1.09 | 1.09 | 1.09 | 1.09 | 1.09 | 1.09 | |
| Turning Speed (k/h) | 25 | | | 15 | 25 | 15 | |
| Number of Detectors | | 2 | 2 | | | | |
| Detector Template | | Thru | Thru | | | | |
| Leading Detector (m) | | 10.0 | 10.0 | | | | |
| Trailing Detector (m) | | 0.0 | 0.0 | | | | |
| Detector 1 Position(m) | | 0.0 | 0.0 | | | | |
| Detector 1 Size(m) | | 0.6 | 0.6 | | | | |
| Detector 1 Type | | Cl+Ex | Cl+Ex | | | | |
| Detector 1 Channel | | | | | | | |
| Detector 1 Extend (s) | | 0.0 | 0.0 | | | | |
| Detector 1 Queue (s) | | 0.0 | 0.0 | | | | |
| Detector 1 Delay (s) | | 0.0 | 0.0 | | | | |
| Detector 2 Position(m) | | 9.4 | 9.4 | | | | |
| Detector 2 Size(m) | | 0.6 | 0.6 | | | | |
| Detector 2 Type | | Cl+Ex | Cl+Ex | | | | |
| Detector 2 Channel | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | 0.0 | | | | |
| Turn Type | | NA | NA | | | | |
| Protected Phases | | 2 | 6 | | | | 4 |
| Permitted Phases | | | | | | | |
| Detector Phase | | 2 | 6 | | | | |
| Switch Phase | | | | | | | |
| Minimum Initial (s) | | 5.0 | 5.0 | | | | 10.0 |

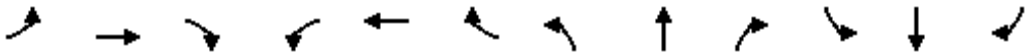


| Lane Group | EBL | EBT | WBT | WBR | SBL | SBR | Ø4 |
|---|---|---|---|---|---|---|---|
| Minimum Split (s) | | 23.8 | 23.8 | | | | 22.0 |
| Total Split (s) | | 30.8 | 30.8 | | | | 24.0 |
| Total Split (%) | | 56.2% | 56.2% | | | | 44% |
| Maximum Green (s) | | 25.0 | 25.0 | | | | 20.0 |
| Yellow Time (s) | | 3.3 | 3.3 | | | | 3.0 |
| All-Red Time (s) | | 2.5 | 2.5 | | | | 1.0 |
| Lost Time Adjust (s) | | 0.0 | 0.0 | | | | |
| Total Lost Time (s) | | 5.8 | 5.8 | | | | |
| Lead/Lag | | | | | | | |
| Lead-Lag Optimize? | | | | | | | |
| Vehicle Extension (s) | | 3.0 | 3.0 | | | | 3.0 |
| Recall Mode | | C-Max | C-Max | | | | None |
| Walk Time (s) | | 7.0 | 7.0 | | | | 7.0 |
| Flash Dont Walk (s) | | 11.0 | 11.0 | | | | 11.0 |
| Pedestrian Calls (#/hr) | | 0 | 0 | | | | 122 |
| Act Effct Green (s) | | 32.6 | 32.6 | | | | |
| Actuated g/C Ratio | | 0.59 | 0.59 | | | | |
| v/c Ratio | | 0.66 | 0.36 | | | | |
| Control Delay | | 15.4 | 9.6 | | | | |
| Queue Delay | | 0.0 | 0.0 | | | | |
| Total Delay | | 15.4 | 9.6 | | | | |
| LOS | | B | A | | | | |
| Approach Delay | | 15.4 | 9.6 | | | | |
| Approach LOS | | B | A | | | | |
| Queue Length 50th (m) | | 51.3 | 21.7 | | | | |
| Queue Length 95th (m) | | #106.3 | 38.5 | | | | |
| Internal Link Dist (m) | | 0.1 | 33.4 | | 0.1 | | |
| Turn Bay Length (m) | | | | | | | |
| Base Capacity (vph) | | 1036 | 1036 | | | | |
| Starvation Cap Reductn | | 0 | 0 | | | | |
| Spillback Cap Reductn | | 0 | 0 | | | | |
| Storage Cap Reductn | | 0 | 0 | | | | |
| Reduced v/c Ratio | | 0.66 | 0.36 | | | | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Cycle Length: 54.8 | | | |
| Actuated Cycle Length: 54.8 | | | |
| Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green | | | |
| Natural Cycle: 60 | | | |
| Control Type: Actuated-Coordinated | | | |
| Maximum v/c Ratio: 0.66 | | | |
| Intersection Signal Delay: 13.4 | | Intersection LOS: B | |
| Intersection Capacity Utilization 38.8% | | ICU Level of Service A | |
| Analysis Period (min) 15 | | | |

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

Splits and Phases: 6: Scott St & Pedestrian Crossing



| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 0 | 478 | 8 | 16 | 527 | 6 | 12 | 0 | 35 | 6 | 0 | 1 |
| Future Volume (vph) | 0 | 478 | 8 | 16 | 527 | 6 | 12 | 0 | 35 | 6 | 0 | 1 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| 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 |
| Frt | | 0.998 | | | 0.999 | | | 0.899 | | | 0.981 | |
| Flt Protected | | | | | 0.999 | | | 0.987 | | | 0.959 | |
| Satd. Flow (prot) | 0 | 1567 | 0 | 0 | 1551 | 0 | 0 | 1394 | 0 | 0 | 754 | 0 |
| Flt Permitted | | | | | 0.999 | | | 0.987 | | | 0.959 | |
| Satd. Flow (perm) | 0 | 1567 | 0 | 0 | 1551 | 0 | 0 | 1394 | 0 | 0 | 754 | 0 |
| Link Speed (k/h) | | 50 | | | 50 | | | 50 | | | 50 | |
| Link Distance (m) | | 78.0 | | | 22.1 | | | 319.9 | | | 53.1 | |
| Travel Time (s) | | 5.6 | | | 1.6 | | | 23.0 | | | 3.8 | |
| Peak Hour Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Heavy Vehicles (%) | 100% | 2% | 2% | 2% | 2% | 100% | 2% | 100% | 2% | 100% | 100% | 100% |
| Parking (#/hr) | | | 0 | | | 0 | | | 0 | | | 0 |
| Adj. Flow (vph) | 0 | 478 | 8 | 16 | 527 | 6 | 12 | 0 | 35 | 6 | 0 | 1 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 486 | 0 | 0 | 549 | 0 | 0 | 47 | 0 | 0 | 7 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 3.0 | | | 3.0 | | | 3.0 | | | 3.0 | |
| Two way Left Turn Lane | | | | | | | | | | | | |
| Headway Factor | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 |
| Turning Speed (k/h) | 25 | | 15 | 25 | | 15 | 25 | | 15 | 25 | | 15 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | CBD | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization 58.1% | | ICU Level of Service B | |
| Analysis Period (min) 15 | | | |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Traffic Vol, veh/h | 0 | 478 | 8 | 16 | 527 | 6 | 12 | 0 | 35 | 6 | 0 | 1 |
| Future Vol, veh/h | 0 | 478 | 8 | 16 | 527 | 6 | 12 | 0 | 35 | 6 | 0 | 1 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Heavy Vehicles, % | 100 | 2 | 2 | 2 | 2 | 100 | 2 | 100 | 2 | 100 | 100 | 100 |
| Mvmt Flow | 0 | 478 | 8 | 16 | 527 | 6 | 12 | 0 | 35 | 6 | 0 | 1 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 533 | 0 | 0 | 486 | 0 | 0 | 1045 | 1047 | 482 | 1062 | 1048 | 530 |
| Stage 1 | - | - | - | - | - | - | 482 | 482 | - | 562 | 562 | - |
| Stage 2 | - | - | - | - | - | - | 563 | 565 | - | 500 | 486 | - |
| Critical Hdwy | 5.1 | - | - | 4.12 | - | - | 7.12 | 7.5 | 6.22 | 8.1 | 7.5 | 7.2 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.12 | 6.5 | - | 7.1 | 6.5 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.12 | 6.5 | - | 7.1 | 6.5 | - |
| Follow-up Hdwy | 3.1 | - | - | 2.218 | - | - | 3.518 | 4.9 | 3.318 | 4.4 | 4.9 | 4.2 |
| Pot Cap-1 Maneuver | 681 | - | - | 1077 | - | - | 207 | 156 | 584 | 134 | 155 | 398 |
| Stage 1 | - | - | - | - | - | - | 565 | 420 | - | 373 | 381 | - |
| Stage 2 | - | - | - | - | - | - | 511 | 380 | - | 408 | 418 | - |
| Platoon blocked, % | | - | - | | - | - | | | | | | |
| Mov Cap-1 Maneuver | 681 | - | - | 1077 | - | - | 203 | 153 | 584 | 124 | 152 | 398 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 203 | 153 | - | 124 | 152 | - |
| Stage 1 | - | - | - | - | - | - | 565 | 420 | - | 373 | 373 | - |
| Stage 2 | - | - | - | - | - | - | 499 | 372 | - | 384 | 418 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0 | 0.2 | 15.3 | 32.5 |
| HCM LOS | | | C | D |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 395 | 681 | - | - | 1077 | - | - | 138 |
| HCM Lane V/C Ratio | 0.119 | - | - | - | 0.015 | - | - | 0.051 |
| HCM Control Delay (s) | 15.3 | 0 | - | - | 8.4 | 0 | - | 32.5 |
| HCM Lane LOS | C | A | - | - | A | A | - | D |
| HCM 95th %tile Q(veh) | 0.4 | 0 | - | - | 0 | - | - | 0.2 |

| Lane Group | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (vph) | 472 | 48 | 138 | 511 | 38 | 220 |
| Future Volume (vph) | 472 | 48 | 138 | 511 | 38 | 220 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 0.988 | | | | 0.885 | |
| Flt Protected | | | | 0.989 | 0.993 | |
| Satd. Flow (prot) | 1552 | 0 | 0 | 1398 | 1380 | 0 |
| Flt Permitted | | | | 0.989 | 0.993 | |
| Satd. Flow (perm) | 1552 | 0 | 0 | 1398 | 1380 | 0 |
| Link Speed (k/h) | 50 | | | 50 | 50 | |
| Link Distance (m) | 57.4 | | | 138.5 | 126.3 | |
| Travel Time (s) | 4.1 | | | 10.0 | 9.1 | |
| Peak Hour Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Parking (#/hr) | | 0 | | 0 | | |
| Adj. Flow (vph) | 472 | 48 | 138 | 511 | 38 | 220 |
| Shared Lane Traffic (%) | | | | | | |
| Lane Group Flow (vph) | 520 | 0 | 0 | 649 | 258 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No |
| Lane Alignment | Left | Right | Left | Left | Left | Right |
| Median Width(m) | 0.0 | | | 0.0 | 3.5 | |
| Link Offset(m) | 0.0 | | | 0.0 | 0.0 | |
| Crosswalk Width(m) | 3.0 | | | 3.0 | 3.0 | |
| Two way Left Turn Lane | | | | | | |
| Headway Factor | 1.24 | 1.24 | 1.24 | 1.41 | 1.24 | 1.24 |
| Turning Speed (k/h) | | 15 | 25 | | 25 | 15 |
| Sign Control | Free | | | Free | Stop | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | CBD | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization 101.4% | | ICU Level of Service G | |
| Analysis Period (min) 15 | | | |

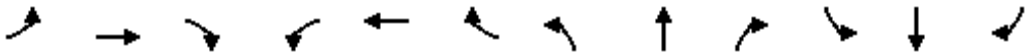
| Intersection | |
|---|---|
| Int Delay, s/veh | 6 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 472 | 48 | 138 | 511 | 38 | 220 |
| Future Vol, veh/h | 472 | 48 | 138 | 511 | 38 | 220 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 100 | 100 | 100 | 100 | 100 | 100 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 472 | 48 | 138 | 511 | 38 | 220 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 520 | 0 | 1283 | 496 |
| Stage 1 | - | - | - | - | 496 | - |
| Stage 2 | - | - | - | - | 787 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 1046 | - | 182 | 574 |
| Stage 1 | - | - | - | - | 612 | - |
| Stage 2 | - | - | - | - | 449 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1046 | - | 149 | 574 |
| Mov Cap-2 Maneuver | - | - | - | - | 149 | - |
| Stage 1 | - | - | - | - | 612 | - |
| Stage 2 | - | - | - | - | 366 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 1.9 | 28.4 |
| HCM LOS | | | D |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | 404 | - | - | 1046 | - |
| HCM Lane V/C Ratio | 0.639 | - | - | 0.132 | - |
| HCM Control Delay (s) | 28.4 | - | - | 9 | 0 |
| HCM Lane LOS | D | - | - | A | A |
| HCM 95th %tile Q(veh) | 4.3 | - | - | 0.5 | - |



| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 30 | 455 | 20 | 84 | 709 | 12 | 4 | 7 | 41 | 9 | 11 | 18 |
| Future Volume (vph) | 30 | 455 | 20 | 84 | 709 | 12 | 4 | 7 | 41 | 9 | 11 | 18 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Storage Length (m) | 0.0 | | 0.0 | 0.0 | | 10.0 | 0.0 | | 0.0 | 0.0 | | 0.0 |
| Storage Lanes | 0 | | 0 | 0 | | 1 | 0 | | 0 | 0 | | 0 |
| Taper Length (m) | 15.0 | | | 15.0 | | | 15.0 | | | 15.0 | | |
| 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 |
| Frt | | 0.995 | | | | 0.850 | | 0.894 | | | 0.936 | |
| Flt Protected | | 0.997 | | | 0.995 | | | 0.996 | | | 0.988 | |
| Satd. Flow (prot) | 0 | 1558 | 0 | 0 | 1563 | 1201 | 0 | 1398 | 0 | 0 | 1452 | 0 |
| Flt Permitted | | 0.997 | | | 0.995 | | | 0.996 | | | 0.988 | |
| Satd. Flow (perm) | 0 | 1558 | 0 | 0 | 1563 | 1201 | 0 | 1398 | 0 | 0 | 1452 | 0 |
| Link Speed (k/h) | | 50 | | | 50 | | | 50 | | | 50 | |
| Link Distance (m) | | 72.3 | | | 104.2 | | | 72.7 | | | 319.9 | |
| Travel Time (s) | | 5.2 | | | 7.5 | | | 5.2 | | | 23.0 | |
| Peak Hour Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Parking (#/hr) | | | 0 | | | 0 | | | 0 | | | 0 |
| Adj. Flow (vph) | 30 | 455 | 20 | 84 | 709 | 12 | 4 | 7 | 41 | 9 | 11 | 18 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 505 | 0 | 0 | 793 | 12 | 0 | 52 | 0 | 0 | 38 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(m) | | 3.5 | | | 3.5 | | | 0.0 | | | 0.0 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 3.0 | | | 3.0 | | | 3.0 | | | 3.0 | |
| Two way Left Turn Lane | | | | | | | | | | | | |
| Headway Factor | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.41 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 |
| Turning Speed (k/h) | 25 | | 15 | 25 | | 15 | 25 | | 15 | 25 | | 15 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | CBD | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization 87.5% | | ICU Level of Service E | |
| Analysis Period (min) 15 | | | |

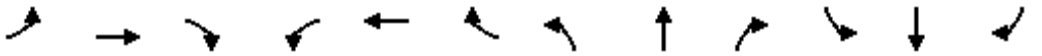
| Intersection | |
|---|---|
| Int Delay, s/veh | 2.4 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ↕ | | | ↰ | ↗ | | ↕ | | | ↕ | |
| Traffic Vol, veh/h | 30 | 455 | 20 | 84 | 709 | 12 | 4 | 7 | 41 | 9 | 11 | 18 |
| Future Vol, veh/h | 30 | 455 | 20 | 84 | 709 | 12 | 4 | 7 | 41 | 9 | 11 | 18 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | 100 | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 30 | 455 | 20 | 84 | 709 | 12 | 4 | 7 | 41 | 9 | 11 | 18 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 721 | 0 | 0 | 475 | 0 | 0 | 1423 | 1414 | 465 | 1426 | 1412 | 709 |
| Stage 1 | - | - | - | - | - | - | 525 | 525 | - | 877 | 877 | - |
| Stage 2 | - | - | - | - | - | - | 898 | 889 | - | 549 | 535 | - |
| Critical Hdwy | 4.12 | - | - | 4.12 | - | - | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Follow-up Hdwy | 2.218 | - | - | 2.218 | - | - | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 |
| Pot Cap-1 Maneuver | 881 | - | - | 1087 | - | - | 114 | 138 | 597 | 113 | 138 | 434 |
| Stage 1 | - | - | - | - | - | - | 536 | 529 | - | 343 | 366 | - |
| Stage 2 | - | - | - | - | - | - | 334 | 361 | - | 520 | 524 | - |
| Platoon blocked, % | | - | - | | - | - | | | | | | |
| Mov Cap-1 Maneuver | 881 | - | - | 1087 | - | - | 88 | 115 | 597 | 87 | 115 | 434 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 88 | 115 | - | 87 | 115 | - |
| Stage 1 | - | - | - | - | - | - | 511 | 505 | - | 327 | 319 | - |
| Stage 2 | - | - | - | - | - | - | 269 | 314 | - | 456 | 500 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0.5 | 0.9 | 19.7 | 34.9 |
| HCM LOS | | | C | D |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 297 | 881 | - | - | 1087 | - | - | 158 |
| HCM Lane V/C Ratio | 0.175 | 0.034 | - | - | 0.077 | - | - | 0.241 |
| HCM Control Delay (s) | 19.7 | 9.2 | 0 | - | 8.6 | 0 | - | 34.9 |
| HCM Lane LOS | C | A | A | - | A | A | - | D |
| HCM 95th %tile Q(veh) | 0.6 | 0.1 | - | - | 0.3 | - | - | 0.9 |



| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 97 | 331 | 87 | 52 | 701 | 179 | 80 | 71 | 55 | 113 | 46 | 154 |
| Future Volume (vph) | 97 | 331 | 87 | 52 | 701 | 179 | 80 | 71 | 55 | 113 | 46 | 154 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Storage Length (m) | 45.0 | | 0.0 | 60.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 |
| Storage Lanes | 1 | | 0 | 1 | | 0 | 1 | | 0 | 0 | | 0 |
| Taper Length (m) | 30.0 | | | 55.0 | | | 15.0 | | | 15.0 | | |
| 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 |
| Frt | | 0.969 | | | 0.969 | | | 0.935 | | | 0.934 | |
| Flt Protected | 0.950 | | | 0.950 | | | 0.950 | | | | 0.982 | |
| Satd. Flow (prot) | 1492 | 1522 | 0 | 1492 | 1522 | 0 | 1492 | 1468 | 0 | 0 | 1441 | 0 |
| Flt Permitted | 0.198 | | | 0.384 | | | 0.482 | | | | 0.831 | |
| Satd. Flow (perm) | 311 | 1522 | 0 | 603 | 1522 | 0 | 757 | 1468 | 0 | 0 | 1219 | 0 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | 19 | | | 24 | | | 46 | | | 58 | |
| Link Speed (k/h) | | 50 | | | 50 | | | 50 | | | 50 | |
| Link Distance (m) | | 104.2 | | | 101.3 | | | 60.6 | | | 194.6 | |
| Travel Time (s) | | 7.5 | | | 7.3 | | | 4.4 | | | 14.0 | |
| Peak Hour Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Parking (#/hr) | | | 0 | | | 0 | | | | | | |
| Adj. Flow (vph) | 97 | 331 | 87 | 52 | 701 | 179 | 80 | 71 | 55 | 113 | 46 | 154 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 97 | 418 | 0 | 52 | 880 | 0 | 80 | 126 | 0 | 0 | 313 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(m) | | 3.5 | | | 3.5 | | | 3.5 | | | 3.5 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 3.0 | | | 3.0 | | | 3.0 | | | 3.0 | |
| Two way Left Turn Lane | | | | | | | | | | | | |
| Headway Factor | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 |
| Turning Speed (k/h) | 25 | | 15 | 25 | | 15 | 25 | | 15 | 25 | | 15 |
| Number of Detectors | 1 | 2 | | 1 | 2 | | 1 | 2 | | 1 | 2 | |
| Detector Template | Left | Thru | | Left | Thru | | Left | Thru | | Left | Thru | |
| Leading Detector (m) | 2.0 | 10.0 | | 2.0 | 10.0 | | 2.0 | 10.0 | | 2.0 | 10.0 | |
| Trailing Detector (m) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Position(m) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Size(m) | 2.0 | 0.6 | | 2.0 | 0.6 | | 2.0 | 0.6 | | 2.0 | 0.6 | |
| Detector 1 Type | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Queue (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Delay (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 2 Position(m) | | 9.4 | | | 9.4 | | | 9.4 | | | 9.4 | |
| Detector 2 Size(m) | | 0.6 | | | 0.6 | | | 0.6 | | | 0.6 | |
| Detector 2 Type | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Turn Type | Perm | NA | | pm+pt | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | 1 | 6 | | | 8 | | | 4 | |

| Lane Group | Ø3 | Ø7 |
|---|---|---|
| Lane Configurations | | |
| Traffic Volume (vph) | | |
| Future Volume (vph) | | |
| Ideal Flow (vphpl) | | |
| Storage Length (m) | | |
| Storage Lanes | | |
| Taper Length (m) | | |
| Lane Util. Factor | | |
| Frt | | |
| Flt Protected | | |
| Satd. Flow (prot) | | |
| Flt Permitted | | |
| Satd. Flow (perm) | | |
| Right Turn on Red | | |
| Satd. Flow (RTOR) | | |
| Link Speed (k/h) | | |
| Link Distance (m) | | |
| Travel Time (s) | | |
| Peak Hour Factor | | |
| Parking (#/hr) | | |
| Adj. Flow (vph) | | |
| Shared Lane Traffic (%) | | |
| Lane Group Flow (vph) | | |
| Enter Blocked Intersection | | |
| Lane Alignment | | |
| Median Width(m) | | |
| Link Offset(m) | | |
| Crosswalk Width(m) | | |
| Two way Left Turn Lane | | |
| Headway Factor | | |
| Turning Speed (k/h) | | |
| Number of Detectors | | |
| Detector Template | | |
| Leading Detector (m) | | |
| Trailing Detector (m) | | |
| Detector 1 Position(m) | | |
| Detector 1 Size(m) | | |
| Detector 1 Type | | |
| Detector 1 Channel | | |
| Detector 1 Extend (s) | | |
| Detector 1 Queue (s) | | |
| Detector 1 Delay (s) | | |
| Detector 2 Position(m) | | |
| Detector 2 Size(m) | | |
| Detector 2 Type | | |
| Detector 2 Channel | | |
| Detector 2 Extend (s) | | |
| Turn Type | | |
| Protected Phases | 3 | 7 |

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Permitted Phases | 2 | | | 6 | | | 8 | | | 4 | | |
| Detector Phase | 2 | 2 | | 1 | 6 | | 8 | 8 | | 4 | 4 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 10.0 | 10.0 | | 10.0 | 10.0 | |
| Minimum Split (s) | 22.5 | 22.5 | | 9.5 | 22.5 | | 22.5 | 22.5 | | 22.5 | 22.5 | |
| Total Split (s) | 40.0 | 40.0 | | 11.0 | 51.0 | | 29.0 | 29.0 | | 29.0 | 29.0 | |
| Total Split (%) | 47.1% | 47.1% | | 12.9% | 60.0% | | 34.1% | 34.1% | | 34.1% | 34.1% | |
| Maximum Green (s) | 35.5 | 35.5 | | 6.5 | 46.5 | | 24.5 | 24.5 | | 24.5 | 24.5 | |
| Yellow Time (s) | 3.5 | 3.5 | | 3.5 | 3.5 | | 3.5 | 3.5 | | 3.5 | 3.5 | |
| All-Red Time (s) | 1.0 | 1.0 | | 1.0 | 1.0 | | 1.0 | 1.0 | | 1.0 | 1.0 | |
| Lost Time Adjust (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | | 0.0 | |
| Total Lost Time (s) | 4.5 | 4.5 | | 4.5 | 4.5 | | 4.5 | 4.5 | | | 4.5 | |
| Lead/Lag | Lag | Lag | | Lead | | | Lag | Lag | | Lag | Lag | |
| Lead-Lag Optimize? | Yes | Yes | | Yes | | | Yes | Yes | | Yes | Yes | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Recall Mode | C-Max | C-Max | | None | C-Max | | None | None | | None | None | |
| Walk Time (s) | 7.0 | 7.0 | | | 7.0 | | 7.0 | 7.0 | | 7.0 | 7.0 | |
| Flash Dont Walk (s) | 11.0 | 11.0 | | | 11.0 | | 11.0 | 11.0 | | 11.0 | 11.0 | |
| Pedestrian Calls (#/hr) | 0 | 0 | | | 0 | | 0 | 0 | | 0 | 0 | |
| Act Effct Green (s) | 45.6 | 45.6 | | 52.4 | 52.4 | | 23.6 | 23.6 | | | 23.6 | |
| Actuated g/C Ratio | 0.54 | 0.54 | | 0.62 | 0.62 | | 0.28 | 0.28 | | | 0.28 | |
| v/c Ratio | 0.58 | 0.51 | | 0.12 | 0.93 | | 0.38 | 0.29 | | | 0.82 | |
| Control Delay | 38.0 | 17.8 | | 8.9 | 34.8 | | 28.4 | 15.7 | | | 40.7 | |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | | 0.0 | |
| Total Delay | 38.0 | 17.8 | | 8.9 | 34.8 | | 28.4 | 15.7 | | | 40.7 | |
| LOS | D | B | | A | C | | C | B | | | D | |
| Approach Delay | | 21.6 | | | 33.3 | | | 20.6 | | | 40.7 | |
| Approach LOS | | C | | | C | | | C | | | D | |
| Queue Length 50th (m) | 11.6 | 44.9 | | 3.2 | 118.2 | | 10.3 | 9.7 | | | 38.4 | |
| Queue Length 95th (m) | #40.1 | 81.2 | | 8.6 | #224.6 | | 20.9 | 20.9 | | | 64.3 | |
| Internal Link Dist (m) | | 80.2 | | | 77.3 | | | 36.6 | | | 170.6 | |
| Turn Bay Length (m) | 45.0 | | | 60.0 | | | | | | | | |
| Base Capacity (vph) | 166 | 825 | | 441 | 947 | | 235 | 487 | | | 418 | |
| 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 | 0.51 | | 0.12 | 0.93 | | 0.34 | 0.26 | | | 0.75 | |

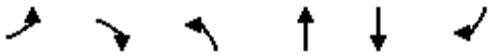
| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | CBD | | |
| Cycle Length: 85 | | | |
| Actuated Cycle Length: 85 | | | |
| Offset: 1 (1%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green | | | |
| Natural Cycle: 90 | | | |
| Control Type: Actuated-Coordinated | | | |
| Maximum v/c Ratio: 0.93 | | | |
| Intersection Signal Delay: 30.1 | | Intersection LOS: C | |
| Intersection Capacity Utilization 106.9% | | ICU Level of Service G | |
| Analysis Period (min) 15 | | | |

| Lane Group | Ø3 | Ø7 |
|---|---|---|
| Permitted Phases | | |
| Detector Phase | | |
| Switch Phase | | |
| Minimum Initial (s) | 3.0 | 3.0 |
| Minimum Split (s) | 5.0 | 5.0 |
| Total Split (s) | 5.0 | 5.0 |
| Total Split (%) | 6% | 6% |
| Maximum Green (s) | 3.0 | 3.0 |
| Yellow Time (s) | 2.0 | 2.0 |
| All-Red Time (s) | 0.0 | 0.0 |
| Lost Time Adjust (s) | | |
| Total Lost Time (s) | | |
| Lead/Lag | Lead | Lead |
| Lead-Lag Optimize? | Yes | Yes |
| Vehicle Extension (s) | 3.0 | 3.0 |
| Recall Mode | None | None |
| Walk Time (s) | | |
| Flash Dont Walk (s) | | |
| Pedestrian Calls (#/hr) | | |
| Act Effct Green (s) | | |
| Actuated g/C Ratio | | |
| v/c Ratio | | |
| Control Delay | | |
| Queue Delay | | |
| Total Delay | | |
| LOS | | |
| Approach Delay | | |
| Approach LOS | | |
| Queue Length 50th (m) | | |
| Queue Length 95th (m) | | |
| Internal Link Dist (m) | | |
| Turn Bay Length (m) | | |
| Base Capacity (vph) | | |
| Starvation Cap Reductn | | |
| Spillback Cap Reductn | | |
| Storage Cap Reductn | | |
| Reduced v/c Ratio | | |

| Intersection Summary |
|---|

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

Splits and Phases: 4: McRae Ave & Richmond Rd



| Lane Group | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (vph) | 6 | 10 | 16 | 245 | 182 | 8 |
| Future Volume (vph) | 6 | 10 | 16 | 245 | 182 | 8 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 0.916 | | | | 0.994 | |
| Flt Protected | 0.982 | | | 0.997 | | |
| Satd. Flow (prot) | 1570 | 0 | 0 | 1740 | 1735 | 0 |
| Flt Permitted | 0.982 | | | 0.997 | | |
| Satd. Flow (perm) | 1570 | 0 | 0 | 1740 | 1735 | 0 |
| Link Speed (k/h) | 30 | | | 50 | 50 | |
| Link Distance (m) | 55.1 | | | 194.6 | 126.3 | |
| Travel Time (s) | 6.6 | | | 14.0 | 9.1 | |
| Peak Hour Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj. Flow (vph) | 6 | 10 | 16 | 245 | 182 | 8 |
| Shared Lane Traffic (%) | | | | | | |
| Lane Group Flow (vph) | 16 | 0 | 0 | 261 | 190 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No |
| Lane Alignment | Left | Right | Left | Left | Left | Right |
| Median Width(m) | 3.5 | | | 0.0 | 0.0 | |
| Link Offset(m) | 0.0 | | | 0.0 | 0.0 | |
| Crosswalk Width(m) | 3.0 | | | 3.0 | 3.0 | |
| Two way Left Turn Lane | | | | | | |
| Headway Factor | 1.09 | 1.09 | 1.09 | 1.09 | 1.09 | 1.09 |
| Turning Speed (k/h) | 25 | 15 | 25 | | | 15 |
| Sign Control | Stop | | | Free | Free | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization 37.5% | | ICU Level of Service A | |
| Analysis Period (min) 15 | | | |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.6 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 6 | 10 | 16 | 245 | 182 | 8 |
| Future Vol, veh/h | 6 | 10 | 16 | 245 | 182 | 8 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 100 | 100 | 100 | 100 | 100 | 100 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 6 | 10 | 16 | 245 | 182 | 8 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 463 | 186 | 190 | 0 | - | 0 |
| Stage 1 | 186 | - | - | - | - | - |
| Stage 2 | 277 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | 4.12 | - | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | 2.218 | - | - | - |
| Pot Cap-1 Maneuver | 557 | 856 | 1384 | - | - | - |
| Stage 1 | 846 | - | - | - | - | - |
| Stage 2 | 770 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 550 | 856 | 1384 | - | - | - |
| Mov Cap-2 Maneuver | 550 | - | - | - | - | - |
| Stage 1 | 835 | - | - | - | - | - |
| Stage 2 | 770 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 10.2 | 0.5 | 0 |
| HCM LOS | B | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1384 | - | 708 | - | - |
| HCM Lane V/C Ratio | 0.012 | - | 0.023 | - | - |
| HCM Control Delay (s) | 7.6 | 0 | 10.2 | - | - |
| HCM Lane LOS | A | A | B | - | - |
| HCM 95th %tile Q(veh) | 0 | - | 0.1 | - | - |

| Lane Group | EBT | EBR | WBL | WBT | NBL | NBR | Ø4 |
|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | |
| Traffic Volume (vph) | 519 | 0 | 0 | 549 | 0 | 0 | |
| Future Volume (vph) | 519 | 0 | 0 | 549 | 0 | 0 | |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| Frt | | | | | | | |
| Flt Protected | | | | | | | |
| Satd. Flow (prot) | 1745 | 0 | 0 | 1745 | 0 | 0 | |
| Flt Permitted | | | | | | | |
| Satd. Flow (perm) | 1745 | 0 | 0 | 1745 | 0 | 0 | |
| Right Turn on Red | | Yes | | | | Yes | |
| Satd. Flow (RTOR) | | | | | | | |
| Link Speed (k/h) | 50 | | | 50 | 50 | | |
| Link Distance (m) | 22.1 | | | 57.4 | 22.8 | | |
| Travel Time (s) | 1.6 | | | 4.1 | 1.6 | | |
| Peak Hour Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| Adj. Flow (vph) | 519 | 0 | 0 | 549 | 0 | 0 | |
| Shared Lane Traffic (%) | | | | | | | |
| Lane Group Flow (vph) | 519 | 0 | 0 | 549 | 0 | 0 | |
| Enter Blocked Intersection | No | No | No | No | No | No | |
| Lane Alignment | Left | Right | Left | Left | Left | Right | |
| Median Width(m) | 0.0 | | | 0.0 | 0.0 | | |
| Link Offset(m) | 0.0 | | | 0.0 | 0.0 | | |
| Crosswalk Width(m) | 3.0 | | | 3.0 | 3.0 | | |
| Two way Left Turn Lane | | | | | | | |
| Headway Factor | 1.09 | 1.09 | 1.09 | 1.09 | 1.09 | 1.09 | |
| Turning Speed (k/h) | | 15 | 25 | | 25 | 15 | |
| Number of Detectors | 2 | | | 2 | | | |
| Detector Template | Thru | | | Thru | | | |
| Leading Detector (m) | 10.0 | | | 10.0 | | | |
| Trailing Detector (m) | 0.0 | | | 0.0 | | | |
| Detector 1 Position(m) | 0.0 | | | 0.0 | | | |
| Detector 1 Size(m) | 0.6 | | | 0.6 | | | |
| Detector 1 Type | Cl+Ex | | | Cl+Ex | | | |
| Detector 1 Channel | | | | | | | |
| Detector 1 Extend (s) | 0.0 | | | 0.0 | | | |
| Detector 1 Queue (s) | 0.0 | | | 0.0 | | | |
| Detector 1 Delay (s) | 0.0 | | | 0.0 | | | |
| Detector 2 Position(m) | 9.4 | | | 9.4 | | | |
| Detector 2 Size(m) | 0.6 | | | 0.6 | | | |
| Detector 2 Type | Cl+Ex | | | Cl+Ex | | | |
| Detector 2 Channel | | | | | | | |
| Detector 2 Extend (s) | 0.0 | | | 0.0 | | | |
| Turn Type | NA | | | NA | | | |
| Protected Phases | 2 | | | 6 | | | 4 |
| Permitted Phases | | | | | | | |
| Detector Phase | 2 | | | 6 | | | |
| Switch Phase | | | | | | | |
| Minimum Initial (s) | 5.0 | | | 5.0 | | | 10.0 |

| Lane Group | EBT | EBR | WBL | WBT | NBL | NBR | Ø4 |
|---|---|---|---|---|---|---|---|
| Minimum Split (s) | 23.8 | | | 23.8 | | | 22.0 |
| Total Split (s) | 30.8 | | | 30.8 | | | 24.0 |
| Total Split (%) | 56.2% | | | 56.2% | | | 44% |
| Maximum Green (s) | 25.0 | | | 25.0 | | | 20.0 |
| Yellow Time (s) | 3.3 | | | 3.3 | | | 3.0 |
| All-Red Time (s) | 2.5 | | | 2.5 | | | 1.0 |
| Lost Time Adjust (s) | 0.0 | | | 0.0 | | | |
| Total Lost Time (s) | 5.8 | | | 5.8 | | | |
| Lead/Lag | | | | | | | |
| Lead-Lag Optimize? | | | | | | | |
| Vehicle Extension (s) | 3.0 | | | 3.0 | | | 3.0 |
| Recall Mode | C-Max | | | C-Max | | | None |
| Walk Time (s) | 7.0 | | | 7.0 | | | 7.0 |
| Flash Dont Walk (s) | 11.0 | | | 11.0 | | | 11.0 |
| Pedestrian Calls (#/hr) | 0 | | | 0 | | | 187 |
| Act Effct Green (s) | 32.6 | | | 32.6 | | | |
| Actuated g/C Ratio | 0.59 | | | 0.59 | | | |
| v/c Ratio | 0.50 | | | 0.53 | | | |
| Control Delay | 11.4 | | | 11.9 | | | |
| Queue Delay | 0.0 | | | 0.0 | | | |
| Total Delay | 11.4 | | | 11.9 | | | |
| LOS | B | | | B | | | |
| Approach Delay | 11.4 | | | 11.9 | | | |
| Approach LOS | B | | | B | | | |
| Queue Length 50th (m) | 34.0 | | | 36.9 | | | |
| Queue Length 95th (m) | 59.4 | | | 64.2 | | | |
| Internal Link Dist (m) | 0.1 | | | 33.4 | 0.1 | | |
| Turn Bay Length (m) | | | | | | | |
| Base Capacity (vph) | 1036 | | | 1036 | | | |
| Starvation Cap Reductn | 0 | | | 0 | | | |
| Spillback Cap Reductn | 0 | | | 0 | | | |
| Storage Cap Reductn | 0 | | | 0 | | | |
| Reduced v/c Ratio | 0.50 | | | 0.53 | | | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Cycle Length: 54.8 | | | |
| Actuated Cycle Length: 54.8 | | | |
| Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green | | | |
| Natural Cycle: 55 | | | |
| Control Type: Actuated-Coordinated | | | |
| Maximum v/c Ratio: 0.53 | | | |
| Intersection Signal Delay: 11.7 | | Intersection LOS: B | |
| Intersection Capacity Utilization 35.3% | | ICU Level of Service A | |
| Analysis Period (min) 15 | | | |

Splits and Phases: 6: Pedestrian Crossing & Scott St